INTRODUCTION

CHAPTER ONE

Background to the Study

Disasters have affected human and natural resources for ages, they are events that disrupt the normal activities of organizations, institutions, and countries. Ottong (2013) defined a disaster as any incident which threatens human safety and damages or threatens to damage, a library's buildings, collections and equipment. Disaster is also described as an event that disrupts a community through loss of life, environmental damage, or economic impact that isbeyond the capacity of the community to respond (UNISDR, 2017).Disaster can be natural or man-made. Natural disasters are those events in the environment that occur suddenly within the ecosystem such as flood, hurricane, wind storm, earthquake, volcanic eruption, fire, drought, typhoon, tsunami, mudslide, extreme cold or heatwave. Man-made disasters are those caused or influenced by man, causing financial losses, risks, hazards and suffering such as war, explosives, liquid chemical spills and terrorism (Ottong, 2013). Disasters (both natural and man-made) lead to escalating disruption in human activities; loss of human lives, destruction of assets and businesses. They challenge institutions and governments causing chaos and bring about disruptions due to limited institutional capacity. However these could be managed by modern technologies

Modern technology is a body of knowledge devoted to creating tools, processing actions and the extraction of materials. The term 'technology" is widely used and everyone has his or her own wayof understanding its meaning. Technology is used to accomplish various tasks in our daily lives, in brief; technology can be described as products and processes used to simplify our daily lives. Technology extend our abilities, making people the most crucial part of any technological system. Modern Technology is also an application of science used to

solve problems. Technology and science are different subjects which work hand-in-hand to accomplish specific tasks or solve problems. (Fernald, 2014).

Disasters has affected libraries in different ways, however the sporadic hits of disasters in different segments of the society have not exempted libraries where a great amount of the nation's information wealth is stocked. Disaster in the university has to do with any event that directly or indirectly affects the smooth administration of a university library by disrupting its normal services to its users. It is an unexpected event which puts library resources or collections at risk. Various incidents of disasters have occurred in libraries worldwide with a magnitude of destruction to valuable information resources.

Water has damage libraries in different scenario, Danou (2014) stated that water damage has from time immemorial, been responsible for the destruction of life and property including library and archival materials. While it is true that hurricanes, tornadoes and floods are dramatic, violent particularly damaging, however, equally destructive to graphic records is the less dramatic intrusion of water into buildings from leaking roofs, faulty drains and air-conditioners. In 1987, the Federal Ministry of Education Library collections were destroyed due to leaking roof and in 1990 the National Library of Nigeria library was also affected as a result of flooding through ducts opened in the building during renovation work. Also, fire disaster appears to be the most common disaster in libraries especially accidental fire due to electrical faults, carelessness by either library staff or library users. Some cases of fire disasters in libraries include fire outbreak at the Department of Theatre Arts of the University of Ibadan, South-West Nigeria, and its library in 1995. Chisamba (2015) reported that in 2013, Islamic insurgents burnt down a library building containing thousands of historic manuscripts in Timbuktu. Some of the manuscripts dated back to the 13th century. More recently, in 2016, it was a sad and drastic moment for University of Jos when a

fireoutbreakdestroyed almost the library building, causing unimaginable destruction of all library resources (print and electronic) including computers and other ICT hardware and irreplaceable students' research reports.

Reports over the years show an alarming increase in levels of crime and Boko Haram terrorist attack, especially in North-Eastern Nigeria. Unfortunately, this situation is spreading across the other Africa countries, but deploying technology, through the use of ICT devices such as a computer, internet, mobile phone, close circuit television (CCTV), surveillance cameras, social network analysis, biometry surveillance, data mining, and satellite imagery devices, the modern technology would produce the desired results.

In the same lamplight, libraries have also experienced damages due to vandalism. Vandalism is an act of demolition of public properties. The antisocial activities of vandals often lead to wanton destruction of property usually public property, many include libraries and archival materials. There are two types of vandalism: ideological vandalism and conventional vandalism. Ideological vandalism involves destruction with a political motive, while conventional vandalism does not appear to have a motive (Kanini 2016). Furthermore, damage due to terrorism has become an issue and a major threat to libraries and other information centres worldwide. However, the September 11, 2001 bombing of the World Trade Centre, was as the result of the terrorist activities where many libraries were affected (Buchanan, 2002).

In Nigeria, terrorists who named themselves "Boko Haram" (meaning Western education is forbidden) are greatly causing havoc to the whole country especially in the extreme North where bombing and kidnapping are so common in North east were library users hardly visit the libraries. (Davou, 2014). Biological agents like insects, fungi and rodents cause damages to books and other library materials particularly in tropical Africa (Alegbeleye, 1993). There are over 70 varieties of insects that have been identified as

enemies of library materials. The most common of these pests are cockroaches, silverfish, termites and moths. Termites feed on grass, hummus, woodwork, library buildings, library books, files, catalogue cards and photographs. When they invade a library, they can do serious damage in a single night. Termites have destroyed libraries and archival materials in tropical countries.

The advent of electronic resource in libraries has increased the occurrence of disasters caused by technical and technological factors. These could include hampering of library operations and loss of vital data caused by such technical factors as hacking into library online records, virus damage to records, systems crash and breach in computer security systems. Equally, in today's world where there is high premium on electronic access to information, an electronic disaster caused by loss of human knowledge is posing a new form of risk for libraries. According to Zuniga (2012), floods, fires, and other perilous situations, although rare, do occur, and most libraries have plans in place to manage them. Employee turnover, on the other hand, happens regularly, yet many libraries are unprepared for the subsequent loss of knowledge, data and information. This may be an especially serious problem when an electronic resources librarian leaves because these librarians possess not only institutional history, but also procedural and technical information that helps keep a library's electronic resources up and running.

