

**DISASTER PREPAREDNESS AND PLANNING FOR SERVICE  
SUSTAINABILITY: CASE OF EGERTON UNIVERSITY DIGITAL  
LIBRARY, MAIN CAMPUS**

**LINET OKETCH**

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**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF  
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REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF  
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## **DECLARATION**

I declare that this research project is my original work and has not been presented in any other university/institution for consideration of any certification. This research project has been complemented by referenced sources duly acknowledged. Where text, data (including spoken words), graphics, pictures or tables have been borrowed from other sources, including the internet, these are specifically accredited and references cited using current APA system and in accordance with anti-plagiarism regulations.

**Signature** .....      **Date:**

**Name:** Linet Oketch

**Reg. No:** E65/OL/NKU/27143/2015

**Department:** Library & Information Science

**Supervisor Declaration:** This research has been submitted for appraisal with my approval as University supervisor.

**Signature**.....      **Date**.....

**Name:** .....

**Department:** Library & Information Science

**University:** Kenyatta University

## **DEDICATION**

To my late husband Dr. Japheth Okomo and my children Prof. Faith Okomo and Dr. Fenny Okomo. Also to my father Pr. Fredrick Oketch who encouraged me spiritually when I was down.

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## **ABBREVIATIONS AND ACRONYMS**

<b>CCTV</b>	Closed Circuit Television
<b>HR</b>	Human Resource
<b>IFRC</b>	International Federation of Red Cross
<b>ISO</b>	International Standards Organization
<b>KU</b>	Kenyatta University
<b>NACOSTI</b>	National Commission for Science, Technology and Innovation
<b>NRCNA</b>	National Research Council of the National Academy
<b>SPSS</b>	Statistics Package for the Social Science
<b>UNESCO</b>	United Nations Education, Scientific and Cultural Organization
<b>UNISDR</b>	United Nations International Strategy for Disaster Reduction

## ABSTRACT

The most important aspect of digital libraries is planning and preparing for disasters. It is also one area that is understood the least. Occurrence of disasters is tied to the general history of information and library science. Disasters are events that no library wants to happen to them, yet they do. The Egerton University library, which serves as a study place, has seen disasters such as unruly students disrupting services and fires. The goal of this study was to assess how sustainability of services in digital libraries were being influenced by planning and preparedness of disasters. The objectives considered were as follows: determining the level of disaster preparedness and planning; finding out about the training of the digital library staff; and determining the amount of planning and preparedness on disaster; looking into the digital library's readiness in regards to disaster planning equipment's, as well as the problems experienced in the planning and preparedness for disasters. The Theory of Planned Behavior served as the foundation. The study used a descriptive research methodology and a census method to gather data from 68 library staff members. A self-administered questionnaire on a five-point Likert scale was used to collect primary data. In order to meet the study's aims, the quantitative data was evaluated inferentially. This data was analyzed using the statistical software SPSS. For ease of interpretation, the results were presented in tables as frequencies and percentages. The instruments' validity was established with the help of experts who aided in the right framing of questions in the questionnaire. They also aided in recalibrating it in accordance with the study's aims. The study found that Egerton University's digital library had a low level of disaster preparedness and planning, putting the it at a disaster risk; just a few of the staff in the digital had received sufficient training on disaster planning and preparedness; equipment related to planning and preparedness of disasters were not adequate within the digital library; challenges associated to planning and preparedness for disasters were also being experienced at the digital library. This digital library study concluded that disasters were not exempted from occurring there just as it wasn't in any part of other organizations; training on members of staff within he digital library was not keenly addressed in regards to planning and preparedness of disasters; equipment's for planning and preparing for disasters were not adequate within the digital library; and some of the things hampering the planning and preparedness of disasters included inadequacy of equipment's and funds. The recommendations are that the management of the digital library together with the institution make available necessary support and training be accorded to staff manning the digital library on planning and preparedness of disasters; a policy on planning and preparing for disasters be well developed and captured in relation to digital libraries and be part of the overall institutions policy on planning and preparedness of disasters; and training on planning and preparedness of disasters be developed in a mechanism that is regular, systematic and structured.

## **CHAPTER ONE**

### **INTRODUCTION AND BACKGROUND TO THE STUDY**

#### **1.1 Introduction**

This section contains the study's background, the problem that informed the study, objectives of the study, specific objectives, and questions to be answered by this study, the study's significance, delimitations and limitations, its significance, study assumptions, conceptual and theoretical framework and operational definition of terms.

Everyone has a stake in disaster preparedness and planning. Knowing and planning on what should happen can assist minimize worry and fear, as well as the occurrence of financial losses. The meaning of preparedness involves efficient planning, allocation of resources and development such as exercises that target simulated responses. Perry and Lindell (2003) posit that disaster preparedness and planning is the level at which both the organization and the individual are ready and equipped to counter the interruptive threats from the environment. Preparedness and planning is often focused on an effective analysis of assessing risk and appropriate links that have a system of warning. Disaster preparedness and planning are methods that enable various units of analysis to respond more effectively and recover more rapidly when disasters hit (Tierney & Sutton, 2006). Preparedness and planning activities also try to ensure that the resources needed for an effective response in the occurrence of a disaster and those who must respond understand how to use those resources.

## **1.2 Background to the Study**

The most important aspect of digital libraries is planning and preparing for disasters. It is also one area that is understood the least (Frank & Yakel, 2013). Occurrence of disasters is tied to the general history of information and library science. (National Research Council of the National Academy [NRCNA], 2007). Disasters are described as incidents that interrupt the economy and society's normal functioning on a large scale. Disasters are events that no library wants to happen to them, yet they do. According to the NRCNA (2007), disaster are in different categories such as disasters caused by man, subsequent disasters, disaster due to nature etc. Despite their categorization, disasters are disruptive and abrupt: they can be caused by a variety of circumstances and happen at any time. These include: fires, wars, civil disorder (Johnson, 2005), rain penetration, leaking pipes, burst heating pipes (Gerlach, 2005), tsunamis (Warnasuriya, 2005), earthquakes (Shaheen, 2008) and floods (2009). The risk of a disaster is therefore a product of how frequent and how severe unwanted events occur.

Disaster preparedness and planning is about embarking on mindful planning which includes enacting measures that can be triggered in the event a disaster happens. Disasters are sudden and, in most time, never give advance warning. The unpredictable nature of disasters is the reason why digital libraries need to put in place disaster preparedness and planning measures for if and when disaster strikes. Digital libraries all over the globe have reported losing crucial sources of information which at times are irreplaceable. According to Nwokedi, Panle and Samuel (2017) disaster in libraries can be described as a sudden removal of information and sources of information from being accessed and being used. Due to the role played by libraries

(acquisition, organization and information dissemination) it is without a doubt therefore that digital libraries will suffer catastrophically when its collection is suddenly removed barring access and use. The preparation and planning for any disaster first requires a library to develop documented procedures in the form of a disaster plan (Nwokedi, Panle & Samuel, 2017). A disaster plan according to Morgan and Smith (2014) includes active awareness, employees with assigned roles, testing of procedures, training, availability and maintenance of facilities and commitment by management. The library has to be prepared through the identification of likely hazards, putting in place mitigation measures and crafting measures of response. A disaster plan is in itself a policy document that captures clear procedures and systematic efforts of how disasters are supposed to be prepared for in case they occur (Iske & Lengfellner, 2015). This policy document assists in ensuring the overall wellbeing of the patrons, library staff and resources and often requires the participation of these stakeholders to implement. A clearly crafted disaster plan/policy considerably affects the disaster preparedness through its elements of prevention, reaction and recovery. According to Ayoung, Boatbil and Baada (2015), academic libraries are ill prepared to prepare for disaster due to lack of awareness. This has exposed many digital libraries to threats emanating from disaster hence rendering them unable to sustain services owing to the damage caused by disasters. The preparedness and planning of any digital library is as a result of the library staff being aware that disaster can happen any time. The library staffs therefore need to put necessary measures in place to deter or mitigate the occurrence of disaster. Awareness among library staff is vital in tackling the what, when, and how during disaster situations. It is only under such situations that the library has a chance of surviving a disaster. According to Garnett (2019), it is important to undertake mock drills because

unless they can be intuitively applied in an actual situation then the response will not be effective. The mock drills therefore become a source of decision making that greatly impacts the wellbeing and safety of both patrons and staff.

The sudden nature of disaster calls for library staff to be prepared for if and when disaster strike. The preparation of library staff comes through training. The training and retraining of library staff ensures that they efficiently and adequately deter, mitigate, respond to disaster and also in recover. Training is an important aspect of preparation and planning as it entails putting in place mechanisms that are necessary in the event of a disaster occurring in an academic library. According to Ayoung, Boatbil and Baada (2015), it is crucial for digital libraries to ensure its staff is trained in disaster preparedness and planning. This can be achieved through collaboration between service agencies and academic libraries. Organizations therefore need to be in the forefront in articulating their training needs in as far as disaster preparedness is concern. According to Nazlin, Sipon and Radzi (2014), the organization conducts a training needs analysis (TNA) before developing a training program to identify individual, operational and organizational needs of staff in disaster preparedness and lastly pinpoints which individual needs training or retraining. The training needs of organizations are specific and sometimes unique. The staff in academic libraries require training that addresses the needs of that organization, in this case the digital library. The training being considered therefore is within a module that provides the greatest impact to the digital library (Nazlin, Sipon & Radzi, 2014). The individual training needs of an individual are always essential in preparing and planning for disasters. If an individual in a digital library lacks the requisite training to prepare for certain disasters that are likely to harm the library, then the necessary training should

be provided (Engelman, Ivey, Tseng, Dahrounge, Brune & Neuhauser, 2013). These are training needs that are related to disaster preparedness specific to an individual in the academic library. Disaster preparedness and planning training enhances flexibility and critical thinking of individuals in the library.

Staff in digital libraries need to be generally enlightened on types of disasters that befall a library, what their causes are, and the immediate action that can be taken during these situations. There are many disasters that can affect a digital library: fire, flooding, earthquakes, faulty electrical fault, arson, malware etc. (Abareh, 2014). These call for different approaches and equipment's in tackling their effects. Academic libraries have since equipped themselves with various disaster preparedness equipment's and tools such as emergency kits, automatic fire sprinklers, manual alarms, audible alarms, smoke detectors and fire extinguishers (Issa, Aliyu, Adedeji, & Rachel, 2012). Preparedness and planning is only essential if the response is timely and adequate. According to Sawant (2014), the most common disasters in a digital library are flooding and fires. This calls for additional disaster equipment's such as automatic fire suppressors, fire buckets, wet pick-up vacuums and flood extractor to be available. Just having them is not enough. To be able to adequately prepare and plan for disaster, a library needs to arm itself with the necessary disaster preparedness equipment's. The absence of these essential equipment's exposed the library collection to risk of damage and also the risk of losing lives. By not ensuring that the equipment's were serviced, the library staff exhibited an attitude that was indifferent in regards to the safety of the patrons, the collections and even themselves. Raju (2014) added that library staff needed to ensure that they continually monitored and evaluated the equipment's tear and wear to avert disaster.

Digital libraries experience a lot of challenges when it comes to preparing and planning for disaster. This is despite the fact that some of these libraries have a disaster preparedness plan that is functional. According to Owolabi (2014), digital libraries were experiencing challenges of lack of funds. The library budget is dwindling meaning that very little or none at all is being allocated for disaster preparedness and planning in the library. This highly impacts the library's disaster preparedness and planning in a negative way. Without adequate funding, the library is unable to sufficiently prepare and plan for likely disasters such as acquiring the necessary disaster preparedness equipment, ensuring that the equipment's are well maintained or serviced and providing proper training of library staff in averting and tackling disasters. Haines (2009) state that basically three reasons are attributed to why libraries lack a disaster preparedness plan: immunity, money and time. Library staff tend to cover themselves in excuses that they are consumed with a lot of library operations to find time to prepare a disaster preparedness plan; library staff claim lack of funds have contributed to their lack of a disaster preparedness plan; and librarian believe a disaster will not occur in their organization hence no need to have a disaster preparedness plan.

Globally, libraries have experienced a variety of changes that are unprecedented in the provision of information services which has resulted in uncertainties in information security changes (Rehman, 2014). Even before then, libraries all over the world have suffered from a number of threats which have resulted in disaster due to poor or a lack of adequate disaster preparedness practices. Disaster have resulted in destruction of library buildings, damage to information materials and systems, danger to human life and destruction to library collection and equipment (Eden & Mathews, 1996). Corral



and Brewerton (1999) mention the most common types of disasters to affect libraries as civil war, earthquakes, storms, theft, and explosions. The infamous Florence flood of 1966, according to Muir and Shenton, is often recognized with imprinting the significance of disaster preparedness strongly within the mind of the professional librarians. Fires sparked deliberately or by a faulty electric cable, water from faulty pipelines or flooding due by heavy rains, inadequate storage and conditions of the environment, inadequate security resulting in break-ins and theft, and badly maintained structures are all major causes of disasters (Eden & Matthews, 1997).

The concept of active preservation and catastrophe planning and preservation did not fully take off until the Arno River flooded in Florence, Italy, in 1966. When the Arno River flooded in Florence, it killed 33 people. It also severely damaged millions of books, manuscripts, artworks, and other things held in cultural institutions (Decker & Townes, 2016). According to Decker and Townes (2016), disasters such as the 2008 flood in Iowa, which severely flooded multiple information centers, such as the ones at the Iowa University, and the Forbes Library arson in Massachusetts in 2014 exposed the degree of disaster preparedness in academic libraries. In the instance of the flooding in Iowa in 2008, the damage was substantial, in part due of the large number of libraries that were damaged. In the instance of the Forbes Library, chemicals from fire extinguishers destroyed the building and contents in addition to the actual fire (Dunn, 2014).

Natural disasters and war have been documented in recent years, commencing in the early twenty-first century. It could be said that 10,000 volumes of storage were buried in 2001 at the University of Sydney, the massive floods that hit the Czech National

Library in Prague (2003) (Vnousek, 2005). There have also been the disaster that Iraqi libraries have been subjected to in connection with the recent war (Johnson, 2005; Topper, 2011; Welsh & Higgins, 2009; Corrigan, 2008; Ellis, 2007; Long, 2006; Diamond, 2006).

When disasters are permitted to occur, they have far-reaching implications for the safety of the staff and the resources. With libraries' budgets falling and their ability to meet demand dwindling, it's vital that users' access to collections be protected against being destroyed in any way possible (Osei-Boadu & Ahenkorah-Marfo, 2013; Ajegbomogun, 2004). Natural disasters and man-made disasters are the two most common types of disasters in libraries. Disaster that occur naturally include hurricanes, storms, earthquake, fires and floods, whereas those cause by man include rioting, wars, a surge in power, negligence, material destruction, armed combat, and terrorism. Technologically reliant times, according to Hasenay and Krtalic (2010), bring new potential catastrophes. This might include computers being used to penetrate databases for automated libraries in order to destroy or distort valuable data. According to Trishanjit (2009), disasters have made many libraries unable to provide services to clients as it happened in past incidences, yet their effects have been severe due to libraries' lack of preparedness.

Ottong and Ottong (2013) points out that libraries since the 21<sup>st</sup> century have metamorphosed from manual methods to providing services to users using automated methods. Library services are therefore providing its functions and services in special ways through digital libraries. A digital library (Nwalo, 2011) is one that has an electronic version of a library, a digital archive of information built from local

knowledge, a repository of multimedia files, or a collection of electronic periodicals and books. Simply described, a digital library is a library where collections are preserved in digital formats and may be accessed by computers locally or remotely (Trivedi, 2010). This will be the definition of digital libraries that will be adopted by this study. According to Ifijeh et al. (2016) digital libraries cannot rule out the possibilities of disasters because globally disaster have become a matter of great concern. These researchers argue that the rate at which disasters occur has been increased by the existence of digital libraries as a result of both technological and technical factors. This can be in the form of hacking of information systems, damage of information due to viruses and a breach of computer system security. There is an increase in the utilization of digital libraries which has also led to an increase in technical or technological factors (Anthony, 2013). Technical issues such as unauthorized penetration into records of the library that are online, damaging records by use of a virus, system crashes and breaches security of the computers, and so on could cause library operations to be hampered and vital data to be destroyed (Dunning, 2014). Disaster in digital libraries refers to any situation that poses a threat to or damages digital materials in a library's holdings. Physical dangers in a digital library could potentially be caused by the failure of certain of the information technology media and equipment used in the libraries. Hacking, the use of old devices, virus attacks, data loss due to insufficient backup, and other technological risks are all possibilities (Dunning, 2014). Human dangers to digital libraries could also be a source of calamity. Human threat in this context refers to disaster or harm caused by people in digital library systems as a result of incompetence or sabotage (Anthony, 2013).

Regionally, a careful examination of the majority of Ghana's higher education libraries reveals the absence of disaster management policies (Ahenkorah-Marfo & Borteye, 2010; Akussah & Fosu, 2001). Terrorism has recently become a problem and a big issue within information and library institutions. The bombings of the United States consulate in both Tanzania and Kenya that occurred virtually concurrently and destroyed various resources, such as those belonging in the library, are a good illustration (McMichael, 2007).

Polytechnic libraries in Ghana, like any other library, are vulnerable to those caused by man and naturally occurring disasters. The University of Jos in Nigeria experienced two large fires in 2013 and 2016, respectively, on two of its campuses. In 2013, there was the first fire disaster. According to Akintunde (2016), while the leaking roof was being repaired, fire destroyed the card catalogue in the library, unit for reservation and circulation, computer lab in the library among other areas which resulted in considerable loss of resources in their hundreds of millions. On October 8, 2016, yet another outlet of the University of Jos' library (Naraguta Campus) was destroyed by fire. According to Sadiq (2016) and Akintunde (2016), the whole collection of Arts, Social Sciences, Management Sciences, automated laboratory, and reading spaces was entirely devoured in the flames. The fire, which originated in the library, entirely damaged the accounting section, economics and business department, psychology, and political sciences, as well as the lecturer offices on the same floor as the library. In Malawi, the Muzuzu University Library's library building and approximately 45,000 books were destroyed by fire in December 2015. The library is supposed to house Muzuzu's and Malawi's rich and unique contents. Various library furniture and equipment were also destroyed in the inferno. Hayes (2016), opined that the library at Muzuzu University is regarded as "one of Malawi's richest reservoirs of

information." The fire was apparently started by a disregarded electrical fault at the library's entrance (Chavula, 2015).

Countries in the African continent like Kenya are hanging back when it comes to the current revolution as a result of poor infrastructure which has been caused by an inadequate creation of knowledge and an absence of capacity within institutions in regards to the numbers as well as skills (Mathews, Smith & Knowles, 2009). This means that when it comes to disaster preparedness and planning, information is seriously lacking as initially mentioned by previous research. Preparing any organization for a disaster entails recognizing potential hazards, minimizing their consequences, and determining response strategies before those hazards become active threats. Academic libraries, which contain personnel, visiting patrons, and a high fuel load due to their diversified collections, are one organization environment that has gotten minimal attention in this area (Robertson, 2005). In as much as a majority of libraries are being catered for by their parent organizations, emergency preparedness and planning, a library can build a self-help program. Even within a university's master plan, libraries can enhance their policies and processes by detecting gaps in preparedness and planning. Digital libraries are vulnerable to the same risks as other enterprises in their neighborhood, and, like them, may be unprepared and unprepared for a variety of catastrophes (Topper, 2008). When it comes to natural calamities, the question is typically not whether, but when (Clareson & Long, 2006). Which makes the issue of preparedness and planning an issue that should be accorded crucial status.

Locally in Kenya, many people depend on libraries or digital libraries for information services since they can hardly afford to purchase the required resources (print and

non-print) on their own. The prevailing terror threats in Kenya led to a disastrous destruction of the library building and library resources during the terror attack at the Garissa University in April of 2015 in which 147 students lost their lives. At the Kenyatta University 38 students were injured during a stampede in the library caused by a false terror alarm (Ochieng, Maichuhie & Esekon, 2016). Egerton University is among the many public Universities in Kenya. It has in many years experienced several students' strikes which have developed in destruction of digital library resources and the building itself. This has occurred several times as the library staff are caught unaware of the situation. The students within the library end up panicking, resulting in commotion within the library and in the process a lot of library resources are destroyed especially the digital content physically available. As they engage the police in running battles, the library windows have been stoned and broken. Tear gas has also been lobbed in the library at one point, almost causing fire because of its combative nature and availability of paper and other non-print resources (digital library resources) in the library. The library building is also an old one with a leaking roof exposing library resources to destruction.

### **1.3 Statement of the Problem**

Disaster preparedness and planning is a process that ensures that organizations are better prepared for any eventualities of a disaster. Digital libraries in particular need to prepare for disaster to minimize the risk of losing information and disruption of services. When a digital library adequately prepares and plans for disaster, it ensures that its services are sustained for the period of the disaster and beyond. Disaster preparedness and planning now existed as a normal challenge in a number of institutions globally (Lerbinger, 2012). This practice encompasses preparing,

planning, strengthening and redeveloping the communities after occurrences of disasters. However, when libraries fail to prepare and plan for disasters, then they are permitted it to occur. Lack of preparation and planning has far-reaching implications for the security of both collections, patrons and staff. This is an area which has been enormously supported by the private agencies and the government, although disasters have continued to result in the damaging of digital library resources, buildings and death yet very little effort has been spared in ensuring the collection is safe. Disaster is manifested in various forms such as those cause by natural causes which include flooding, earthquakes and tornadoes, while others include attacks by terrorists and violence in the work place. This exposes the resources in the library to a lot of risk. In today's world, no institution or group can be completely immune to tragedy. Disaster planning and preparation for centers of information, as well as their staff and holdings, is a question of basic security (UNESCO, 2005). With libraries' budgets falling and their ability to meet demand dwindling, it's vital that users' access to collections be protected against destruction in any way possible. However, disaster preparedness and planning has not been fully embraced in libraries let alone digital libraries today. According to Tanui (2013) the most academic libraries have done in terms of disaster preparedness and planning is to develop risk matrices as required by ISO. According to Nwokedi (2017), academic library staff are ignorant and ill prepared towards preparing and planning for disaster. The preparation and planning for any disaster first requires a digital library to develop documented procedures in the form of a disaster plan (Nwokedi, Panle & Samuel, 2017). A disaster plan according to Morgan and Smith (2014) includes active awareness, employees with assigned roles, testing of procedures, training, availability and maintenance of facilities and commitment by management. Due to the threat disasters bring, it is vital

that the digital library considers disaster preparedness and planning, and managing this aspect part of its fundamental duties. Being prepared in advance for a crisis is crucial so that if one happens, the library is able to cope. The study therefore sought to establish the level of planning and preparedness of disasters in relation to sustainability of services at the digital library in Egerton University.

#### **1.4 Objectives of the Study**

The study's main objective was to evaluate the disaster preparedness and planning for service delivery in digital libraries at the Egerton university library.

##### **1.4.1 Specific objectives**

- i. To establish the level of disaster preparedness and planning in sustaining services at Egerton University digital library;
- ii. To find out the type of disaster preparedness and planning training that the digital library staff have undergone in sustaining services at Egerton University digital library;
- iii. To establish the disaster preparedness and planning equipment's that can sustain services at Egerton university digital library;
- iv. To look into the problems experienced in the planning and preparedness for disasters at the digital library in Egerton University.

##### **1.5 Research questions**

- i. What is the level of disaster preparedness and planning in sustaining services at Egerton University digital library?
- ii. How have the library staff been trained in disaster preparedness and planning so as to sustain services at Egerton University digital library?



- iii. What are the equipment's that have been put in place at Egerton University digital library to prepare and plan for disasters for sustained services?
- iv. What are the challenges facing Egerton University digital library in preparing and planning for disasters for sustained services?

## **1.6 Significance of the study**

The study may be of importance to policy makers in the field of information science. The policy makers may find both the literature and the outcome of this study to be insightful in providing relevant information in the area of disaster preparedness and planning, and digital libraries. Policy makers may be able to enact relevant policies that may address this specific area of interest.

The study provides and adds into the already scarce literature in this area of disaster preparedness and planning in digital libraries. Few studies have concentrated on how digital libraries are preparing and plan for disasters. This study therefore provided additional information in this area.

Librarians may find this study to be a great source of information. The literature and outcomes may be used by librarians to improve their mechanisms of preparing and planning for disasters at the digital library.

## **1.7 Limitations and delimitations of the study**

### **1.7.1 Limitations of the study**

The study only focused on Egerton university library at the main campus in Njoro. The main focus was to look into the planning and preparedness of disasters of the digital library. The library staff who are trained in library and information science formed the population and sample. The study confined itself to the objectives that

were chosen for this study. Only the responses provided by the decided sample formed the data that was used to analyze the findings.

### **1.7.2 Delimitations of the study**

The delimiting factor of this study were on evaluating the disaster preparedness and planning of digital libraries at Egerton university main campus in Njoro. The methodology agreed on was another delimiting factor. The study delimited itself to the results of this study which were generalized by the researcher. The variables chosen for this study were also another delimiting factor.

### **1.8 Assumptions of the study**

The following assumptions were formed:

- i. The digital library had a risk on disasters.
- ii. The library staff at Egerton University library were aware of the risks posed to the digital library.

### **1.9 Theoretical framework**

The study utilized the theory of planned behavior into putting the issue of disaster preparedness and planning in sustaining services in digital libraries into perspective. The theory was used because of its ability to determine disaster preparedness and planning predictive factors: environmental and individual.

#### **1.9.1 Theory of planned behavior**

Preparation is all about planning and that depends upon the behavior of an individual. The theory of planned behavior as such presents a framework of establishing the

behavior of an individual towards preparing and planning for disasters (Najafi et al., 2017). In this study, it's the behavior of the digital library staff towards preparing and planning for disasters. According to Ajzen (1991), behavior is influenced by factors of an individual's motivation which define their intention. Intentions on the other hand are as a result of three factors: attitude which in relation to behavior is the level at which an individual un-favors or favors a particular behavior; social factor which is the perceived social pressure to adapt to or to ignore a certain behavior; predictor of intention which is the level of perceived behavioral control which basically is how difficult or how easy it is to adopt a behavior. It believes that people all interact in order to impact one another through cognitive, emotive and physiological factors, behavioral patterns and environmental occurrences. It therefore provides a model that underlines the dynamic interaction between personal and environmental variables, which affects the behavior of an individual (Wood & Bandura, 1989). In this case how the digital library staff interact with the environmental factors that affect them. According to Najafi, et al. (2017), the stronger a person's intention to conduct the activity under consideration, the more positive the perception and personal approach toward the conduct and the larger the viewed control of behavior. In turn, intention is regarded as a direct antecedent of actual behavior. Ajzen (2002), on the other hand, cautions that the degree of success is dependent not only on an individual's goal, but also on those necessary opportunities that do not inspire, such as resources that impact their behavior control. A study by Lee and Lemyre (2009) contextualized disaster preparedness and planning as a means by which the motivation of the individuals respond to functions of disasters through cognitive and affective responses to hazards. Individuals will be motivated to prepare and plan for disasters by looking at the results and their ability to succeed. The individual's ability to react however depends

on their ability to respond responsibly or not through their level of preparedness and planning (Lee & Lemyre, 2009).

### **1.10 Conceptual framework**

Sustaining of services in the digital library was the dependent variable in this study. The following independent variables were used to put it into perspective as extracted from disaster preparedness and planning: level of disaster preparedness and planning; disaster management training of library staff; disaster preparedness and planning equipment; challenges faced in disaster preparedness and planning.

Disaster is an abrupt incident that hinders or halts the usual functioning of an institution, business or a person. Centers of culture together with libraries and other centers of information have been faced by huge losses occasioned by destruction as a result of incidences of disaster (Kahn, 2012). They encompass vital information being lost and which cannot be easily replaced.

Disaster preparedness and planning is a phenomena experienced worldwide yet it's an area which has attracted studies for many years. It is stated by Lindell (2013) that disaster preparedness and planning is initiated when systems of early warning are put in place which can warn and respond to the risks. Irrespective of the form of equipment acquired by the institution, Galindo and Betta (2013) argue that the resources are important in their effective sourcing and execution. Majority of the disaster preparedness and planning resources are similar though tackle the same form of disasters (Cauhye et al., 2012). For instance according to Cauhye et al. (2013) they include CCTV cameras, fire exits, sensors for smoke, equipments for extinguishing

fire that are helpful in preparing and planning for disasters in most organizations and institutions.

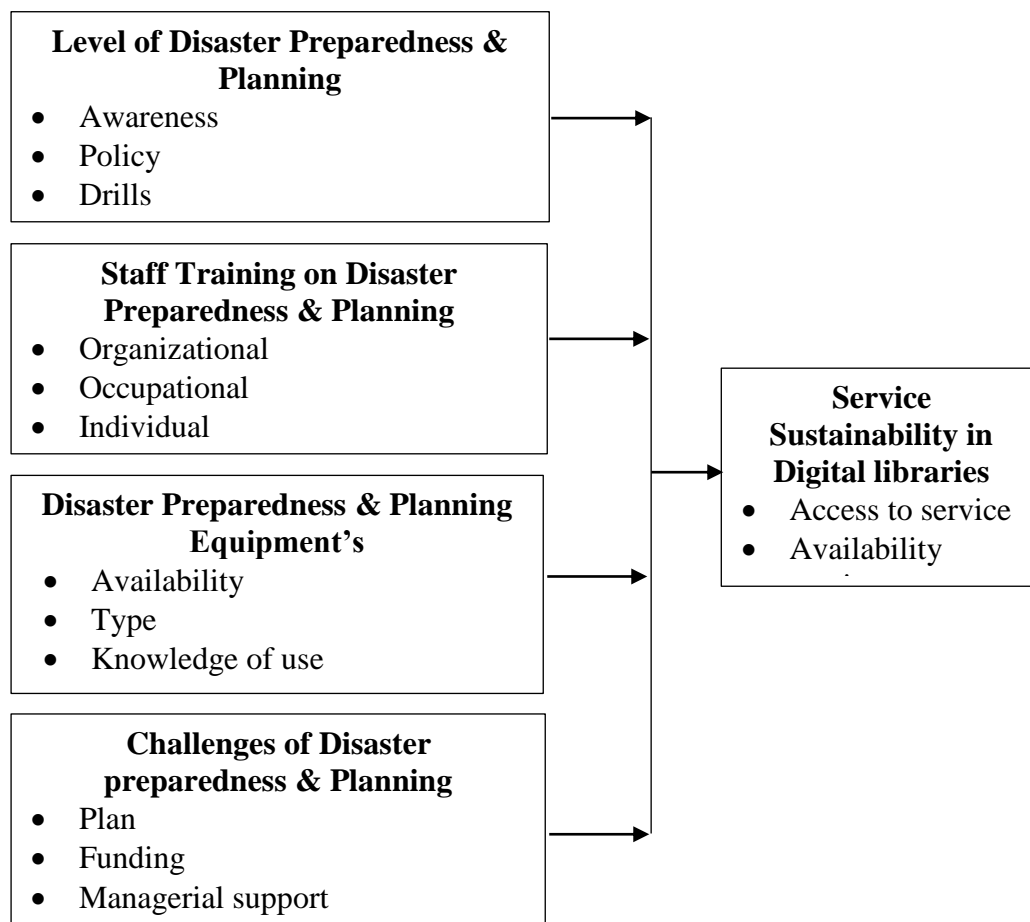
Paltala et al. (2012) opine that disaster preparedness and planning circumstances require proper degree of personnel training to properly tackle the occurrence. It is argued by Lindell (2013) that it is entirely not possible to prepare and plan for disaster without prior personnel training and placing them to take charge so as to make sure they have the needed expertise to tackle the incidences and capacity build others on ways of tackling disasters. Despite the need for digital centers to have an operational plan for tackling disasters which can steer them on what is required to be done when disaster strikes. Many libraries have revealed they are experiencing financial challenges, they are lacking personnel who are trained, and also an absence of dedicated staff in the library as barriers to fully being disaster prepared (Sawant 2014; Kolawole et al., 2015; Morgan & Smith 2014; Owolabi, 2104).