Disasters can be tremendous and needs all strategies to prevent or mitigate their effects. Ugwu (2015). Defined disaster management as the actions taken by an organization in response to unforeseen or unexpected events that adversely affect the environment and people in the area surrounding that organization. Disaster management focuses on ways to prevent disaster from happening or reduce the consequences when it happens. Disaster management in libraries focuses on ways to prevent disaster from happening or reduce the consequences when it happens. Disaster management in libraries in the view of Haigh (2012)

has four phases (disaster management lifecycle). These are mitigation; preparedness; response; and recovery. Mitigation is the first phase of disaster management which is aimed to minimize the effects of the disaster in academic libraries, archives and all information centres. Mitigation is the action to reduce the consequences of a disaster impact such as injuries and loss of life and properties, since it may not be possible to prevent all disasters. This phase is also known as pre-disaster mitigation. At this phase, the focus is on meeting the basic needs of the people until more permanent and sustainable solutions can be found. Preparedness focuses on the efforts put in place to prevent the occurrence of a disaster and how to fight or control the impact when it happens.Recovery is the fourth phase of disaster management and is the restoration of all aspects of the disaster's impact on a community and the return of the local economy to some sense of normalcy, including saving lives, meeting humanitarian needs (food, shelter, clothing, public health and safety), and supporting the morale of the affected population (Rosenberg, 2013).

Conversely, the traditionalapproaches in reducing the severity of natural disasters have created the need for the application of modern technologies in disaster management in libraries. A technological approach to disaster management helps to minimize the impact of disasters by reducing the magnitude of the loss of human and material resources. Technological advancements, especially concerning modern technologies, have provided a real yardstick to warn, prepare, share and respond, quickly to a disaster for minimizing its impact and in some cases it is even possible to avoid the damages by a natural disaster, (Rattan 2013). The following technologies are used in the reduction of damage by disasters: Geographic Information System **(**GIS) can be used in carrying out search-and-rescue operations in a more effective manner by identifying areas that are disaster-prone and zoning them according to risk magnitudes. It is used in giving users information on the hazard areas in the library so that users will not make use of the affected areas**.** The exact damage site can

be visited to start rescue operations. This can be very effective for search and evacuation of displaced people or people buried under debris. This is used in the library in telling the users the exact place of an incident. Warning and Forecasting Systemplays a vital role in determining the possible action of a disaster. The potentially affected area can be evacuated and people can be moved to safer places even before the disaster. It is effective for floods and cyclones. Earthquake Warning System is being used these days to warn people against its possible strike.

Other modern technologies for disaster management in libraries include thermal detectors which are sensors mostly used for enclosed areas and detect rapid heat rise. They are two types: fixed temperature detectors sound an alarm when a pre-determined temperature is high it will sound as an alarm when the temperature rises more rapidly than would normally be expected. It is installed in the library to serve as an alarm device in case of any disaster. Photoelectric detectorsactivate an alarm when visible smoke particles interfere with the passage of light to a sensing cell within the device. A detection system should be sensitive, reliable and easy to maintain.Automatic fire suppression systems are universally accepted as the most effective defence against fire. More than 80 per cent of library fires can be controlled by fewer sprinkler heads. However, it is also essential to have a ready supply of handheld fire extinguishers. Closed Circuit Television (CCTV) is used in libraries to monitor the student activities and their behaviour in the library. The common mischievous activities in the libraries like tearing of the pages from the books, hiding the books, sitting in corners and gossiping and book theft can be reduced to a great extent. A metal detector is used in checking any type of dangerous gadget at the entrance of the library, to protect the information resource. Also, there are different types of fire extinguishers and the relevant one must be available in the event of a fire. Type A, a water-based extinguisher, is for

combustible materials,such as paper or wood, Type B, a carbon dioxide-based extinguisher, is for electrical fires or flammable liquids, and, Type C is a comprehensive extinguisher.

Though, Howard, (2003) refers togender as socially constructed characteristics of women and men such as norms, roles and relationships of and between groups of women and men. It varies from society to society and can be changed. While most people are born either male or female, they are taught appropriate norms and behaviours including how they should interact with others of the same or opposite sex within households, communities and workplaces. While working experience is the knowledge of an event gained through involvement in the activity or exposure to it. Terms in philosophy such as empirical knowledge or a posteriori knowledge" are used to refer to knowledge based on experience. A person with considerable experience in a specific field can gain a reputation as an expert. The concept of experience generally refers to know-how or procedural knowledge, rather than propositional knowledge: on-the-job training rather than book-learning.According toWeare (2015), academic librariansrefer to those who obtained first degree and above in library and information science, work to make academic information and knowledge resources accessible to students and staff. As an academic librarian, you'll manage, organize, evaluate and disseminate information, providing support to members of an academic community including students, researchers and academic staff.Academic librarians are available to assist all university staff and students, offering specialist advice on any information related query including academic skills, referencing, conducting a literature review and getting published.

In conclusion, it shows that the use of modern technology in disaster management in university libraries is to mitigate the impacts of these unforeseen calamitous events. Libraries must be prepared for all types of disasters, whether natural or man-made, that may occur, as the effect of not being prepared may lead to loss of materials, loss of life, disruption of organizational activities or ultimately, the loss of the library building. For any library to be

fully prepared for a disaster, the staff must be aware of the possibility of a disaster. They must also be aware of the necessary measures needed to be taken to prevent the disaster from causing too much damage. Rosenberg (2013) observed a significant relationship between awareness and adoption of modern technology in disaster management. Thus, the awareness of modern technology in disaster management goes a long way to affect their adoption. Besides the awareness of modern technology, the ability to use the technology in managing disaster effectively also affects the use. Lack of awareness implies ignorance which consequences could be fatal.