Disaster preparedness and planning has become a global challenge, prompting most companies and institutions to transform their perspective from an individual's issue to an issue concerning the world and nations which could be addressed in conjunction with other organizations around the world (Sandwell, 2011). As Sandwell (2011) points out, the majority of these obstacles are caused by natural causes such as not being able to forecast an earthquake or a flood, as well as the severity of the upcoming crisis.

**Independent Variables**

**Dependent**

**Variable**



**Figure 1. 1: Conceptual Framework**

**Source:** Researcher, 2020

### **1.11 Operational definition of terms**

**Disaster** - is “an abrupt hindrance to the operations of library services massive personnel, building, environmental and economic effects, which are beyond the capabilities of the library to cope (United Nations International Strategy for Disaster Reduction [UNISDR], 2016). These are sudden events which end up being disruptive to the services of a digital library.

**Disaster preparedness** – is the level at which a person or institution is prepared and able to react to the harming threats of the environment in regards to information (Perry & Lindell, 2003). Steps taken by the digital library to mitigate the effects of the various disasters.

**Service delivery** – the spreading or flow of required services. The processes and actions which lead to satisfaction of an information need of a digital library user.

**Training** – is defined as the procedure of acquiring knowledge through being guided by an educator (Management Study Guide, 2016). Various actions taken in uplifting the skills and competencies of a library staff in a digital library.

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

#### 2.1 Introduction

Provided in this section is a reviewed literature that is associated with the study's subject matter. The selected literature was selected on account of the variables that directed this study and the gaps identified in previous studies.

#### 2.2 Disaster preparedness & planning

Disaster preparedness and planning is about embarking on well crafting and the putting of required measures in place that can be triggered in the event a disaster happens. Disasters are sudden and, in most time, never give advance warning. The unpredictable nature of disasters is the reason why digital libraries need to put in place disaster preparedness and planning measures for if and when disaster strikes. Digital libraries all over the globe have reported losing crucial sources of information which at times are irreplaceable. According to Nwokedi, Panle and Samuel (2017) disaster in libraries can be described as a sudden removal of information and sources of information from being accessed and being used. Due to the role played by libraries (acquisition, organization and information dissemination) it is without a doubt therefore that digital libraries will suffer catastrophically when its collection is suddenly removed baring access and use. Hence the need to cautiously prepare for the eventuality of disasters within academic libraries in relation to digital collection.

The preparation and planning for any disaster first requires a library to develop documented procedures in the form of a disaster plan (Nwokedi, Panle & Samuel, 2017). A disaster plan according to Morgan and Smith (2014) includes active



awareness, employees with assigned roles, testing of procedures, training, availability and maintenance of facilities and commitment by management. This study was undertaken in South African and concentrated solely on the role played by disaster plans in the management of libraries. Its findings were based on exploratory review of empirical literature. The institutions were purposively chosen and included six major academic libraries and public libraries within the province of Western Cape. Data was acquired through questionnaires which were mailed to the respondents including interviewing of some library staff. Ahenkorah-Marfo and Borteye (2010) adds that when referring to academic libraries or even digital libraries, disaster preparedness and planning is about having a plan to control disaster, readying staff, setting up a team to manage disasters, having emergency plans and exists and instituting training and simulation. According to Ayoung, Batil and Baladi (2015), a disaster preparedness and planning policy must be part of the larger disaster management policy which is mandatory for all academic libraries to safeguard the library staff, the patrons and the digital library collection. This study focused on polytechnic libraries within Ghana, in particular, their disaster preparedness. Qualitative case study design was adopted, specifically a multiple case approach. Telephone interviews were conducted resulting in data being obtained from participants. It was based on the findings from five polytechnic libraries. Despite this Ngulube, Modisane and Mnkei-Saurombe (2011) have established that majority of academic libraries lack a documented disaster preparedness and planning policy even though they have considerable digital library collection. The few academic libraries which had documented their disaster preparedness and planning policies were not putting them into practice (Ngoepe, 2014). According to Ayoung, Boatbil and Banbil (2014), it is

only when academic libraries implement their disaster preparedness and planning policy can they begin to fight disaster occurrences.

The library has to be prepared through the identification of likely hazards, putting in place mitigation measures and crafting measures of response. While having a disaster plan is a good place to start, a study by Morgan and Smith (2014) established that most libraries in universities in Ghana do not have a documented disaster plan hence jeopardizing the security and safety of their digital library. A similar study, also conducted in Ghana by Ayong, Batil and Baladi (2015) supported earlier findings that majority of digital libraries generally exhibited a lack of disaster plan and security policies. A disaster plan is in itself a policy document that captures clear procedures and systematic efforts of how disasters are supposed to be prepared for in case they occur (Iske & Lengfellner, 2015). The responsibility of designing a disaster policy or plan is usually allocated to patrons of a disaster preparedness team (Ugwuanyi, Ugwu & Ezema, 2015). This policy document assists in ensuring the overall wellbeing of the patrons, library staff and resources and often requires the participation of these stakeholders to implement. A clearly crafted disaster plan/ policy considerably affects the disaster preparedness through its elements of prevention, reaction and recovery. Echezona, Ugwu and Ozioko (2012) describe the three stages as those that take place before the disaster happens, during the actual disaster and after the occurrence of the disaster. The level at which the academic library is capable of preventing, responding and recovering from a disaster is in itself a reflection of the quality and level of preparedness and planning.

According to Ayoung, Boatbil and Baada (2015), academic libraries are ill prepared to prepare for disaster due to lack of awareness. This has exposed many digital libraries to threats emanating from disaster hence rendering them unable to sustain services owing to the damage caused by disasters. Early preparation and planning therefore helps in reducing the impact caused by disasters in disrupting service delivery in digital libraries. Global studies (Modisane & Mnkeni-Saurombe, 2011; Trishanjit, 2009; Aziagba & Edet, 2008) earlier conducted have indicated a lack of unpreparedness and planning of digital libraries in managing disasters as being caused by a lack of awareness by library staff. The study by Modisane and Mnkeni-Saurombe (2011) was conducted in South Africa, focusing on a combination of strategic management with disaster management of public records. It used a qualitative approach where data was collected through triangulation. It is stated by Kostagiolas et al. (2011) and Kaur (2009) that the lack of awareness by library staff is global phenomena that is experience in all regions. The preparedness and planning of any digital library is as a result of the library staff being aware that disaster can happen any time. The library staffs therefore need to put necessary measures in place to deter or mitigate the occurrence of disaster. According to Nwokendi, Panle and Samuel (2017), awareness is possessing the information or being knowledgeable about something. Ignorance which in other terms is lack of awareness may lead to fatal consequences. Oluwatola, Ogbuiyi, Oriogu and Ogbuiyi (2015) in their study which set to establish the level of awareness of academic libraries on disaster preparedness established that majority of library staff in digital libraries in West Nigeria were not fully aware of measures related to disaster preparedness and planning. Observation and structured questionnaires were utilized in this survey research which randomly sampled 208 participants. Another study by Marfo and Borteye (2016) that was

carried out in Ghana also yielded similar results that most library staff were ignorant on library disaster preparedness and planning measures. The study utilized observation, interview guides and questionnaires to acquire the needed data from a purposively selected sample of library staff. Additionally, in a more recent study by Nwokendi, Panle and Samuel (2017) it was also found that the library staffs were not aware of the mechanisms of disaster preparedness and planning that their respective academic digital libraries had put in place such as use of fire extinguisher, evacuation routes, and emergency numbers.

Awareness among library staff is vital in tackling the what, when, and how during disaster situations. It is only under such situations that the library has a chance of surviving a disaster. According to Marfo and Borteye (2016), staff involvement in disaster preparedness and planning is important. They claim that none of the academic digital libraries had done simulated disaster exercises, which they find concerning. Even though the drills might be disruptive, they do not however require much resource to conduct and are necessary to conduct to gauge the level of preparedness and planning. Ayoung, Boatbil and Baada (2015) points that disaster preparedness and planning drills need to be conducted frequently but not so much to a point they induce fatigue. They established that some library staff did not perceive the mock disaster drills as necessary. According to Garnett (2019), it is important to undertake mock drills because unless they can be intuitively applied in an actual situation then the response will not be effective. According to McCook (2011), the aspect of disaster mock drills is one that is often forgotten. The drills must be done regularly and unannounced to evaluate the response of staff and patrons. The mock drills assist in assessing the response of the people within the library and also the practicability of

the disaster plan, giving room for adjustments. The mock drills therefore become a source of decision making that greatly impacts the wellbeing and safety of both patrons and staff. Khalid and Dol (2015) established that academic digital libraries conducted mock drills though it was not frequently done as expected. The academic digital libraries that conducted these drills only focused on conducting drills related to fire yet ignoring other disasters. These drills majorly depended on the training that the library staff and sometimes the library patrons received.

### **2.3 Staff training on disaster preparedness**

The sudden nature of disaster calls for library staff to be prepared for if and when disaster strike. The preparation of library staff comes in the form of training. The training and retraining of library staff ensures that they efficiently and adequately deter, mitigate, respond to disaster and also in recover. Abareh (2014) and Issa, Aliyu, Adedeji and Rachel (2012) have in their studies acknowledged the role being played by training in regards to preparing and planning for disasters as it influences mitigation, responses and issues of recovery. Hence, the manner in which the process of mitigation is conducted and coordinated in relation to preparing for disasters. This study was conducted in Nigeria's North Easter region and targeted heads of twenty one academic libraries who were provided with questionnaires, having been purposively selected in the survey. Training is an important aspect of preparation and planning as it entails putting in place mechanisms that are necessary in the event of a disaster occurring in an academic library. According to Ayoung, Boatbil and Baada (2015), it is crucial for digital libraries to ensure its staff is trained in disaster preparedness and planning. This can be achieved through collaboration between service agencies and academic libraries. Morgan and Smith (2014) indicated that a

disaster preparedness plan has to include training of library staff and also their inclusion in its preparation so that they can own the processes captured in it. Many possible disasters are considered in a disaster preparedness plan and so library staff needs to acquire the needed training.

The development of a disaster preparedness plan goes along way into benefitting any organization. Organizations therefore need to be in the forefront in articulating their training needs in as far as disaster preparedness is concern. According to Nazlin, Sipon and Radzi (2014), the organization conducts a training needs analysis (TNA) before developing a training program to identify individual, operational and organizational needs of staff in disaster preparedness and lastly pinpoints which individual needs training or retraining. Those library staff who are implementers of some aspects of the disaster preparedness plan will have to be provided with the training. The library staff responsible for early warning will also require training as well as others who are responsible for recovery. Nazlin, Sipon and Radzi (2014) state that training is not a one of thing but something that requires refreshing every now and then. The training involves activities undertaken during mock drills.

The training needs of organizations are specific and sometimes unique. The staff in academic libraries require training that addresses the needs of that organization, in this case the digital library. The training being considered therefore is within a module that provides the greatest impact to the digital library (Nazlin, Sipon & Radzi, 2014). When considering the organization needs in disaster preparedness and planning, the training program is designed to prepare and respond not just the staff themselves but also the organization in ensuring it continues to provide services. As the needs of the

organization changes, the training program and the library staff will need to review and update themselves with skills required of them by the organization. The skills acquired in the training will have to be relevant, practical and specific to the threats faced by the academic library. Otherwise, if the training being provided is not within the requirements of the organization then it will be considered to obsolete or wasteful because it does not satisfy the needs of the academic library and will not produce the desired effects.

The individual training needs of an individual are always essential in preparing and planning for disasters. If an individual in a digital library lacks the requisite training to prepare for certain disasters that are likely to harm the library, then the necessary training should be provided (Engelman, Ivey, Tseng, Dahrounge, Brune & Neuhauser, 2013). These are training needs that are related to disaster preparedness specific to an individual in the academic library. The training requirements of one library staff in the library may be different from the other and therefore the training needs should be individually addressed. The training needs of this individual should be individualized but in reflection of the appropriate requirements of disaster preparedness (Nazlin, Sipon & Radzi, 2014). Disaster preparedness and planning basically aims at building capacity of the individual through improving their skills and knowledge on preparing and responding to disasters. The skills of an individual library staff are enhanced personally and also as part of a team. According to the International Federation of Red Cross [IFRC], (2020) the skills of an individual are improved through appropriate training to align them with the needs of an organization so as to enhance the coordinated efforts in preparing for disasters together with its availability and quality. Pierard, Shoup, Clement, Emmons, Neely and Wilkinson (2016) state that the

perspective of individual library employees is changed through training in to one that is capable of eliminating or reducing hazards that might affect the library. Disaster preparedness and planning training enhances flexibility and critical thinking of individuals in the library.

#### **2.4 Disaster preparedness equipment's**

Staff in digital libraries need to be generally enlightened on types of disasters that befall a library, what their causes are, and the immediate action that can be taken during these situations. There are many disasters that can affect a digital library: fire, flooding, earthquakes, faulty electrical fault, arson, malware etc. (Abareh, 2014). This study was conducted in Nigeria's North Easter region and targeted heads of twenty one academic libraries who were provided with questionnaires, having been purposively selected in the survey. These call for different approaches and equipment's in tackling their effects. Academic libraries have since equipped themselves with various disaster preparedness equipment's and tools such as emergency kits, automatic fire sprinklers, manual alarms, audible alarms, smoke detectors and fire extinguishers (Issa, Aliyu, Adedeji, & Rachel, 2012). All these and many more are considered adequate equipment's for preparing and planning for disasters. The equipment's for deterring and mitigating the effects of disaster are important if put in place early enough. There will be a variation on the equipment's that a digital library will put in place because this depends on the prevalent or likelihood of a particular disaster affecting the specific digital library. According to Abareh (2014), digital libraries need to equip themselves with moisture/water alarms to alert library employees of any leakages might affect the collection of the library including information equipment's. This is a better disaster preparedness equipment



in cases of flooding and leakages. On the other hand fire/smoke detectors and fire extinguishers are essential within the library to enable early detection of smoke or fire which might be starting in the library (Aabo & Audunson, 2012). This can be caused by an electric fault or the fire might have been deliberately caused.

Preparedness and planning is only essential if the response is timely and adequate. According to Sawant (2014), the most common disasters in a digital library are flooding and fires. This calls for additional disaster equipment's such as automatic fire suppressors, fire buckets, wet pick-up vacuums and flood extractor to be available. Just having them is not enough. A complete inventory of the entire collection of equipment's and apparatus and their functionality condition is required (Marfo & Borteye, 2016). This inspection is to be conducted periodically to detect which equipment's need to be replaced, repaired or even added. The library staff also need to be trained on how to use or how the various equipment's operate in order to be able to use them when time comes (Sawant, 2014). The library staff should be aware of the availability of these equipment's within the digital library and be able to trigger or locate them as quickly as possible. According to a study by Oluwatola et al. (2015), most of the library staff were not aware of the library disaster preparedness and planning measure or knowledge of how to operate the available disaster equipment's. Additionally, in another study by Marfo and Borteye (2016), it was established that library staff in were not aware of the available disaster equipment's nor the disaster escape measures. Ngoepe (2014) found out that some academic libraries lacked proper disaster equipment's installed within the library. This was not only a risk to the library collection but also a danger to the lives of the library staff and patrons.

Availability of disaster preparedness and planning in digital libraries is a matter of concern. To be able to adequately prepare and plan for disaster, a library needs to arm itself with the necessary disaster preparedness equipment's. A study conducted by Ayoung, Boatbil and Baada (2015) established that most digital libraries lack the basic equipment's needed in preparing for disasters. The study mentioned that the libraries lacked fire extinguishers, fire blankets, fire alarms, sprinklers and smoke detectors. This therefore crippled their ability to adequately prepare and plan for any disaster should it strike them. The absence of these essential equipment's exposed the library collection to risk of damage and also the risk of losing lives. According to Ngoepe (2014), the few libraries that had these equipment's did not however service them as required. The library staff were unaware when last the disaster preparedness equipment's were last maintained or even they were maintained at all. This posed a very great risk for disaster. Ayoung, Boatbil and Baada (2015) stated that library staff needed to ensure that the disaster preparedness equipment's available within the library were inspected regularly. By not ensuring that the equipment's were serviced, the library staff exhibited an attitude that was indifferent in regards to the safety of the patrons, the collections and even themselves. Raju (2014) added that library staff needed to ensure that they continually monitored and evaluated the equipment's tear and wear to avert disaster. Such include ensuring that equipment for fighting fire is regularly serviced or checking if electrical wires are left exposed. This periodical evaluation is important to ensure that there is adequate information on the risks that can affect the library so as to make informed decisions in terms of preparation and planning.

## **2.5 Challenges of disaster preparedness**

Previous studies (Sawant, 2014; Kolawola, Abolaji, & Olagoke, 2015) have shown that digital libraries experience a lot of challenges when it comes to preparing and planning for disaster. This is despite the fact that some of these libraries have a disaster preparedness plan that is functional. According to Owolabi (2014), digital libraries were experiencing challenges of lack of funds. This was a major contributor to their below par level of disaster preparedness and planning. According to Chatterjee (2017), the library budget is dwindling meaning that very little or none at all is being allocated for disaster preparedness and planning in the library. This highly impacts the library's disaster preparedness and planning in a negative way. Without adequate funding, the library is unable to sufficiently prepare and plan for likely disasters such as acquiring the necessary disaster preparedness equipment, ensuring that the equipment's are well maintained or serviced and providing proper training of library staff in averting and tackling disasters.

Haines (2009) state that basically three reasons are attributed to why libraries lack a disaster preparedness plan: immunity, money and time. Library staff tend to cover themselves in excuses that they are consumed with a lot of library operations to find time to prepare a disaster preparedness plan; library staff claim lack of funds have contributed to their lack of a disaster preparedness plan; and librarian believe a disaster will not occur in their organization hence no need to have a disaster preparedness plan. Disaster preparedness plans for libraries have always been advocated for by Osei-Boadu and Ahenkorah (2013) as being vital and hence should form part of the strategic development plan of the library. Disaster preparedness plans assist libraries in planning and preparing for the likelihood of a disaster. It includes

putting up measures that can deter or mitigate the effects of disasters. Khalid and Dol (2015) conducted a study within Selangor and Kuala Lumpur libraries and stated that the greatest challenge libraries were facing in coming up with a disaster plan was funding. This was an exploratory study conducted in Malaysia targeting academic libraries within two state in Kuala Lumpur. Library staff within the forty libraries were provided with questionnaires to acquire data from them. They established that more than half of the academic libraries they reviewed did not allocate a budget or funds for this purpose. They stated that the few libraries that had managed to have for themselves a disaster preparedness plan had acquired the services of external experts which might have been expensive for the other libraries.

According to Ahenkorah-Marfo and Borteye (2010), most libraries are lacking this important document hence making them susceptible to disasters. The absence of this document was making it difficult for libraries to approach disasters or even avert them. Ngulube et al. (2011) in their study established that no academic library under study in South Africa had a documented disaster preparedness plan despite heavily investing in digital content within their libraries. This was a qualitative study conducted in South Africa targeting archives and records centers. Data was acquired through triangulation technique. The findings showed that this presented a challenge in how to go about averting disasters within those libraries. Ngoepe (2014) conducted a study and established that few of the libraries under study actually had a disaster preparedness plan. Despite having a documented plan, these libraries were not implementing them. This presented a challenge in safeguarding the information collection. The lack of a disaster preparedness plan or the lack of its implementation exhibits their lack of preparedness.

According to Khalid and Dol (2015), library staff lacked experience in developing disaster preparedness plans for their institutions. The respective libraries have to rely on external experts who were also charging fees that the libraries could not afford. This left them with one option, being trained in order offer them with the prerequisite skills and expertise. Despite this option being available, Khalid and Dol (2015) stated that these emergency preparedness procedures were not accessible to more than half of the library staff. The library staff therefore lacked awareness and readiness of disasters occurring at any given time. Training was an essential tenet of disaster preparedness. Issa, Aliyu, Adedeji, and Rachel (2012) pointed that disaster preparedness training was most available for senior library staff. This left the other cadre of staff without the much needed skills because they were not involved in the training. Morgan and Smith (2014) reiterated the fact that training of library staff on disaster preparedness was not being prioritized in academic libraries. They pointed that this was reason why it was not possible for library staff to be able to identify possible risks, measures of mitigation and lack of measure to respond to the hazards. Library staff in a study conducted by Marfo and Borteye (2016) were found not to have been on emergency procedures or even how to handle the emergency equipment's available. The management of these libraries was clearly lacking in support in regards to training library staff in disaster preparedness. By considering senior library staff and passing other cadre of staff in these training, the management has demonstrated a lack of support in the overall preparation for disaster (Owolabi et al., 2014). Oluwatola et al. (2015) therefore concludes by stating that lack of training or the partial training of library staff was thus a hindrance to disaster preparedness.

## **2.6 Summary of literature and gap identification**

Disaster preparedness and planning is about embarking on a well-crafted process of enacting measures required so that they can be triggered in the event a disaster happens. Disasters are sudden and in most time never give advance warning. Due to the role played by libraries (acquisition, organization and information dissemination) it is without a doubt therefore that libraries will suffer catastrophically when its collection is suddenly removed barring access and use. Hence the need to cautiously prepare and plan for the eventuality of disasters within academic libraries in relation to digital collection. The preparation for any disaster first requires a library to develop documented procedures in the form of a disaster plan. A disaster plan includes active awareness, employees with assigned roles, testing of procedures, training, availability and maintenance of facilities and commitment by management. when referring to academic libraries or even digital libraries, disaster preparedness and planning is about having a plan to control disaster, readying staff, setting up a team to manage disasters, having emergency plans and exists and instituting training and simulation. The library has to be prepared through the identification of likely hazards, putting in place mitigation measures and crafting measures of response. The training and retraining of library staff ensures that they efficiently and adequately deter, mitigate, respond to disaster and also in recover. Training is an important aspect of preparation and planning as it entails putting in place mechanisms that are necessary in the event of a disaster occurring in an academic library. Staff in digital libraries need to be generally enlightened on types of disasters that befall a library, what their causes are, and the immediate action that can be taken during these situations. Digital libraries have since equipped themselves with various disaster preparedness equipment's and tools such as emergency kits, automatic fire sprinklers, manual alarms, audible

alarms, smoke detectors and fire extinguishers. Despite the fact that some of these libraries have a disaster preparedness plan that is functional, digital libraries were experiencing challenges of lack of funds. Without adequate funding, the library is unable to sufficiently prepare and plan for likely disasters such as acquiring the necessary disaster preparedness equipment, ensuring that the equipment's are well maintained or serviced and providing proper training of library staff in averting and tackling disasters.

## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.1 Introduction**

This chapter offers a detailed account on discussions concerning study design, the population targeted, technique utilized in sampling, instrument used in acquisition of data, presentation of data, analysis of data and eventually issues of ethics that were considered in this study.

#### **3.2 Research design**

According to Kumar (2011), a research design is a series of steps that seek to answer questions raised in the research problem. In support, Creswell (2013) adds that a research design is a series of acceptable and calculated steps that a researcher uses to answer pertinent issues raised in the study in a correct and unbiased manner within the allocated budget.

The entire research was therefore founded on the basis of the research design. The study therefore adopted a descriptive research design. This was informed by the adequate description of the problem under study and the variables applied. Descriptive research design is capable of acquiring information that the study can use to adequately describe the current situation as it is while identifying similarities. The study made use of this design to make calculated steps which were used in answering pertinent issues concerning disaster preparedness and planning by addressing issues concerning the level of disaster preparedness, training of staff, disaster equipment's and challenges of disaster preparedness and planning. This was supported by a qualitative study approach.

### **3.3 Location of the study**

#### **3.3.1 Egerton University**

This Public University is among the oldest higher learning institution in Kenya, established in 1987. The University is situated in Nakuru within Njoro town. The institution was initially founded in 1939 as a farm school. It has since transformed into one of the top public Universities in Kenya. Over the years it has grown to more branches in Nakuru, Kisii and Laikipia Town. The universities Act of 2012 has since transformed and established Egerton University as a public university recognized in Kenya and empowered it with a charter in 2013. Egerton University has in many years experienced several students' strikes which have resulted in destruction of digital library resources and the building itself. This has occurred several times as the library staff are caught unaware of the situation. The students within the library end up panicking, resulting in commotion within the library and in the process a lot of library resources are destroyed especially the digital content physically available. As



they engage the police in running battles, the library windows have been stoned and broken. Tear gas has also been lobbed in the library at one point, almost causing fire because of its combative nature and availability of paper and other non-print resources (digital library resources) in the library. The library building is also an old one with a leaking roof exposing library resources to destruction. This has resulted in the library being a suitable location for this study, given the numerous experiences.

### **3.4 Target population**

This is described by Kothari (2014) as the sum total of items with a likeness that is observable and similar. Additionally, it's described as a requirement needed to fit within a particular specification. Kasomo (2007) similarly describes it a categorization of objects with characteristics which are similar. All the library staff at the Egerton University formed the target population. The target population in the study entailed library staff at the academic library under study. The study targeted the 68 library staff at Egerton University. In as much as disaster preparation was a University wide concern, this study only looked at disaster preparedness within the library hence selection of library staff.

**Table 3. 1: Target Population**

<b>Categories</b>	<b>Population</b>	<b>%</b>
Senior level	3	4
Middle level	25	37
Junior level	40	59

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<b>Total</b>	<b>68</b>	<b>100</b>
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**Source:** Egerton University, 2020

### **3.5 Sampling technique and sample size**

#### **3.5.1 Sampling techniques**

A predetermined process which has been settled on in research to procure a sample in referred to as sampling. The technique of sampling is according to Kombo and Tromp (2006) a sequence of procedures that help in procuring a sizeable group having indistinguishable elements that can be studied, from within a bigger group that it represents. According to Rubin (2011), appropriate information is obtained from a sample in order to describe a population hence forming a sample frame.

#### **3.5.2 Sample size**

The study made use of the census method as its preferred technique of sampling. Cooper & Schindler (2014) indicate the two set requirements for undertaking a study based on census as a methodology. This includes, the study being feasible due to the sizeable nature of the population and when its characteristics vary so much from one another. Census method was used because the target population was small and therefore the researcher sought their input in considerable time for the study. *Census method* refers to the complete enumeration of a universe in this case all the library staff at the Egerton University. The sample size for the study was therefore 68 respondents.

**Table 3. 2: Sample Size**

<b>Categories</b>	<b>Population</b>	<b>%</b>
Senior level	3	4
Middle level	25	37
Junior level	40	59
<b>Total</b>	<b>68</b>	<b>100</b>

**Source: Author, 2018**

### **3.6 Research instruments**

A systemized set of questionnaires were utilized in this study then issued to library staff of Egerton University. A questionnaire is a summarization of enquiries which participants are exposed to in a study and are expected to respond. This forms the particular information which was acquired by this research and they included raw ideas in the form of enquiries from questionnaires. They were utilized in this instance for their ability to quickly acquire data from a big number of respondents in a short time frame. Other important materials such as disaster preparedness documents were reviewed together with literature from online sources and journals.

#### **3.6.1 Questionnaire**

A questionnaire is a summarization of enquiries which participants are exposed to in a study and are expected to respond. They were utilized in this instance for their ability to quickly acquire data from a big number of respondents in a short time frame and in a timely manner (Mugenda & Mugenda, 2013). This study's purpose were captured in

the form of written enquiries which were provided as answers in the questionnaire. Section A contained question on demographic data: section B contained questions on the level of disaster preparedness: section C contained questions on disaster preparedness training: section D contained questions on disaster preparedness equipment's: and section E contained questions on challenges faced in disaster preparedness. Every objective was transformed into a sequence of enquiries within the systemized questionnaires hence directing the participants in providing responses to the enquiries. They were utilized in this instance for their ability to quickly acquire data from a big number of respondents in a short time frame and in a timely manner.

### **3.7 Pilot study**

A pilot study was undertaken at the Technical University of Kenya, Nairobi library. A piloted enquiry was undertaken earlier to undertaking this particular study for purposes of identifying and correcting potential problems with the questions (Gill & Johnson, 2010). It comprised of 8 library staff from the middle and top management level. The pilot unit comprised of a tenth of the study sample. The acquired data during the piloted enquiry was discarded and never formed part of this final study.

#### **3.7.1 Validity**

This is the degree at which an instruments accuracy in achieving its intended purpose can be measure. Actually, it is the degree of accuracy with which the instrument can accurately acquire the needed data from within the sample. According to Mugenda & Mugenda (2013), instrument validity can be achieved by having it tested by experts in the field which comprised of academic supervisor and other professional in the department of information science. Before it was used for data collection, the aforementioned professionals analyzed the instrument and provided comments on the

changes which were then made. As a result, the researcher transmitted the research instrument to the study supervisor for adjustments and changes to the framework. This allowed the study instrument to be validated. As a result, the process allowed the instrument to be altered and modified in compliance with established standards in order to improve content validity.