Similarly, gender and age can also influence the use of this technology in the sense that the younger ones may have the knowledge and skills of using the technology than the older ones, besides, the female staff may be scared of using some of this technology in disaster management.Now that we have seen some of the impacts of technology in modern life, it is our responsibility to use technology to improve our lives, but we also have to make sure that we preserve our society and environment, if we don't control the usage of technology, we shall end up harming both the society and environment.

Statement of the Problem

Libraries are referred to as the heart or nerve centres of the institutions. Materials in the libraries are vulnerable to a disaster of various kinds, such as fire, flood, pests destructions, windstorm and computer viruses. They usually leave in their trail very unpleasant experiences. Effective disaster preparedness in these libraries is necessary. The disaster management preparedness would safeguard the institutions from losing their library materials, as the effect of not having disaster management measures in libraries would cause them to lose their materials when disaster strikes. However, the particular circumstance of disasters in libraries is that they may bring about extensive damage or loss of information resources which is valuable in daily lives.

Library resources constitute significant component in every university's institutional memory and knowledge base. They also help to transmit information from one generation to another. These resources are utilized by staff, students and researchers to facilitate teaching, learning and research. Library resources also make significant impact in the lives of individual members of the society, resulting from their historical, legal and administrative values. Considering the importance of these resources therefore, there is need to ensure that they are properly maintained as a precursor to ensuring their sustainability. Any library that loses its resources faces the danger of losing human treasures in form of recorded history. From time immemorial, the existence of libraries and their resources have been endangered by flood, fire, biological agents, delinquent users, weather conditions as well as poor weather conditions. In recent times, the advent in technology has given rise to Information and Communication Technology (ICT) facilities used in information generation, processing, preservation and accessibility. These facilities are sometimes prone to attack by virus and other external threats, thereby exposing the digital resources stored in them to damage. ICT has also resulted in the manufacturing of dangerous weapons used by terrorists in destroying organizations and institutions like libraries. In the light of the above development therefore, there is need for librarians to ensure that the resources are protected from destruction.

Purpose of the Study

The main purpose of this study are to ascertain the awareness and adoption of modern technologies in disaster management in Federal university libraries in North-East Nigeria. Specifically, the study sought to determine:

1. librarians awareness of modern technologies used in disaster management in libraries
2. adoption of modern technologies for disaster management of water and windstorm-related disasters in federal university libraries in North-East Nigeria

3. adoption of firefighting equipment for disaster management of fires disasters in federal university libraries in North-East Nigeria
4. adoption of modern technologies to safeguard vital records in libraries in federal university libraries in North-East Nigeria
5. use of an electronic resource management system to safeguard electronic resources in federal university libraries in North-East Nigeria
6. adoption of a surveillance system for managing disaster arising from vandalism in federal university libraries in North-East Nigeria
7. adoption of modern technologies to manage disaster that emanate from terrorism in federal university libraries in North-East Nigeria
8. adoption of modern technologies to manage disaster that emanate from biological agents in federal university libraries in North-East Nigeria.
9. whether significant difference exits in male and female librarian's awareness of modern technologies in disaster management in federal university libraries in North-East Nigeria.
10. whether significant difference exits in librarian's awareness of modern technologies based on years of working experience in disaster management in federal university libraries in North-East Nigeria
11. whether significant difference exits in male and female librarian's adoption of modern technologies in disaster management in federal university libraries in North-East Nigeria.
12. whether significant difference exits in librarian's adoption of modern technologies based on years of working experience in disaster management in federal university libraries in North-East Nigeria.

Significance of the Study

The study aimed at determining librarians' awareness and adoption of modern technologies for disaster management in Federal University Libraries in North-East Nigeria. This study would be of significant benefits to some stakeholders namely, the university management, librarians, government agencies, library science department, Non-Governmental Organization (NGO), other public libraries in Nigeria, as well as preservation and conservation section of the Nigeria Library Association(NLA), and researchers.

University management are expected to benefit from the study as the findings will highlight techniques and identify modern technology equipment in controlling disaster in their various libraries. However, the university management will know the types of modern technology to purchase in the library. In addition during orientation programmeof newly admitted students the library staff will educate them on how to make use of the technological facilities in the library

Library science department will benefit from the findings of the study as they will serve as a guide in developing curriculum, particularly for schools, colleges and universities.The curriculum will be used in teaching library science student to have a prior knowledge of disaster management before graduating.

Government agencies will benefit from the findings of this study as they will serve as a reference document, by drawing up a disaster management plan and policies that will be implemented in the whole parastatals in Nigeria.

Among other beneficiaries from the government agencies is the National Emergency Management Agency (NEMA).The finding will provide them with a strategic plan on how to mitigate disaster and also equip them with modern technologies for controlling disasters. This will help them in early preparation before the need arises.

Researchers and scholars will benefit from the findings of this study as they will highlight to them the necessity of using modern technologies for disaster management in university libraries in terms of danger. Finally, the outcome of the study will add to the existing literature on the use of modern technologies in disaster management and disaster preparedness

Scope of the study

The study was delimited to the awareness and adoption of modern technologies for disaster management in a federal university in North East Nigerian. The study focused on awareness and adoption of modern technologies for disaster management practices as it relates to disasters emanating from water and windstorm, fires, vital records, electronic resources, vandalism, terrorism, and biological agent. The study excluded examining the use of manual practices for disaster management. This was investigated from academic librarians in six Federal University Libraries in North-East Nigeria thus other supporting staff are excluded from the study.