### **3.7.2 Reliability**

Reliability is argued by Cohen et al. (2011) as being similar to being dependable. They define reliability as having the capabilities of producing similar outcome within some time. This process is concern with eliciting precision and similarities. A study's reliability is hinged on it being capable of generating similarities within an indistinguishable population being looked at. This situation makes the study to be replicated. In order to make sure the study was reliable, a pretest was conducted on the data collection tool. This was undertaken during the piloting. Reliability according to Mugenda & Mugenda (2013), is the level at which the tool used in a particular study produces outcomes that are consistent or data once a trial is repeated. Random error, which is the divergence from a correct measurement caused by circumstances that the researcher did not adequately address, has an impact on research reliability. According to Berg (2012), the utilization of a standardized and consistent pattern of enquiry for particular unexpected reactions is especially crucial for achieving reliability and for a likelihood of replicating the study. The study made use of a standard questionnaire for all respondents.

### **3.8 Data collection techniques**

A systemized set of questionnaires were utilized in this study for acquiring crucial information regarding this study's elements. They were particularly handed over to participants at their place of work for which they returned after marking them appropriately. Attached was a letter introducing the study, hence appropriately guiding the participants. Research assistants were utilized and assisted in the delivery of questionnaire. The questionnaires were marked as the assistant or the researcher waited and were picked upon completion. A letter of introduction was also utilized. It contained instructions to the participants to carefully go through the instructions and questions prior to effectively answering them.

### **3.9 Data analysis**

According to Creswell (2009), data analysis is the restructuring of raw data for the purpose of making meaning of it. This method results in information that is relevant to the data presented. Data analysis entails a series of operations that begin with data gathering and conclude with an exhaustive outline of the outcome. Throughout the process, the collected data is analyzed and bits of information are compiled. According to Shamo and Resnik (2013), there are numerous stages of analysis. Regardless, they are all dependent on the separation of usable data from the total set of data presented.

Data was collected through the earlier identified objectives/ variables and thus was analyzed in the same manner. This followed the arrangement of the questions in the questionnaire: section A concentrated on bio data; section B on the level of disaster preparedness and planning; section C on staff training; section D on disaster

preparedness equipment's; section E on challenges of disaster preparedness and planning; and section F on effects of disaster preparedness and planning on service sustainability.

The collected data was physically analyzed, cleaned, coded and entered into statistical software (Statistics Package for the Social Science – SPSS). Qualitative data was collected and there after cleaned so as to pinpoint partly, inaccurate or data that was illogical. Data quality was achieved by correcting the errors detected or omissions done. The data was then coded and entered into statistical software for evaluation. The acquired qualitative data was thematically and inferentially analyzed. Then it was accordingly arranged in accordance with the objectives of the study and then grouped after its content was scrutinized. The researcher interpreted the data and formulated her own understanding which was then presented. The analyzed data was laid out in tables and figure through percentages and frequencies. This elicited outcomes which were discussed, resulting in recommendations being made and eventually suggestions.

### **3.10 Logistical and ethical Considerations**

Earlier to the acquisition of data, a letter of authority was acquired by the researcher from National Commission for Science, Technology and Innovation (NACOSTI). This was to aid in fulfilling the set requirements in Kenya prior to undertaking studies of this nature. An introductory letter was sought by the researcher to assist in accessing the institution under study. The researcher approach the relevant office within the institution under study and was allowed to access the respondents. The researcher issued clear instructions to the respondents not to indicate information that could identify them on the questionnaire. This guaranteed their anonymity and

confidentiality. The participants were never coerced to take part in the study in any way. The data collected was used for academic purpose to which it was intended. The participants had to be individuals of either 18 years or above. They also had to willingly provide consent to be part of this enquiry. The researcher also treated the respondents with respect: the researcher did not force the respondents to answer any question they felt uncomfortable with. Guidelines associated with ethics in research were also adhered to. This included providing a summarized introductory note, making participants data confidential, willingly participating and utilizing this study for what it was initially intended. All sources were cited and referenced.



## **CHAPTER FOUR**

### **PRESENTATION OF FINDINGS, INTERPRETATION AND DISCUSSION**

#### **4.1 Introduction**

This section presents an outline of the analyzed data that the study was based on. The analyzed data is presented thematically in this chapter then followed by discussion. This chapter therefore entails: response rate, demographic information, thematic presentation and discussion.

In order to achieve this purpose, the following objectives were addressed: to establish the level of disaster preparedness and planning in sustaining services at Egerton University digital library; to find out the disaster preparedness and planning training the staff have undergone in sustaining services at Egerton University digital library; to establish the disaster preparedness and planning equipment's that can sustain services at Egerton university digital library; to look into the problems experienced in the planning and preparedness for disasters at the digital library in Egerton University.

This chapter therefore, provides the study findings as strategy of achieving the stated objectives. The findings are presented from the primary data collected. The findings are organized on the basis of the stated objectives.

#### **4.2 General and demographic information**

The objective of this section was to answer the questions developed in this study from the respondents, which included response rate and demographic attributes. Demographic information is a necessary element that is used in the description of the characteristics of those participating in the research. It enables better comprehension

of particular background characteristics of participants. This study considered the participants gender, age, and academic level of participants to acquire its demographic information.

#### 4.2.1 Response rate

The study first established the rate at which the respondents returned data on its research instrument. This is referred to as response rate. It is important as it makes sure that the outcome captured is representative of the sample targeted and that the research instrument has performed its intended purpose. The respondent's rate of this study was 94%. Response rate is the actual rate at which the tool used in research was responded to. The study distributed 68 questionnaires and got back 64 of them. This is outlined in Table 4.1.

**Table 4. 1: Response Rate**

<b>Category</b>	<b>Sample (f)</b>	<b>Response rate (%)</b>
Not returned questionnaires	4	6
Returned questionnaires	64	94
<b>Total</b>	<b>68</b>	<b>100</b>

**Source:** Author, 2021

The general rate of responding to this study was 94%. This is regarded as acceptable and adequate in deriving inferences. A response rate of 75% or more is regarded by Mugenda and Mugenda (2009) as being acceptable and credible. This study therefore may be considered suitable and credible for analysis and generalization.

#### 4.2.2 Gender of respondents

The gender of the participants was requested to be known. Gender was considered by this study due to its importance in disaster preparedness. Disaster impacts the various genders differently and hence the importance of differentiating gender analysis in disaster preparedness. This study therefore captured gender in terms of male and female and computed the findings in frequency and percentage. The study captures views of more female participants (67.2%) than male (32.8%) participants as shown in Table 4.2.

**Table 4. 2: Gender of respondents**

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Male	21	32.8	32.8	32.8
Valid Female	43	67.2	67.2	100.0
<b>Total</b>	<b>64</b>	<b>100.0</b>	<b>100.0</b>	

Table 4.2 shows that the majority of the respondents were female representing 67.2% of the total number of respondents. The results are indicative of the situation facing many organizations in regards to gender disparity. Gender was considered in this study because it is considered as a factor that shapes various tendencies of behavior such as those associated with disaster recover, response, preparation and anticipation in the form of policies (Cvetkovic et al., 2018). Despite disasters being gender neutral, the Global Facility for Disaster Reduction and Recovery (2020) have argued that there

exists sufficient evidence showing that females are powerful agents of positive change before, during and after disaster occurs. These findings however differ from other findings from Austin (2010) and Kano et al. (2009) which have shown men to be more engaged in disaster prepared. In this case it can infer that the organization is prepared in tackling disasters given the majority of the participants are females.

### 4.2.3 Age of respondents

The respondent's age was sought by the study. Age is considered an important element in disaster preparedness because it indicates to their experience with disasters. The older one is the more vulnerable they are to disasters and therefore more likely to prepare for disasters. The age of the respondents was therefore categorized in the following sets: 18 to 25 years, 26 to 33 years, 34 to 41 years and 42 years and above. The study found that the majority of the respondents were between the ages of 34-41 years (40.6%), while 32.8% were between the ages of 26-33, 18.8% were over 42 years of age, and 7.8% were between the ages of 18-25 years. The results were presented in Table 4.3 as frequencies and percentages.

**Table 4. 3: Age of respondents**

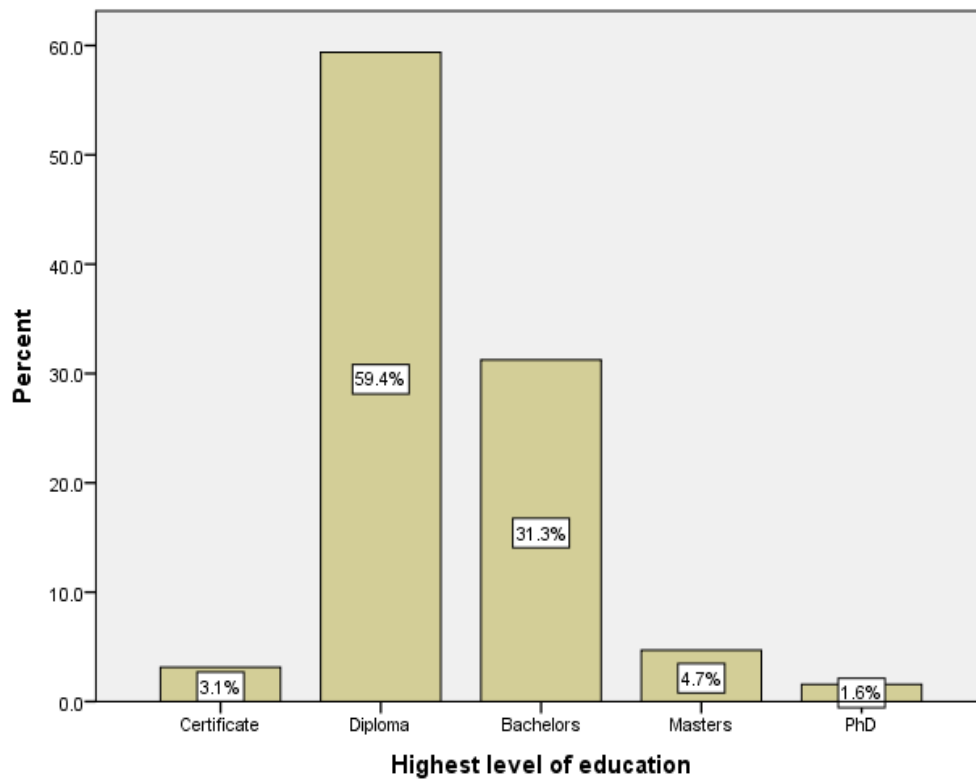
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 18-25 years	5	7.8	7.8	7.8
26-33 years	21	32.8	32.8	40.6
34-41 years	26	40.6	40.6	81.3
Over 42 years	12	18.8	18.8	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	<b>100.0</b>	

The study shows respondents of various ages working in this organization, majority of whom are between the ages of 34-41 years. The variation of age groups implies their experience with disasters within the organization. This outcome is supported by studies conducted by Sattler et al. (2000) and Mishra and Suar (2005) which have suggested that disaster preparedness increases with age. The participants at this age group being the majority can therefore mean that they are prepared to tackle disasters.

#### **4.2.4 Academic level**

The study established from the respondents their highest academic level. Education is an important element in disaster preparedness because formal education is seen as promoting disaster preparedness. The Figure 4.1 shows that majority of the respondents 59.4% have attained diploma qualification as their highest academic qualification, followed by 31.3% having bachelor's qualification, 3.1% having certificate qualification and 1.6% having PhD qualification. The results are presented as percentages in Figure 4.1.

#### **Figure 4. 1: Academic level**



The Figure 4.1 shows that majority of the respondents had attained a diploma qualification of education. All the participants had however attained a post-secondary school qualification. This implies that the respondents were educated and therefore capable of being motivated and be provided with the skills and knowledge that can be used in taking necessary action to minimize their vulnerability to disasters. According to Mutarak and Pothisiri (2013), there is empirical evidence that suggest a correlation between the level of education of an individual and their preparedness to disasters. This is supports an earlier study by Menard et al. (2011) who established that a relationship exists between having a post-secondary education and disaster preparedness. This infers therefore that the participants, given their level of education seems to be prepared for disasters.

### 4.3 Level of disaster preparedness and planning

A Likert scale was used in a series of statements to enable elicit responses in relation to the level of disaster preparedness and planning at Egerton University library. Most of the respondents (70.3%) agreed that the digital library could experience a disaster. Another 15.6% of the participants strongly agreed, 9.4% disagreed, 3.1% strongly disagreed while 1% were not sure. The responses are captured in Table 4.4.

**Table 4. 4: Awareness on disaster occurrence**

	Frequency	Percent	Cumulative Percent
Strongly agree	10	15.6	15.6
Agree	45	70.3	85.9
Not sure	1	1.6	87.5
Disagree	6	9.4	96.9
Strongly disagree	2	3.1	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

Valid	64
Missing	0
<b>Mean</b>	<b>2.14</b>
<b>Std. Deviation</b>	<b>.906</b>

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.4 shows that majority of respondents had agreed (70.3%) that they were aware that the digital library can suffer from disaster. Cumulatively therefore, most of the participants agreed that the digital library could experience a disaster as supported by a mean of 2.14 and a standard deviation of 0.906. These results indicate that the digital library is not exempted from disasters like any other organization. It also shows that the library staff are aware of the likelihood of the digital library experiencing disaster, therefore the likelihood of the staff preparing and planning for these disasters. According to Nwokendi, Panle and Samuel (2017), the preparedness and planning of any digital library is as a result of the library staff being aware that

disaster can happen any time. These results however are contrary to findings by Oluwatola, Ogbuiyi, Oriogu and Ogbuiyi (2015) in which established that majority of library staff in digital libraries in were not fully aware of possibility of disaster happening in digital libraries.

The respondents were asked if the library is at risk of disaster. This question was important to know if the respondents were aware that every organization was at risk of disasters. Most of the respondents (65.6%) agreed that the digital library is at risk of disaster. Another 23.4% strongly agreed that the digital library was at risk of disaster followed by 4.7% who disagreed, 3.1% who strongly disagreed and 3.1% who were not sure. Table 4.5 capture the outcome of the responses.

**Table 4. 5: Risk of disaster**

	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Strongly agree	15	23.4	23.4
Agree	42	65.6	89.1
Not sure	2	3.1	92.2
Disagree	3	4.7	96.9
Strongly disagree	2	3.1	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

Valid N	64
Missing	0
<b>Mean</b>	<b>1.98</b>
<b>Std. Deviation</b>	<b>.864</b>

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.5 shows that majority of the respondents (65.6%) had agreed that the digital library was at risk of disasters. Cumulatively therefore, the respondents agreed



that the digital library was at risk of disaster. This is supported by a mean of 1.98 and a standard deviation of 0.864. These results indicate that the digital library is at risk of disaster. According to Ifijeh, Idiegbeyan-ose, Segun-Adeniran and Ilogho (2016) digital libraries cannot rule out the possibilities of disasters because globally disaster have become a matter of great concern. These researchers argue that the rate at which disasters occur has been increased by the existence of digital libraries as a result of both technological and technical factors.

The respondents were asked if the digital library has a disaster preparedness plan. A disaster management plan is important as it shows the readiness of an organization in dealing with disaster. Most of the respondents (46.9%) disagreed that the digital library has a disaster preparedness plan. Another 21.9% strongly disagreed, 15.6% agreed and 9.7% strongly agreed. The responses are captured in Table 4.6.

**Table 4. 6: Documented disaster preparedness plan**

	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Strongly agree	6	9.4	9.4
Agree	10	15.6	25.0
Not sure	4	6.3	31.3
Disagree	30	46.9	78.1
Strongly disagree	14	21.9	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
	<b>Mean</b>	<b>3.56</b>
	<b>Std.</b>	<b>1.258</b>
	<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.6 shows that majority of the respondents (46.9%) had disagreed that the library had a documented disaster preparedness plan. Cumulatively therefore, the

respondents disagreed that the digital library had a disaster preparedness plan. This is supported by a mean of 3.56 and a standard deviation of 1.258. These results indicate that the digital library therefore has no documented disaster preparedness plan of its own. These findings are in tandem with findings of a study by Ngulube, Modisane and Mnkei-Saurombe (2011) that established that majority of academic libraries lack a documented disaster preparedness and planning policy even though they have considerable digital library collection. Also, by Morgan and Smith (2014) who established that majority of academic libraries in do not have a documented disaster plan hence jeopardizing the security and safety of their digital library.

The respondents were asked if the organizations disaster preparedness and planning policy covers the digital library. A disaster policy provides direction to the organization and its staff in preparing and tackling disasters. Most of the respondents (43.8%) disagreed that the organizations disaster preparedness and planning policy covers the digital library. Another 25% strongly disagreed, 18.8% agreed, 7.8% strongly agreed while 4.7% were not sure. The responses are captured in Table 4.7.

**Table 4. 7: Coverage of disaster policy**

	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Strongly agree	5	7.8	7.8
Agree	12	18.8	26.6
Not sure	3	4.7	31.3
Disagree	28	43.8	75.0
Strongly disagree	16	25.0	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
	<b>Mean</b>	<b>3.59</b>
	<b>Std.</b>	<b>1.269</b>
	<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.7 show that majority of the respondents had disagreed that the digital library had a disaster policy. Cumulatively therefore, the respondents disagreed that the organizations disaster preparedness and planning policy covers the digital library. This is supported by a mean 3.59 and a standard deviation of 3.59. These results indicate that the digital library therefore was not covered by the organization disaster preparedness and policy. It implies that the overall disaster preparedness and planning policy was developed without considering specific disaster needs of the digital library. These findings are in tandem with results by Ngulube, Modisane and Mnkei-Saurombe (2011) which established that majority of academic libraries lack a documented disaster preparedness and planning policy even though they have considerable digital library collection. According to Akintunde (2016), while most academic libraries fall under the umbrella of their parent institution's emergency preparedness and planning, the disaster needs of digital libraries are seldom addressed in these broad organizational policies.

The respondents were asked if the library has been conducting drills to ascertain their disaster preparedness and planning. Drills are an important activity which goes to show the preparedness of an organization towards disaster. When staff in an organization conducts regular drills, then they become more prepared in cases of disaster. Most of the respondents 46.9% agreed that the library has been conducting drills on disaster preparedness and planning. Another 21.9% strongly agreed, 15.6% disagreed, 12.5% strongly disagreed while 3.1% were not sure. The findings are captured in Table 4.8.

**Table 4. 8: Disaster preparedness drills**

	Frequency	Percent	Cumulative Percent
Strongly agree	14	21.9	21.9
Agree	30	46.9	68.8
Not sure	2	3.1	71.9
Disagree	10	15.6	87.5
Strongly disagree	8	12.5	100.0
<b>Total</b>	<b>64</b>	<b>100.0</b>	

Valid	64
Missing	0
<b>Mean</b>	<b>2.50</b>
<b>Std.</b>	<b>1.333</b>
<b>Deviation</b>	
<b>n</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.8 show that majority of the respondents had agreed that the library had been conducting drills on disaster preparedness and planning. Cumulatively therefore most of the respondents agreed that the library was conducting drills on disaster preparedness and planning. This is supported by a mean of 2.50 and a standard deviation of 1.333. This implies that the library is keen on protecting its digital collection by readying itself for any disaster through disaster response drills to gauge their preparedness. The readiness is manifested in its effort to train its staff in disaster preparedness. These findings were in tandem with a study by Khalid and Dol (2015) which established that digital libraries conducted mock drills though it was not frequently done as expected. A study by Marfo and Borteye (2016) however contradicted these findings by claiming in their study that none of the digital libraries had done simulated disaster exercises, which they found concerning.

#### **4.4 Staff training on disaster preparedness and planning**

A Likert scale was used in a series of statements to enable elicit responses in relation to the training of staff on disaster preparedness and planning at Egerton University library.

The respondents were asked if the library has been keen on staff training in relation to planning and preparing for disasters. Training of staff prepares them in taking action to deter disasters and also in how to behave when disaster strikes to mitigate its effects. Most of the respondents (48.8%) indicated that they disagreed that the library was keen on staff training in relation to planning and preparing for disasters. Another 21.9% strongly disagreed, 14.1% agreed, 12.5% strongly agreed while 3.1% were not sure. The findings are captured in Table 4.9.

**Table 4. 9: Staff disaster preparedness training**

	Frequency	Percent	Cumulative Percent
Strongly agree	8	12.5	12.5
Agree	9	14.1	26.6
Not sure	2	3.1	29.7
Disagree	31	48.4	78.1
Strongly disagree	14	21.9	100.0
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
	<b>Mean</b>	<b>3.53</b>
	<b>Std.</b>	<b>1.321</b>
	<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.9 show that most of the respondents (48.4%) had disagreed that the library wasn't keen on staff training in relation to planning and preparing for disasters. Cumulatively therefore most of the respondents disagreed that the library was keen on staff training in relation to planning and preparing for disasters. This is supported by a mean of 3.53 and a standard deviation of 1.321. These results imply the lack of seriousness and support that is directed to the training of library staff in preparing and planning for disasters. This means that the library staff are either not completely trained or adequately trained in disaster preparedness and planning. The sudden nature

of disaster calls for library staff to be prepared for if and when disaster strike. The training and retraining of library staff ensures that they efficiently and adequately deter, mitigate, respond to disaster and also in recovery (Abareh, 2014). According to Ayoung, Boatbil and Baada (2015), it is crucial for digital libraries to ensure its staff is trained in disaster preparedness and planning.

The respondents were asked if the training on disaster preparedness and & planning considers the needs of the library in preparing for disasters. The training provided to staff needs to consider the individual needs of the staff so as to be effective. Most of the respondents (43.8%) disagreed that the disaster preparedness and planning training considered the needs of the digital library. Another 25% strongly disagreed, 18.8% agreed, 7.8% strongly agreed while 4.7% were not sure. The findings are captured in Table 4.10.

**Table 4. 10: Needs of digital library in disaster preparedness**

	Frequency	Percent	Cumulative Percent
Strongly agree	5	7.8	7.8
Agree	12	18.8	26.6
Not sure	3	4.7	31.3
Disagree	28	43.8	75.0
Strongly disagree	16	25.0	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

Valid	64
Missing	0
<b>Mean</b>	<b>3.59</b>
<b>Std.</b>	<b>1.269</b>
<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.10 show that majority of the respondents (43.8%) had disagreed that the disaster preparedness and planning training being conducted considered needs of the digital library. Cumulatively therefore, most respondents indicate they that they disagreed that the disaster preparedness and planning training considered the needs of the digital library. This is supported by a mean of 3.59 and a standard deviation of 1.269. This implies that the library staff are not adequately trained on preparing and planning for disaster within the digital library. It also implies that the disaster preparedness and planning training has not been customized to address the disaster needs of the digital library. The training needs of the digital library are specific and sometimes unique. The staff in academic libraries require training that addresses the needs of that organization, in this case the digital library. The training being considered therefore is within a module that provides the greatest impact to the digital library (Nazlin, Sipon & Radzi, 2014).

The respondents were asked if the disaster preparedness & planning training considers personal needs of the library staff. Individual needs are important when being trained especially in disaster preparedness. This is because each individual has their own needs which require to be addressed. Most of the respondents (46.9%) disagreed that the personal need were considered in disaster preparedness and planning training. Another 21.9% strongly disagreed, 15.6% agreed, 9.4% strongly agreed while 6.3% were not sure. The responses are captured in Table 4.11.

**Table 4. 11: Personal needs in disaster preparedness training**

	Frequency	Percent	Cumulative Percent
Strongly agree	6	9.4	9.4
Agree	10	15.6	25.0
Not sure	4	6.3	31.3
Disagree	30	46.9	78.1
Strongly disagree	14	21.9	100.0
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N Valid	64
Missing	0
<b>Mean</b>	<b>3.56</b>
<b>Std. Deviation</b>	<b>1.258</b>

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The table 4.11 show that majority of the respondents (46.9%) had disagreed that personal needs were being considered in disaster preparedness and planning training. Cumulatively therefore, most of the respondents disagreed that the personal needs of library staff were not considered when providing training on disaster preparedness and planning. This is supported by a mean 3.56 and a standard deviation of 1.258. These results indicate that the training on disaster preparedness and planning was not specific to the individual needs of the library staff. These are training needs that are related to disaster preparedness specific to an individual in the academic library. The training requirements of one library staff in the library may be different from the other and therefore the training needs should be individually addressed. The training needs of this individual should be individualized but in reflection of the appropriate requirements of disaster preparedness (Nazlin, Sipon & Radzi, 2014).

The respondents were asked if the disaster preparedness & planning training methods applied considered the section of the library one works in. The materials contained in the different library sections may vary making the needs of these sections to also be different. This might call for different ways of preparedness for these sections. Most



of the respondents (70.3%) disagreed that the training on disaster preparedness and planning considered the library section in which the staff were working. Another 15.6% strongly disagreed, 9.4% agreed, 3.1% strongly agreed while 1.6% were not sure. The responses are captured in Table 4.12.

**Table 4. 12: Disaster preparedness considers library section**

	Frequency	Percent	Cumulative Percent
Strongly agree	2	3.1	3.1
Agree	6	9.4	12.5
Not sure	1	1.6	14.1
Disagree	45	70.3	84.4
Strongly disagree	10	15.6	100.0
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
	<b>Mean</b>	<b>3.86</b>
	<b>Std.</b>	<b>.906</b>
	<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.12 show that majority of the respondents (70.3%) had disagreed that the training on disaster preparedness and planning considered the library sections. Cumulatively therefore, most of the respondents disagreed that the training on disaster preparedness and planning considered the library section in which the staff were working. This is supported by a mean of 3.86 and a standard deviation of 0.906. These results indicate that the disaster preparedness and planning training did not considered training needs analysis when it was being developed. According to Nazlin, Sipon and Radzi (2014), the library needs to conducts a training needs analysis (TNA) before developing a training program to identify individual, operational and organizational needs of staff in disaster preparedness. Those library staff who are

implementers of some aspects of the disaster preparedness plan will have to be provided with the training.

#### 4.5 Disaster preparedness equipment's and planning

A Likert scale was used in a series of statements to enable elicit responses in relation to the disaster preparedness and planning equipment's at Egerton University library.

The respondents were asked if the library has adequate disaster preparedness & planning equipment's within the library. Having disaster preparedness equipment's is a key component of readying for disasters. It is the equipment's which will be used to mitigate the effects of disasters. Most of the respondents (46.9%) disagreed that the library has adequate disaster preparedness and planning equipment's. Another 21.9% strongly disagreed, 15.6% agreed, 12.5% strongly agreed while 3.1% were not sure.

The responses are captured in Table 4.13.

**Table 4. 13: Adequacy of disaster preparedness equipment's**

	Frequency	Percent	Cumulative Percent
Strongly agree	8	12.5	12.5
Agree	10	15.6	28.1
Not sure	2	3.1	31.3
Disagree	30	46.9	78.1
Strongly disagree	14	21.9	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

<b>Key:</b>	N Valid	64
	N Missing	0
	<b>Mean</b>	<b>3.50</b>
	<b>Std.</b>	<b>1.333</b>
	<b>Deviation</b>	

Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree);

2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.13 show that majority of the respondents (46.9%) had disagreed that the library had adequate disaster preparedness and planning equipment's. Cumulatively

therefore, most of the respondents disagreed that the library had adequate disaster preparedness and planning equipment's. This is supported by a mean of 3.50 and a standard deviation of 1.333. These results imply that the digital library is not adequately prepared for disasters. This is due to the unavailability of adequate disaster preparedness equipment's. Availability of disaster preparedness and planning in digital libraries is a matter of concern. To be able to adequately prepare and plan for disaster, a library needs to arm itself with the necessary disaster preparedness equipment's. The findings of this study are aligned to those of a study conducted by Ayoung, Boatbil and Baada (2015) which established that most digital libraries lack the basic equipment's needed in preparing for disasters.

The respondents were asked if the disaster preparedness equipment's are strategically positioned within the library. Position of disaster equipment's enables staff to know and easily access them when required. Most of the respondents (70.3%) disagreed that the disaster preparedness equipment are strategically positioned within the digital library. Another 15.6% strongly disagreed, 9.4% agreed, 3.1% strongly agreed while 1.6% were not sure. The results are captured in Table 4.14.

**Table 4. 14: Positioning of disaster equipment**

	Frequency	Percent	Cumulative Percent
Strongly agree	2	3.1	3.1
Agree	6	9.4	12.5
Not sure	1	1.6	14.1
Disagree	45	70.3	84.4
Strongly disagree	10	15.6	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
	<b>Mean</b>	<b>3.86</b>
	<b>Std.</b>	<b>.906</b>
	<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

Table 4.14 show that majority of the respondents (70.3%) had disagreed that the disaster fighting equipment's were strategically positioned in the digital library. Cumulatively therefore the respondents disagreed that the disaster preparedness equipment's are strategically positioned within the digital library. This is supported by a mean of 3.86 and a standard deviation of 0.906. These results indicate that the digital library will not be able to tackle disaster effectively owing to lack of proper positioning of the disaster preparedness equipment's. These findings are in tandem with the finding of a study by Marfo and Borteye (2016), who found out that some academic libraries lacked proper disaster equipment's installed strategically within the library. This was not only a risk to the library collection but also a danger to the lives of the library staff and patrons.

The respondents were asked if the disaster preparedness and planning equipment's available in the library are appropriate. There are different disasters and therefore this required appropriate equipment's to be available to mitigate the effects of these various disasters. Most of the respondents (45.3%) disagreed that the disaster preparedness and planning equipment available were appropriate. Another 21.9% strongly disagreed, 17.2% agreed, 9.4% strongly agreed while 6.3% were not sure. The responses are captured in Table 4.15.

**Table 4. 15: Appropriateness of disaster preparedness equipment's**

	Frequency	Percent	Cumulative Percent
Strongly agree	6	9.4	9.4
Agree	11	17.2	26.6
Not sure	4	6.3	32.8
Disagree	29	45.3	78.1
Strongly disagree	14	21.9	100.0
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
	<b>Mean</b>	<b>3.53</b>
	<b>Std.</b>	<b>1.272</b>
	<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.15 show that the majority of the respondents (45.3%) had disagreed that there were appropriate disaster preparedness and planning equipment's in the library. Cumulatively therefore, most of the respondents disagreed that the library had appropriate disaster preparedness and planning equipment's. This is supported by a mean of 3.53 and a standard deviation of 1.272. These results indicate that the digital library therefore were exposed to disasters should they occur because of a lack of appropriate equipment's to detect and fight disasters. A study conducted by Ayoung, Boatbil and Baada (2015) established that most digital libraries lack the basic equipment's needed in preparing for disasters. This therefore crippled their ability to adequately prepare and plan for any disaster should it strike them.