Research Questions

The following research questions guide the study:

1. What are the librarians' awareness of modern technologies used in disaster management in libraries?
2. What are the modern technologies adopted for disaster management of water-and windstorms related disasters in Federal University Libraries in North-East Nigeria?
3. What are the types of firefighting equipment adopted for disaster management of fires disasters in Federal University Libraries in North-East Nigeria?
4. What the types of modern technologies adopted to safeguard vital records in libraries in Federal University Libraries in North-East Nigeria?

5. What are the modern technologies adopted to safeguard electronic resources in Federal University Libraries in North-East Nigeria?
6. What are the surveillance system adopted for managing disaster arising from vandalism in Federal University Libraries in North-East Nigeria?
7. What are the modern technologies adopted to manage disaster that emanates from terrorism in Federal University Libraries in North-East Nigeria?
8. What are the modern technologies adopted to manage disaster that emanates from biological agents in Federal University Libraries in North-East Nigeria?
9. What are the significant difference that exits in male and female librarian's awareness of modern technologies in disaster management in federal university libraries in North-East Nigeria?
10. What are the significant difference that exits in librarian's awareness of modern technologies based on years of working experience in disaster management in federal university libraries in North-East Nigeria?
11. What are the significant difference that exits in male and female librarian's adoption of modern technologies in disaster management in federal university libraries in North-East Nigeria?
12. What are the significant difference that exits in librarian's adoption of modern technologies based on years of working experience in disaster management in federal university libraries in North-East Nigeria?

Hypotheses

The following null hypotheses was tested at 0.05 level of significance

1. Librarians' awareness of modern technology to safeguard vital records in university libraries will not be dependent on gender.

2. There is no significant difference in the mean responses of male and female academic librarians on modern technology adopted to safeguard vital records in university libraries.

3. Librarians' awareness of modern technology to safeguard vital records in university libraries will not be dependent in years of experience.

4. There is no significant difference in the mean responses of academic librarians on modern technology adopted to safeguard vital records in university libraries based on years of working experience.

5. Librarians' awareness of electronic resource management systems adopted to safeguard electronic resources will not be dependent on years of experience..

6. There is no significant difference in the mean responses of male and female academic librarians on electronic resource management systems adopted safeguard electronic resources.

7. There is no significant difference in the mean responses of academic librarians on electronic resource management systems that can be adopted to safeguard electronic resources based on years of working experience.

8. There is no significant difference in the mean responses of male and female academic librarians on the types of surveillance system that are adopted in managing disaster arising from vandalism.

9. There is no significant difference in the mean responses of academic librarians on the types of surveillance system that can be adopted in managing disaster arising from vandalism based on years of working experience

10. Librarians' awareness of types of surveillance system adopted in managing disaster arising from vandalism will not be dependent on gender.

11. Librarians' awareness of types of surveillance system adopted in managing disaster arising from vandalism will not be dependent on years of experience

12. There is no significant difference in the mean responses of male and female academic librarians on modern technology adopted in managing disaster that emanate from terrorism.

13. There is no significant difference in the mean responses of academic librarians on modern technology that can be adopted in managing disaster that emanate from terrorism based on years of working experience.

14. There is no significant difference in the mean responses of male and female academic librarians on modern technology adopted in managing disaster that emanate from biological agents.

15. There is no significant difference in the mean responses of male and female academic librarians on modern technology adopted in managing disaster that emanate from biological agents in North-east based on years of working experience.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

In this chapter, the literature related to the subject of this investigation will be reviewed under the following subheadings;

Conceptual Framework

Awareness

Adoption

Disaster

Management

Modern Technology

Theoretical Framework

Dynamic Awareness Theory by Riemer and Haines (2008)

Technology Acceptance Model (TAM) by Davis (1989)

Theoretical Studies

Awareness of modern technologies used in disaster management in libraries

Modern technology for disaster management of water and windstorm-related disasters

Firefighting equipment for disaster management of fires related disasters

Adoption of modern technology to safeguard vital records in libraries

Electronic resource management system to safeguard electronic resources

Surveillance system for managing disaster arising from vandalism

Modern technology to manage disaster that emanates from terrorism

Modern technology to manage disaster that emanates from a biological agent

Empirical Studies

Librarians' awareness of modern technologies used in disaster management in libraries.

Adoption of modern technology for disaster management of water and windstorm-related disasters.

Adoption of firefighting equipment for disaster management of fires related disasters.

Adoption of modern technology to safeguard vital records in libraries.

Use of electronic resource management system to safeguard electronic resources.

Adoption of a surveillance system for managing disaster arising from vandalism.

Adoption of modern technology to manage disaster that emanates from terrorism.

Adoption of modern technology to manage disaster that emanates from a biological agent.

Summary of Review of Related Literature

Conceptual Framework

The key concepts in this study are considered as follows:

Awareness

In the view of Adams (2010) awareness means knowledge and knowledge is seen as an understanding of how the everyday world is constituted and how it works. Awareness can also be seen as a state of ability to receive, know, to feel or to be conscious of events, objects or sensory patterns. The above definition, therefore, contains three keywords events, objects and sensory patterns. Events mean the focus of cognitions or feelings and sensory pattern involving or derived from the sense in which a model is considered worthy of imitation when any event or technology come new, it is awareness that will help to bring its development and also its importance. Without the term awareness, so many things could go wrong leading to a state of ignorant society or dispensation.

In connection with this, Mimin (2013) avers that awareness means a common knowledge or understanding about social, scientific or political issues. Individual, as well as users, need awareness for them to know things happening around them, it is awareness that will keep somebody relevant in this world where information and knowledge are fast becoming prerequisite for every society. Having explained awareness above, based on other people's ideas, the researcher summarily sees awareness as a state of not being "ignoramus" but simply launching oneself into an environment of being knowledgeable. Awareness is defined as knowing something from observation or information received about it. It means knowing that something exists and a person is considered aware if he is informed, notice or realize something. For instance, if somebody is well-informed, about the latest changes in library rules, it means the person is aware of the new library rules. However, awareness can be defined as knowledge that something exists, or understanding of a situation or subject at present based on information or experience. From this definition, it is evident that awareness can simply denote the human cognitive ability to recognize and recall fact, events and circumstance.

Adoption

Adoption is a decision toembrace aninnovation and to make use of the innovation as the best course of action available (Leeuwis, 2003). Adoption is the act of taking something on as your own. Adoption usually refers to the act of embracing ideas or habits (Rodgers & Shoemaker, 1971). The authors further explained that adoption entails making full use of a new idea as the best course of action available. In the context of this study, adoption is defined as the act of embracing an innovations, ideas that could be used in disaster management.

Disaster

Disaster is defined differently by different authors. According to Davou (2014), disasters are unexpected events which put people and materials at risk, damage buildings, destroy information and communication infrastructures, disrupt services and render documentary materials inaccessible to users. They are sudden adverse or unfortunate extreme incidents which cause great damage to human beings, materials as well as plants and animals. According toWaweru (2014), disaster is an unexpected occurrence whose effects are negative and have lasting impacts on the operations of the firm.

Ahenkorah-Marfo and Borteye (2010),disaster is a common phenomenon that can and will happen when least expected. They emphasized that disaster often comes unannounced and uninvited with disastrous consequences. A disaster is an occurrence that causes widespread destruction and distress, nevertheless, disaster is an unexpected event which puts people and materials at risk, damage buildings, destroy the information infrastructure, disrupt services and render documentary materials inaccessible to users**.** Operationally, disaster is also described as an event that disrupts a community through loss of life, environmental damage and economic impact that isbeyond the capacity of the community to respond. They can occur in the form of flood, fire, drought, extreme cold or heat wave. They can also occur in the form of leaking roofs, explosives, liquid chemical spills, building deficiencies, terrorism, pests, insects, data alteration, viruses' injection, tempering with the password, server destructions.

Modern Technologies

Modern technologies is defined as an advancement of old technologies with new addition and modification, however, modern technologies can potentially play a pivotal role in disaster prevention, mitigation and management (Zlatanova, 2015). Modern Technology is defined as a body of knowledge devoted to creating tools, processing actions and the

extracting of materials (Paul, 2016). This is the use of modern technologies in the application of techniques, systems, processes and skills to solve complex human challenges and problems. Fernald (2014) defined the term as the "Ability to convert society's resources (labour and capital) into output (goods and services that we value)". Similarly, Thiel (2014) defined modern technology as any new and better way of doing things. In the view of Arthur (2009), sketched two out of three conceptions of modern technology which are:

1. Modern technology as an assemblage of practices and components.
2. Modern technology as the entire collection of devices and engineering practices available to a culture. In the field of librarianship, any process or technique that makes library operations faster is known as information technology.

Modern technology is the use of modern skills and modern equipment to perform any task within less time and with proper results (Khulaifi, 2002). In the view of the researcher, modern technology can be defined therefore as any form of technology that speeds up the rate at which information is created, edited, disseminated and stored as well as used in managing disasters in the library.

Disaster Management

The International Federation of Red Cross and Red Crescent Societies(2017) defined disaster management as the organization and management of resources and responsibilities for dealing with all the humanitarian aspects of emergencies, in particular, preparedness, response and recovery to lessen the impact of disasters. Disaster management involves several aspects comprising of disaster vulnerable area mapping, the proper understanding of type and degree of causative parameters involved, mitigation or prevention planning, assessing damages caused by the disaster and rehabilitation.

On the other hand, disaster management, according to Tatum (2010) is a process or strategy that is implemented when any type of catastrophic or event takes place, sometimes referred to as “disaster recovery management”. The process may be initiated when anything threatens to disrupt normal operations or puts the lives of human beings at risk. Governments at all levels, as well as many businesses, create some sort of disaster plan that make it possible to overcome the catastrophe and return to normal function as quickly as possible, however, a truly comprehensive disaster management plan will encompass a wide range of possibilities that can easily be adapted in the event of a disaster.

Disaster management, according to Taabu (2014), is a collective term that encompasses all aspects of planning and responding to emergencies in the event of disasters, these including both pre- and post-event activities. It refers to the management of both the risk and the consequences of an event. In essence, disaster management is more than just response and relief; it is a systematic process aimed at reducing the negative impact and/or consequences of adverse events. It is therefore evident that libraries, archive and museums have for many years been concerned about the issues of risk and disaster that destroy library collection due to a wide number of factors affecting libraries around the world through man-made and natural causes. The main goal of disaster management in this study is to design a disaster policy that will reduce disaster risk and prevent them by proper infrastructure and systems detection of possible threats. Disaster management in thecontext of this study is the development of disaster policies, which is described as a set of predetermined actions, which will reduce the possibility of a disaster happening and further also reduce the extent of the damage likely to occur should a disaster strike.

Theoretical Framework

The Reimer-Haines' Dynamic Awareness Theoryand Technology Acceptance Model (TAM) theory have been found related and selected for the present study.