The respondents were asked if the library staffs are aware of where the disaster preparedness & planning equipment's are positioned. This question was important because it is necessary for the library staff to be aware of where the disaster preparedness equipment's are positioned to be able to quickly access them. Most of the respondents (43.8%) disagreed that they were aware of the positioning of the

disaster preparedness and planning equipment's. Another 25% strongly disagreed, 18.8% agreed, 7.8% strongly agreed while 4.7% were not sure. The responses are captured in Table 4.16.

**Table 4. 16: Staff awareness on positioning of disaster equipment's**

	Frequency	Percent	Cumulative Percent
Strongly agree	5	7.8	7.8
Agree	12	18.8	26.6
Not sure	3	4.7	31.3
Disagree	28	43.8	75.0
Strongly disagree	16	25.0	100.0
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
	<b>Mean</b>	<b>3.59</b>
	<b>Std.</b>	<b>1.269</b>
	<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

Table 4.16 show that the respondents (43.8%) disagreed that they were aware of the positioning of the disaster preparedness and planning equipment's. Cumulatively therefore, most of the respondents disagreed that they were aware of the positioning of the disaster preparedness and planning equipment's within the library. This is supported by a mean of 3.59 and a standard deviation of 1.269. These results indicate that the library staff would not be able to timely locate these disaster preparedness and planning equipment's should they be needed to fight a disaster. The library staff should be aware of the availability of these equipment's within the digital library and be able to trigger or locate them as quickly as possible. According to a study by Oluwatola et al. (2015), most of the library staff were not aware of the library disaster preparedness and planning measure. Additionally, in another study by Marfo and

Borteye (2016), it was established that library staff were not aware of the available disaster equipment's nor the disaster escape measures.

The respondents were asked if the library staffs know how to operate the various disaster preparedness and planning equipment's. It is important for the library staff to know how to operate these disaster preparedness equipment if they are to be used to fight disasters. Most of the respondents (48.4%) disagreed that they knew how to operate the various disaster preparedness and planning equipment's. Another 21.9% strongly disagreed, 14.1% agreed, 12.5% strongly agreed while 3.1% were not sure. The findings are captured in Table 4.17.

**Table 4. 17: Knowledge of operating disaster preparedness equipment's**

	Frequency	Percent	Cumulative Percent
Strongly agree	8	12.5	12.5
Agree	9	14.1	26.6
Not sure	2	3.1	29.7
Disagree	31	48.4	78.1
Strongly disagree	14	21.9	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
	<b>Mean</b>	<b>3.53</b>
	<b>Std.</b>	<b>1.321</b>
	<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.17 show that majority of the respondents (48.4%) disagreed that they knew how to operate the various disaster preparedness and planning equipment's. Cumulatively therefore, most of the respondents disagreed that they knew how to operate the various disaster preparedness and planning equipment's. This is supported by a mean of 3.53 and a standard deviation of 1.321. These results

indicate that the library staff lack the prerequisite skills of operating the available disaster preparedness and planning equipment's thus if a disaster should occur, then they will in a position to fight it. The library staff need to be trained on how to use or how the various equipment's operate in order to be able to use them when time comes (Sawant, 2014). According to a study by Oluwatola et al. (2015), most of the library staff lacked knowledge of how to operate the available disaster equipment's. This is in tandem with the findings of this study.

#### **4.6 Challenges of disaster preparedness and planning**

A Likert scale was used in a series of statements to enable elicit responses in relation to the challenges of disaster preparedness and planning at Egerton University library.

The respondents were asked if the disaster preparedness plan was difficult to implement because of insufficient funds. This question was important because availability of funds is important in the implementation of a disaster plan. Most of the respondents (54.7%) agreed that the disaster preparedness plan was difficult to implement because of insufficient funds. Another 28.1% strongly agreed, 9.4% strongly disagreed, 6.3% disagreed while 1.6% were not sure. The findings are captured in Table 4.18.



**Table 4. 18: Insufficient funds**

	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Strongly agree	18	28.1	28.1
Agree	35	54.7	82.8
Not sure	1	1.6	84.4
Disagree	4	6.3	90.6
Strongly disagree	6	9.4	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
<b>Mean</b>		<b>2.14</b>
<b>Std.</b>		<b>1.180</b>
<b>Deviation</b>		

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

Table 4.18 show that majority of the respondents (54.7%) agreed that the disaster preparedness plan was difficult to implement because of insufficient funds. Cumulatively therefore, most of the respondents agreed that the disaster preparedness plan was difficult to implement because of insufficient funds. This is supported by a mean of 2.14 and a standard deviation of 1.180. These results indicate that funding or finances that are directed to disaster preparedness are essential in implementing the disaster preparedness plan. According to Owolabi (2014), digital libraries were experiencing challenges of lack of funds. This was a major contributor to their below par level of disaster preparedness and planning. According to Chatterjee (2017), the library budget is dwindling meaning that very little or none at all is being allocated for disaster preparedness and planning in the library. Without adequate funding, the library is unable to sufficiently prepare and plan for likely disasters such as acquiring the necessary disaster preparedness equipment.

The respondents were asked if the library staffs do not take the disaster preparedness plan serious because they don't think disasters will occur in the library. This question

was important because the attitude of library staff towards the disaster preparedness plan determines if they will implement it or not. Most of the respondents (50%) agreed that the library staffs do not take the disaster preparedness plan serious because they don't think disasters will occur in the library. Another 28.1% strongly agreed, 12.5% disagreed, 6.3% strongly disagreed while 3.1% were not sure. The responses are captured in Table 4.19.

**Table 4. 19: Lack of seriousness by library staff**

	Frequency	Percent	Cumulative Percent
Strongly agree	18	28.1	28.1
Agree	32	50.0	78.1
Not sure	2	3.1	81.3
Disagree	8	12.5	93.8
Strongly disagree	4	6.3	100.0
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N Valid	64
Missing	0
<b>Mean</b>	<b>2.19</b>
<b>Std. Deviation</b>	<b>1.167</b>

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

Table 4.19 show that majority of the respondents (50%) agreed that the library staffs do not take the disaster preparedness plan serious because they don't think disasters will occur in the library. Cumulatively therefore, this means that most of the respondents had agreed that the library staffs do not take the disaster preparedness plan serious because they don't think disasters will occur in the library. This is supported by a mean of 2.19 and a standard deviation of 1.167. These results indicate that the attitude problem that is facing the implementation of the disaster preparedness plan within the library. These findings are supported by findings from a study by Khalid and Dol (2015) who established that librarian believe a disaster will not occur in their organization hence no need to have a disaster preparedness plan.

The respondents were asked if the disaster preparedness plan is not being implemented because the management wasn't providing the required support. This question was important because the success any plan including a disaster plan relies on the support provided by the top management of that organization. Most of the respondents (70.3%) agreed that the disaster preparedness plan was not being implemented the management wasn't providing the required support. Another 15.6% strongly agreed, 9.4% disagreed, 3.1% strongly disagreed while 1.6% were not sure. The findings are captured in Table 4.20.

**Table 4. 20: Management not supporting disaster plan**

	Frequency	Percent	Cumulative Percent
Strongly agree	10	15.6	15.6
Agree	45	70.3	85.9
Not sure	1	1.6	87.5
Disagree	6	9.4	96.9
Strongly disagree	2	3.1	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
<b>Mean</b>		<b>2.14</b>
<b>Std.</b>		<b>.906</b>
<b>Deviation</b>		

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

Table 4.20 show that majority of the respondents (70.3%) agreed that the disaster preparedness plan was not being implemented the management wasn't providing the required support. Cumulatively therefore, most of the respondents agreed that the disaster preparedness plan was not being implemented the management wasn't providing the required support. This is supported by a mean of 2.14 and a standard deviation of 0.906. Marfo and Borteye (2016) found that the management of libraries

was clearly lacking in support in regards to training library staff in disaster preparedness. By considering senior library staff and passing other cadre of staff in these training, the management has demonstrated a lack of support in the overall preparation for disaster

The respondents were asked if the library staffs were not adequately trained on disaster preparedness. This question was important because the library staff need to be trained to be able to adequately prepare for disasters. Most of the respondents (59.4%) agreed that the library staffs were not adequately trained on disaster preparedness. Another 20.3% strongly agreed, 14.1% disagreed, 4.7% strongly disagreed while 1.6% were not sure. The responses are captured in Table 4.21.

**Table 4. 21: Lack of adequate training on disaster preparedness**

	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Strongly agree	13	20.3	20.3
Agree	38	59.4	79.7
Not sure	1	1.6	81.3
Disagree	9	14.1	95.3
Strongly disagree	3	4.7	100.0
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
	<b>Mean</b>	<b>2.23</b>
	<b>Std.</b>	<b>1.080</b>
	<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

Table 4.21 show that majority of the respondents (59.4%) agreed that the library staffs were not adequately trained on disaster preparedness. Cumulatively therefore, most of the respondents agreed that the library staffs were not adequately trained on disaster preparedness. This is supported by a mean 2.23 and a standard deviation of 1.080.

These results imply that the library staff lack skills prerequisite skills for disasters. This will be a challenge to the digital library as the staff will not have the needed training in combating disasters. According to Ahenkorah-Marfo and Borteye (2010), most libraries are lacking this important training on its staff hence making them susceptible to disasters. This presented a challenge in how to go about averting disasters within those libraries. The library staff therefore lacked awareness and readiness of disasters occurring at any given time. Training was an essential tenet of disaster preparedness. Issa, Aliyu, Adedeji, and Rachel (2012) pointed that disaster preparedness training was mostly available for senior library staff. This left the other cadre of staff without the much needed skills because they were not involved in the training.

The respondents were asked if the available disaster preparedness equipment's were regularly serviced. This question was important because for the disaster preparedness equipment's to effectively tackle disasters, they have to be in good working condition, meaning, they have to be regularly serviced. Most of the respondents (51.6%) disagreed that the available disaster preparedness equipment's were regularly serviced. Another 15.6% strongly disagreed, 15.6% agreed, 12.5% strongly agreed while 4.7% were not sure. The responses are captured in Table 4.22.

**Table 4. 22: Servicing of disaster preparedness equipment's**

	Frequency	Percent	Cumulative Percent
Strongly agree	8	12.5	12.5
Agree	10	15.6	28.1
Not sure	3	4.7	32.8
Disagree	33	51.6	84.4
Strongly disagree	10	15.6	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
	<b>Mean</b>	<b>3.42</b>
	<b>Std.</b>	<b>1.282</b>
	<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.22 show that majority of the respondents (51.6%) disagreed that the available disaster preparedness equipment's were regularly serviced. Cumulatively therefore, most of the respondents disagreed that the available disaster preparedness equipment's were regularly serviced. This is supported by a mean of 3.42 and a standard deviation of 1.282. These results indicate that there was a challenge of regularly servicing the available disaster preparedness equipment's. According to Ngoepe (2014), the few libraries that had disaster preparedness equipment's did not however service them as required. The library staff were unaware when last the disaster preparedness equipment's were last maintained or even they were maintained at all. This posed a very great risk for disaster. Ayoung, Boatbil and Baada (2015) stated that library staff needed to ensure that the disaster preparedness equipment's available within the library were inspected regularly.

#### **4.7 Effects of disaster preparedness & planning on service sustainability**

A Likert scale was used in a series of statements to enable elicit responses in relation to the effects of disaster preparedness and planning on service sustainability at Egerton University library.

The respondents were asked if provision of services will be affected if the library does not prepare and plan for disasters. This question was important so as to establish if there is an association between preparing for disaster and provision of services in the library. Most of the respondents (68.8%) agreed that provision of services will be affected if the library does not prepare and plan for disasters. Another 14.1% strongly agreed, 12.5% disagreed, 3.1% strongly disagreed while 1.6% were not sure. The respondents are captured in Table 4.23.

**Table 4. 23: Effects of disaster preparedness on services provision**

	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Strongly agree	9	14.1	14.1
Agree	44	68.8	82.8
Not sure	1	1.6	84.4
Disagree	8	12.5	96.9
Strongly disagree	2	3.1	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
<b>Mean</b>		<b>2.22</b>
<b>Std.</b>		<b>.951</b>
<b>Deviation</b>		

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.23 show that majority of the respondents (68.8%) agreed that provision of services will be affected if the library does not prepare and plan for disasters. Cumulatively therefore, most of the respondents agreed that provision of services will be affected if the library does not prepare and plan for disasters. This is supported by a mean of 2.22 and a standard deviation of 0.951. The results are supported by Osei-Boadu& Ahenkorah-Marfo (2013) who in their study established that when disasters are permitted to occur, they have far-reaching implications such as denying users'

access to collections through destruction of the digital collection. This interrupts provision of services until the digital library can recover from that particular disaster.

The respondents were asked that if the availability of digital resources will be affected when the library does not prepare and plan for disasters. The question was important so as to establish if there was an association between disaster preparedness and availability of digital resources. Most of the respondents (70.3%) strongly agreed that the availability of digital resources will be affected when the library does not prepare and plan for disasters. Another, 15.6% agreed, 9.4% disagreed, 3.1% strongly disagreed while 1.6% were not sure. The responses are captured in Table 4.24.

**Table 4. 24: Effects of disaster unpreparedness on resource availability**

	Frequency	Percent	Cumulative Percent
Strongly agree	45	70.3	70.3
Agree	10	15.6	85.9
Not sure	1	1.6	87.5
Disagree	6	9.4	96.9
Strongly disagree	2	3.1	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

N	Valid	64
	Missing	0
<b>Mean</b>		<b>1.59</b>
<b>Std.</b>		<b>1.109</b>
<b>Deviation</b>		

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.24 show that majority of the respondents (70.3%) strongly agreed that the availability of digital resources will be affected when the library does not prepare and plan for disasters. Cumulatively therefore, the respondents agreed that the availability of digital resources will be affected when the library does not prepare and plan for disasters. This is supported by a mean of 1.59 and a standard deviation of 1.109. These results indicate that the digital collection will be rendered unavailable during a



disaster if a digital library does not prepare and plan well. According to Nwokedi, Panle and Samuel (2017) disaster in digital libraries can result in a sudden removal of information and sources of information from being accessed and being used. Due to the role played by libraries (acquisition, organization and information dissemination) it is without a doubt therefore that digital libraries will suffer catastrophically when its collection is suddenly removed baring access and use.

The respondents were asked if the occurrence of disaster will affect the consistency of service sustainability in the library. The question was important as it sought to establish if services in the library will be sustained in the occurrence of disaster. Most of the respondents (46.9%) strongly agreed that the occurrence of disaster will affect the consistency of service sustainability in the library. Another 21.9% agreed, 17.2% disagreed, 12.5% strongly disagreed while 1.6% were not sure. The responses are captured in Table 4.25.