The Reimer-Haines' Dynamic Awareness Theory

This study is supported by the Dynamic Awareness Theory (DAT). The theory was advocated by Riemer and Haines in 2008. The Dynamic Awareness Theory stated that there are four elements, namely; mechanism and the role of technology in the process of awareness. DAT suggests that a person's awareness is not in a static state which can be arbitrarily turned on and off rather a slow build-up of information about hissurroundings.Regarding instant messaging as an example, before the actual communicatio n process takes place, one must feel that the other person is capable of receiving and responding. Once a response is received, the presence of the other is confirmed and as the conversation continues, this feeling will increase in intensity On the other hand, if no more messages are received, the feeling of the other's presence can vanish quickly. DAT holds that awareness develops gradually overtime meaning there are different levels of awareness and that such awareness depreciates when not actively attended to by users which refer to the application of awareness.

This principal statement of DAT is that awareness depends on a person's affinity to communicate habits as well as communication technology. Awareness in mediated communication builds and diminishes. By communicating intensively via mediated means, DAT holds that one gathers enough information about other environment and that is unique to every participating individual. Though, technology plays a vital role in the process of awareness creation.

This theory is related to the present study as it emphasizes that effective communication on disaster management through the use of modern technology proves that the importance of modern technology cannot be overemphasized. The dissemination of information in one way or the other affects the library user either positively or negatively, this entails that the awareness and adoption of modern technology in disaster management will enhance the use of modern technology and can be accepted and used in university libraries.

Technology Acceptance Model (TAM)

The theory used for this study is the Technology Acceptance Model (TAM) devised by Davis (1989). TAM theory of how users come to accept and use technology. This model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it notably; Perceived Ease of Use (PEU) as defined by Davis cited in Wikiversity (2011) is the degree to which a person believes that using a particular system would be free from effort; Perceived usefulness (PU) according to Davis cited in Wikiversity (2011) is the degree to which a person believes that using a particular system would enhance his/her job performance. PEU may be influenced by two factors: the "availability of training and support" and "perceived accessibility" of the new technology (Karahanna & Straub 1999). PEU is alsoinfluenced by technology self-efficacy, objective usability, and direct experience (Venkatesh & Davis 1996). PU may be influenced by three factors: the availability oftraining and support; the social presence of the technology through communication channels; and the social influence to use the new technology (Karahanna & Straub 1999).

TAM suggests that the actual use of the system is determined by the users' behavioural intentions to use the system, which in turn jointly determined by the users' attitudes towards using the system and their perceived usefulness of the system (Davis, Bagozzi and Warshaw cited by Saade, Nebebe and Tan 2007). Attitude towards use is the

evaluation of the desirability of employing a particular information system while behavioural intention to use is a measure of the likelihood of a person to employ the application. Attitude is a determinant of whether the user will use or reject the system. The attitude of the user, in turn, was considered to be influenced by two major beliefs: PEU and PU with PEU having direct effect influence on PU. Davis, Bagozzi and Warshaw cited in Chutter 2009 conducted a longitudinal study to measure users' intentions to use a system and reported that both PEU and PU have a direct effect on behavioural intention.

This study is based on theTechnology Acceptance Model (TAM). The research proposes that the adoption and use of technology are mediated by two beliefs: Perceived Ease of Use (PEU) and Perceived Usefulness (PU). PEU refers to the degree to which academic librarians believe that using modern technology would be free of effort and PU is the degree to which academic librarians believe that using modern technology would enhance their job performance. Their attitude toward the use and behavioural intentions to use will be formed as they believe that modern technology is useful and also believe in a positive use performance relationship.

Davis (1989) in his technology acceptance model argues that the degree to which a person feels that the technology will require little or no effort determines perceived ease of use. Perceived usefulness, on the other hand, is the degree to which a person believes that a particular technology can enhance performance such as time and output efficiency (Lederer, 1998). Therefore, if there seems to be added value to a process, individuals are more likely to accept technology

TAM was first introduced by Davis (1989) to predict individual adoption and use of new information technologies. It is an adaptation of the Theory of Reasoned Action, in that the model posits that belief determines behavioural intentions which determine behaviours.TAM differs from the theory of Planned Behaviours in that it accounts for the fact

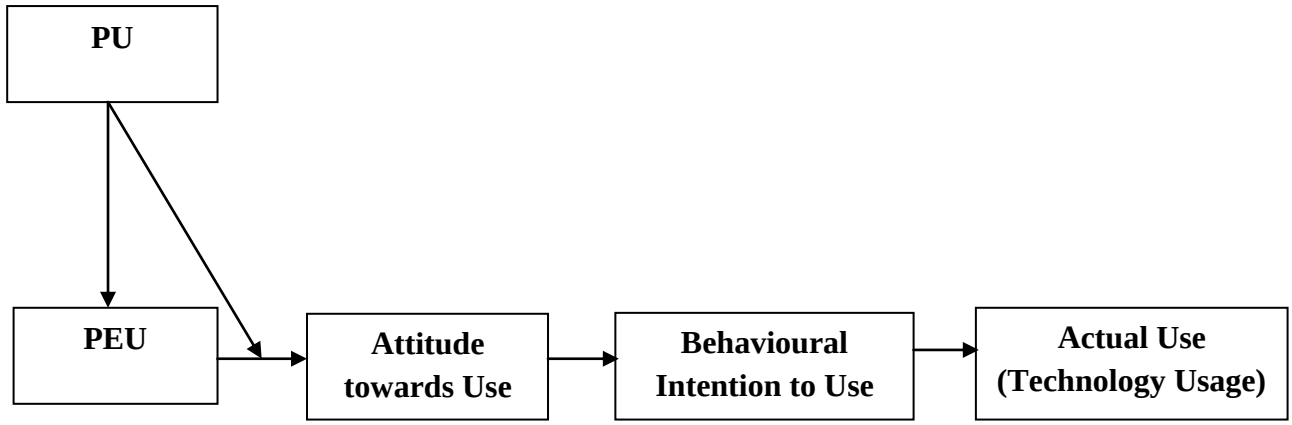
that in Organisational settings, the adoption of technology is not determined solely by the user's belief (Saade, 2003). TAM posits that individual's behavioural intention to use an IT is determined by two beliefs:

Perceived Usefulness (PU) The extent to which a person believes that using a technology will enhance his or her performance, thus using Modern technologies in disaster management in university libraries will enhances the librarian's to manage disaster in a more effective and efficient manner and at the same time improved the skills and competencies of the librarian in management disaster.

Perceived Ease of Use (PEOU) The degree to which a person believes that using technology will be free of effort. As such the use of technology in the library reduces much of the traditional method of managing disasters in libraries. In other words it will go a long way in save guarding library resources in terms of disasters, however, technology will render services at the appropriate time without undue and unnecessary delay in the event of a disaster.

Over the years there have been massive developments and advances in hardware and software capabilities but the problem of underutilization of these ICT systems has been identified as a major factor underlying the "productivity paradox from organizational investments in information technology (Sichel 1997). This issue has led to a lot of IT research with the main objective of assessing the value of using information technology to an organization and understanding the determinants of that value (Taylor & Todd, 1995). One of the theories that best explain general ICT use is the technology acceptance model (TAM). This theory and others have been confirmed by Meso, (2005) as important in any global study that has to do with assessing the impact of ICT and its use. Current research uses TAM to explain the general use of ICT.

Technology Acceptance Model (TAM)



(Source: Adopted from Venkatesh and Davis, 2000, and modified)

Librarian Perceived Ease and Use of Technology in Disaster Management

An element of uncertainty exists in the minds of the librarian concerning the successful adoption of these technologies in the libraries. Attitude towards usage and intentions to use these technologies may be ill-formed or lacking. This actual usage may not be a direct or immediate consequence of such attitudes, and intentions (Davis, 1989). Davis developed a theory of Technology Acceptance Model based on the works of Fish Bein and Ajzen (1992) why some people use technology and their attitude towards them. Technology Acceptance Model (TAM) according to Davis (1989) is an information system theory that models how users come to accept and use technology.

The model suggests that when users are presented with a new technology several factors influence their decision about how and when they will use it. These factors are known as an external variable which includes opinions of a fellow librarian, pressure from society with the rapid growth in the use of technology. Perceived Usefulness (PU) was defined by Davis (1989) as the degree to which a person believes that using a particular system would enhance his or her performance. Some of the factors which contribute to the librarian'

Perceived Usefulness of disaster are Positive and negative factors influencing perceived usefulness. Consequently, the more librarian's perceive technology as being useful, the more he/she will be willing to adopt it and utilize it. Applying perceived usefulness and perceived ease of use to technology utilization by librarian's is important to say that the easier and user-friendly the technology tool is, the more it will be adopted, the more it will be able to communicate information and the more the students and teachers will regard it as useful

Technology Acceptance Theory and Dynamic Awareness Theory

Technology Acceptance Model and Dynamic Awareness Theory are alike in terms of constructs and sometimes complement each other in the study of Dynamic Awareness Theory. In retrospect to Lee (2011) suggestion, earlier studies by Carter and Belanger (2005) have indicated that Technology Acceptance Model and Dynamic Awareness Theory exhibits a certain degree of overlap when applied to understand dynamic awareness theory of technology. The two theories work intertwine that is Technology Acceptance Model and Dynamic Awareness Theory are both important because they share similar characteristics and factors that affect technology awareness **and** adoption

Theoretical Studies

Librarians Awareness of Modern Technologies Used in Disaster Management in Libraries

Geographical Information System technology plays a critically important role in disaster management, Ugwu. (2015), stated thatawareness of GIS technologies can help in disaster management, GIS can provide current weather indexes based on location and surrounding areas. Wind information is relevant in predicting the movement of chemical cloud release or anticipating the direction of wildfire spread upon the early report. Also, earthquake, reservoir level at dam sights, radiation monitors and so forth can all be monitored and displayed by location of GIS. Such modern technologies like: Satellite communication

networks, Geographic Information system (GIS), remote sensing technology and fire suppressants are needed for disaster management in libraries and other institutions (Sahu, 2009). Satellite communications are very vital in disaster mitigation. One way of improving the chances that an emerging link will remain operational during a disaster is to connect it to the satellite. This is because satellites are the only wireless communications infrastructure that is not susceptible to damage from disasters because the main equipment that sends and receives signals (Satellite Space Craft) is located outside the earth's surface.

Imran, in Merriam-Webster (2018) stated that AI awarenessmodern technologies can be used in disaster management, Artificial Intelligence (AI) is a branch of computer science that deals with the simulation of intelligent behaviour in computers. These machines or computers operate equally well in processing either numbers or symbols. In disaster response, AI can be used to classify messages on social media during a humanitarian crisis. For example, Artificial Intelligence for Disaster Response (AIDR) ingested data from Twitter and processed by using machine learning classification techniques and crowdsourcing in real-time. This system successfully classified informative versus non-informative tweets during the 2013 Pakistan Earthquake. Venkatachary, in Sahu, Ugwuanyi, Ugwu, and Ezema. (2015) stated that,awareness of (GEO) technologies can assist in disaster management, they are two kinds of satellite communications networks support disaster management and emergency response activities, namely: geostationary satellite systems (GEO) and Low – earth orbit satellite (LEO). GEO satellites are capable of providing a full range of communication services, such as voice, video, and broadband data. These satellites operate with ground equipment ranging from gateway antennas to mobile terminals, the size of the cellular phone. LEO satellites operate in orbits between 780km and 1500km and provide voice and low-speed data communications. Even before disaster strikes, these networks are used to provide seismic and flood-sensing data that makes it possible for early warning of an

impending crisis. They also broadcast disaster warning notices and facilitates general communication and information flow