**Table 4. 25: Effects of disaster occurrence on service sustainability**

	Frequency	Percent	Cumulative Percent
Strongly agree	30	46.9	46.9
Agree	14	21.9	68.8
Not sure	1	1.6	70.3
Disagree	11	17.2	87.5
Strongly disagree	8	12.5	<b>100.0</b>
<b>Total</b>	<b>64</b>	<b>100.0</b>	

Valid	64
Missing	0
<b>Mean</b>	<b>2.27</b>
<b>Std.</b>	<b>1.504</b>
<b>Deviation</b>	

**Key:** Ranked on a scale: 1.0-1.7(strongly agree); 1.8-2.5(agree); 2.6-3.3(not sure); 3.4-4.1 (disagree); and 4.2-5.0(strongly disagree)

The Table 4.25 show that majority of the respondents (46.9%) strongly agreed that the occurrence of disaster will affect the consistency of service sustainability in the library. Cumulatively therefore, most of the respondents strongly agreed that the occurrence of disaster will affect the consistency of service sustainability in the library. This is supported by a mean of 2.27 and a standard deviation of 1.504. These results indicate that the library will not be in a position to sustainable provide services because of the destruction caused by the disaster. This is supported by a study by Nwokedi, Panle and Samuel (2017) who established that sustaining services in the library will be a challenge once disasters have occurred. It will take considerable amount of time before the library can resume normal services. All this of course will depend on the level of disaster preparedness and how fast the recovery process is undertaken, together with the information resources which have been affected.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This section presents a summary of the outcome from the investigation categorized as per the objectives. The conclusion in relation to the outcome is also drawn and appropriate recommendations made in line with this study.

#### 5.2 Summary

First, to establish the level of disaster preparedness and planning in sustaining services at Egerton University digital library. The findings indicated that the level of disaster preparedness and planning at the digital library in Egerton University was low. According to the outcome, the library staff admitted that the digital library could experience disasters. The respondents admitted that the digital library was not exempted from disasters like any other organization or section within the University. The outcome pointed at an availability of awareness on the part of the library staff on the likelihood of experiencing disasters. The outcome showed that the digital library was at risk of disasters. Despite this, the digital library had no documented disaster preparedness plan of its own. The University wide disaster preparedness and planning policy also never covered the digital library. This implied therefore that the overall disaster preparedness and planning policy was developed without considering specific disaster needs of the digital library.

Second, to find out the disaster preparedness and planning training the staff have undergone in sustaining services at Egerton University digital library. The findings indicate that the training on planning and preparedness of disaster wasn't adequate.

According to the outcome, the library has not been keen in staff training on planning and preparedness in disaster. These results imply the lack of seriousness and support that is directed to the training of library staff in preparing and planning for disasters. This means that the library staff are either not completely trained or adequately trained in disaster preparedness and planning. In cases where disaster preparedness training was provided, then it did not consider the needs of the digital library as well as the personal needs of the library staff.

Third, to establish the disaster preparedness and planning equipment's that can sustain services at Egerton university digital library. The findings indicate that the equipment's related to planning and preparedness on disasters were not supplied adequately. This is due to the outcome of responses which pointed to unavailability of adequate disaster preparedness equipment's. Availability of disaster preparedness and planning in digital libraries is therefore a matter of concern. To be able to adequately prepare and plan for disaster, a library needs to arm itself with the necessary disaster preparedness equipment's. The few available disaster equipment's were also not strategically positioned within the digital library, therefore not making it possible to effectively tackle disaster when it happens. The available disaster equipment's were also found to be inappropriate for disaster preparedness. The findings showed that the library staff were not aware of the positioning of the disaster equipment's and they also were not aware of how to operate them. These results indicate that the library staff lack the prerequisite skills of operating the available disaster preparedness and planning equipment's thus if a disaster should occur, then they will in a position to fight it.

Fourth, to look into the problems experienced in the planning and preparedness for disasters in sustaining services at Egerton University digital library. The findings indicate that planning and preparedness of disasters was a challenge for digital libraries. The outcome shows that the digital library was having challenges of implementing the disaster preparedness plan due to insufficient funds. The library staff were also not taking seriously the disaster preparedness plan because they thought disaster will not occur in the library. Lack of support from management was another challenge being experienced. Another challenge expressed by the respondents was lack of adequate disaster preparedness training and inadequate availability of disaster preparedness equipment's.

Lastly, the study sought to find if disasters will affect provision of services at the digital library. The findings indicate that the in the event of disasters happening services of digital library will be affected. The outcome showed that services related to the digital library will be interrupted when a disaster strikes. This is because the availability of the digital resources will be affected hence rendering the services unavailable. The outcome showed that disasters will affect the consistency of service sustainability in the library.

### **5.3 Conclusion**

It was established that disasters were not exempted from occurring in digital libraries just as it wasn't in any part of other organizations. The library staff were aware of the likelihood of the digital library experiencing disaster, therefore the likelihood of the staff preparing and planning for these disasters. The library were also aware that the library was at risk of disasters though it never had a documented disaster preparedness

plan for the digital library. The organizations disaster preparedness policy also never covered the digital library.

The study established that training on members of staff within the digital library was not keenly addressed in regards to planning and preparedness of disasters. The disaster preparedness training never considered the needs of the digital library, the personal needs of the staff, nor the particular needs of the actual section in which the staff were allocated to within the library. This means therefore that the disaster preparedness and planning training did not considered training needs analysis when it was being developed.

The study concluded that equipment's for planning and preparing for disasters were not adequate within the digital library. This made it inadequately equipped for fighting disasters. The available disaster preparedness equipment's were not strategically positioned within the digital library hence not easily accessible when needed. The disaster preparedness equipment's were also not appropriate for tackling disasters. The library staff were also not aware of their availability and how to operate the disaster preparedness equipment's. The library staff lacked the prerequisite skills of operating the available disaster preparedness and planning equipment's thus if a disaster should occur, then they will in a position to fight it.

The study findings concluded that some of the things hampering the planning and preparedness of disasters included inadequacy of equipment's and funds together with staff training. The other challenge was lack of support from the management which is required in implementing a disaster preparedness plan. The library staff were not

adequately trained in disaster preparedness and the equipment's were not regularly serviced.

Based on the outcome of the study, it can be concluded service provision and sustainability would be affected in case of a disaster at the digital library. This is because the resources would become unavailable and it would result in interruption of services until the digital library can recover from that particular disaster. The library will not be in a position to sustainably provide services because of the destruction caused by the disaster.

## **5.4 Recommendations**

### **5.4.1 Policy recommendations**

- I. The management of the digital library together with the institution make available necessary support and training be accorded to staff manning the digital library on planning and preparedness of disasters. This can be done through offering a fair opportunity for staff at all the levels within the digital library to be trained on disaster preparedness and planning based on their needs and those of the digital library. A suitable training tool should be developed within the institution to be able to identify the specific needs of the digital library staff so as to directly provide content that is linked to their needs in relation to disaster preparedness and planning.
- II. A policy on planning and preparing for disasters be well developed and captured in relation to digital libraries and be part of the overall institutions policy on planning and preparedness of disasters. This will enable it gain the much needed seriousness and resources.

III. Training on planning and preparedness of disasters be developed in a mechanism that is regular, systematic and structured..

#### **5.4.2 Recommendations for further research**

This study was focused on disaster preparedness in relation to digital libraries. The study was also based on the library at Egerton University. It is important to have an overall view on disaster preparedness in relation to other academic libraries especially within public universities to have a clear picture. This study therefore recommends for a selective study encompassing a number of libraries within public libraries in Kenya. As it has been established by this study, finances play a significant role in implementing disaster preparedness plans. Public universities in Kenya are not as funded as the other private universities. This study therefore recommends a comparative study on this area to look at how prepared public and private universities are.



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## APPENDICES

### APPENDIX I: QUESTIONNAIRE FOR LIBRARY STAFF

Dear Respondent,

I am a Masters Student in the Department of Library & Information Science at Kenyatta University. I am currently conducting a research on **Evaluation of disaster preparedness and planning for service sustainability in digital libraries. Case of Egerton University library, main campus.**

I am hereby requesting for your assistance in completing the attached questionnaire, which will provide necessary information required for this study. You are free to withdraw from participating at any stage.

The information you provide will be used for the study only and will be treated with confidentiality and it will be beneficial to the researcher as well as the mentioned academic libraries.

**Kindly indicate your consent to participate below.**

Agree        [   ]            Disagree     [   ]

Signed .....

Your cooperation will be highly appreciated. Thanking you in advance.

Sincerely,

Linnet Oketch

For further information you may contact me at:     Tel: 0725517733

Email: [linet\\_humanist\\_movement@yahoo.com](mailto:linet_humanist_movement@yahoo.com)

**SECTION A: BIO DATA (tick as applicable)**

1. Gender: Male  Female
2. What is your age bracket
- 18-25 years
- 26-33 years
- 34-41 years
- Over 42 years
3. State your highest level of education.
- Certificate  Diploma
- Bachelors  Masters  PhD

**SECTION B: LEVEL OF DISASTER PREPAREDNESS AND PLANNING**

1. Please rate the level of disaster preparedness on a scale of 1-4 where 1 = Strongly Agree, 2 = Agree, 3 = Neutral/Not Sure, 4 = Disagree, 5 = Strongly Disagree.

Level of Preparedness				
	1	2	3	4
I am aware that the library can suffer from disasters.				
The digital library is at a risk of disasters.				
The library has a documented disaster preparedness plan.				
The disaster preparedness& planning policy covers the digital library.				
The library has been conducting drills to ascertain disaster preparedness& planning.				

**SECTION C: STAFF TRAINING ON DISASTER PREPAREDNESS& PLANNING**

2. Please rate the training of staff on disaster preparedness on a scale of 1-5 where 1 = Strongly Agree, 2 = Agree, 3 = Neutral/Not Sure, 4 = Disagree, 5 = Strongly Disagree.

Staff Training					
	1	2	3	4	5
The library has been keen on training its staff on disaster preparedness& planning.					
The training on disaster preparedness and & planning considers the needs of the library in preparing for disasters.					



The disaster preparedness & planning training considers personal needs of the library staff.					
The disaster preparedness& planning training methods applied consider the section of the library one works in.					

**SECTION D: DISASTER PREPAREDNESS EQUIPMENTS AND PLANNING**

3. Please rate the disaster preparedness equipment's on a scale of 1-5 where 1 = Strongly Agree, 2 = Agree, 3 = Neutral/Not Sure, 4 = Disagree, 5 = Strongly Disagree.

Disaster Equipment's					
	1	2	3	4	5
The library has adequate disaster preparedness& planning equipment's within the library.					
The disaster preparedness equipment's are strategically positioned within the library.					
The disaster preparedness& planning equipment's available in the library are appropriate.					
The disaster preparedness& planning equipment's are for different types of disaster.					
The library staffs are aware of where the disaster preparedness& planning equipment's are positioned.					
The library staffs know how to operate the various disaster preparedness& planning equipment's.					

**SECTION D: CHALLENGES OF DISASTER PREPAREDNESS AND PLANNING**

4. Please evaluate the challenges of disaster preparedness& planning on a scale of 1-5 where 1 = Strongly Agree, 2 = Agree, 3 = Undecided, 4 = Disagree and 5 = Strongly Disagree.

Level of Effectiveness					
	1	2	3	4	5
The disaster preparedness plan is difficult to implement because of insufficient funds.					
The library staffs do not take the disaster preparedness plan serious because they don't think disasters will occur in the library.					
The disaster preparedness plan is not being implemented due to lack of support from the management.					
Library staffs are not adequately trained on disaster preparedness.					
The available disaster preparedness equipment's are not regularly serviced.					

**SECTION E: EFFECTS OF DISASTER PREPAREDNESS& PLANNING ON SERVICE SUSTAINABILITY**

5. Please evaluate the effects of disaster preparedness & planning on service sustainability on a scale of 1-5 where 1 = Strongly Agree, 2 = Agree, 3 = Undecided, 4 = Disagree and 5 = Strongly Disagree.

Effects of Disaster Preparedness& Planning on Service Sustainability					
	1	2	3	4	5
In case of disasters, provision of services will be affected if the library does not prepare& plan for disasters.					

In case of disasters, the availability of digital resources will be affected when the library does not prepare& plan for disasters.					
The occurrence of disaster will affect the consistency of service sustainability in the library.					

**Thank You!**

## APPENDIX III: KU RESEARCH AUTHORIZATION



### KENYATTA UNIVERSITY GRADUATE SCHOOL

E-mail: [dean-graduate@ku.ac.ke](mailto:dean-graduate@ku.ac.ke)

Website: [www.ku.ac.ke](http://www.ku.ac.ke)

P.O. Box 43844, 00100  
NAIROBI, KENYA  
Tel. 8710901 Ext. 57530

Our Ref: E65/OL/NKU/27143/2015

DATE: 26<sup>th</sup> August, 2021

Director General,  
National Commission for Science, Technology  
and Innovation  
P.O. Box 30623-00100  
NAIROBI

Dear Sir/Madam,


**RE: RESEARCH AUTHORIZATION FOR LINET OKETCH REG. NO. E65/OL/NKU/27143/15**

I write to introduce Ms. Linet Oketch who is a Postgraduate Student of this University. She is registered for M.LIS degree programme in the **Department of Library and Information Science**.

Ms. Oketch intends to conduct research for a M.LIS Project Proposal entitled, "**Disaster Preparedness and Planning for Service Sustainability: Case of Egerton University Digital Library, Main Campus**".

Any assistance given will be highly appreciated.

Yours faithfully,

  
**PROF. ELISHIBA KIMANI**  
**DEAN, GRADUATE SCHOOL**



EK/nn

**APPENDIX IV: NACOSTI LETTER**



**REPUBLIC OF KENYA**

National Commission for Science, Technology and Innovation  
 Ref No: **134476**



**NATIONAL COMMISSION FOR  
SCIENCE, TECHNOLOGY & INNOVATION**

Date of Issue: **07/September/2021**

**RESEARCH LICENSE**



**This is to Certify that Ms. LINET ODHIL OKETCH of Kenyatta University, has been licensed to conduct research in Nakuru on the topic: DISASTER PREPAREDNESS AND PLANNING FOR SERVICE SUSTAINABILITY: CASE OF EGERTON UNIVERSITY DIGITAL LIBRARY, MAIN CAMPUS for the period ending : 07/September/2022.**

License No: **NACOSTIP/21/12720**

134476

**Applicant Identification Number**



**Director General  
NATIONAL COMMISSION FOR  
SCIENCE, TECHNOLOGY &  
INNOVATION**

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**Verification QR Code**

**APPENDIX V: TIMELINE**

<b>Activity</b>	<b>August - October 2019</b>	<b>January - April 2020</b>	<b>May - January 2021</b>	<b>February - March 2021</b>
Proposal Development - Chapter 1&3 - Data collection instrument				
Proposal Revision and Defense - Reviews by the supervisor - Amending the corrections given and proposal defense				
Data Collection - Carrying the field work by issuing the questionnaire to the respondents				
Data Analysis/Project write up - Coding using SPSS - Doing the analysis (Chapter four and five)				
Report Writing and Submission				

## APPENDIX VI: BUDGET

Activity	Amount (Kshs.)
Material collection (Literature)	10,000.00
Printing	3,000.00
Photocopying	5,000.00
Data Collection (Photocopying of questionnaire) - One research assistant	5000.00
Questionnaire coding (SPSS) and Data Analysis	25000.00
Report Writing	5,000.00
Binding and Dissemination	5000.00
Transport	2,000.00
<b>Total</b>	<b>60,000.00</b>