Rattan (2017) stated that awareness of remote sensing technology, geographic information system, global positioning system, forecasting and warning system, communication technology and the internet can be used in managing disasters. Unfortunately, the data collecting tools in meteorological stations, for example, are not updated as required. The level of accuracy when predicting weather patterns remains low. The media has been portraying how many people in Africa lose confidence in alerts raised by meteorological departments, even sometimes to their hazard. Governments have in some cases failed to put up control mechanisms for potential disasters when early signs are detected. In Kenya for instance, the government set apart funds to mitigate the possible effects of El-Nino rains early in the year 2016. Many of the counties, however, failed to carefully utilize the funds by putting up structures that would minimize the effects of flooding, such as the construction of proper drainage.

Yap in Hassan (2015)stated thatlibrarian awareness of ICT in the form of Internet, GIS, Remote Sensing and satellite-based communication links can help a great deal in planning and implementation of disaster risk reduction (DRR) measures. However, technological change is posing a particular challenge to the librarian in developing countries like Nigeria. Librarians face a challenge of working environment where change is driven by skills, technological innovation and growing client expectations. To provide effective services demands the willingness of librarians to adapt to these realities. However, Yap in Hassan (2015) stated that technologies have been playing a major role in designing early warning systems, catalyzing the process of preparedness, response and mitigation. ICT tools are also being widely used to build knowledge warehouses using internet and data warehousing techniques. These knowledge warehouses can facilitate planning and policy

decisions for preparedness, response, recovery and mitigation at all levels. Similarly, GIS-based systems improve the quality of analysis of hazard vulnerability and capacity assessments, guide development planning and assist planners in the selection of mitigation measures. Communication systems have also become indispensable for providing emergency communication and timely relief and response measures.

Modern technologies can be used to minimize the impact of disasters in many ways. In disaster mitigation and preparedness process, modern technologies are widely used to create Early Warning Systems (EWS). A EWS may use more than one modern technologies tool in parallel and these can be either traditional (radio, television, telephone) or modern (SMS, cell broadcasting, Internet). Media plays an important role in disseminating timely disaster information. EWS, television and radio broadcasting, web portals and telecommunications have a significant role in disaster mitigation. Despite essentiality of modern technologies in disaster management it should also not be taken as a panacea for all ills. Modern technologies like any other tool can deliver its best force multiplier effect when other necessary ingredients are in place simultaneously. (Yap (2011).Kim**(**2012) emphasized that geographic information systems (GIS) technology developed the recent wireless communication and its technology were used to study on the real-time disaster damage information management system development based on web GIS that can provide the user quick and efficiently with various damage information and data. A recent example includes the aftermath of the Haitian earthquake that was the first network to come alive to establish communication with trapped people. The evolving landscape of wireless and mobile technology, voice and data convergence, computing and modelling capability of services, the growth trend potential for integrated technological solutions. The world especially New York City will never be the same after 11th September 2011 as a result of the terrorist activities(Taabu, 2014).

Awareness on Space-based technologies is increasingly being recognized as essential inimproving performance during all phases of the DRR cycle, particularly for remotesensing, mapping and communication (Namuduri, 2017). The United Nations Institute for Training and Research (UNITAR) offers countries access to satellite data through the UNITAR Operational Satellite Applications Program. According to UNITAR, "UNOSAT is a technology-intensive program delivering imagery analysis and satellite solutions to relief and development organizations within and outside the UN system to help make a difference in critical areas such as humanitarian relief, human security and strategic territorialsecurity, strategic territorial and development planning. UNOSAT develops applied research solutions keeping in sight the needs of the beneficiaries at the end of the process.

Waweru (2014) stated that awareness on the use of smoke detectors technology, libraries in Africa did not emphasize the use of heat smoke detectors probably because of the cost of purchase or maintenance. Waweru stated that libraries depended more on human guards which could be unreliable for detecting fire on time. Ojo-Igbinoba in Waweru (2014) opined that only a few libraries possessed fire suppressant systems. In their contributions, every staff should be trained to use a fire extinguisher and that there should be drills to practice what each staff would do in the event of a fire disaster. Library buildings should be provided with smoke detectors, fire extinguishers, fire alarms and fire pulls. Also, sand buckets should be provided to compliment fire extinguishers and up-to-date emergency phone lines should be maintained. Smoke detector technologies are expensive, inaccessible, and unavailable to a great extent. Also, the large population of the library staff lack the necessary skills for the applications of the new technologies (Rio,2014).

Librarian awareness on Early Warning Systems (EWS) is a technology that identification, detection and risk assessment of the hazard, the accurate identificationof the vulnerability of a population are at risk (ITU, 2015). The communication of informationabout

the threat to the vulnerable population is essential insufficient time and clarityso that they can take action to avert negative consequences. The final component underscores the importance of education and creating awareness in the population so that they may respond with the appropriate actions. Effective disaster management relies on thorough integration of emergency plans at all levels of government and non-government involvement. Activities at each level individual, group, community affect the other levels

Kafi and Gibril (2016) stated thatSatellite Communications can offer,many emergency communication systems, these technologieswill remain functional when terrestrial networks fail. High-speed internet access can be switched to satellites in the event of a disaster. Satellitecommunications have also been used to reach the remote communities whereterrestrial or wireless networks are not available and not considered commerciallyand technologically viable to set up. Combining remote sensing satellites withcommunication satellites can be useful in ensuring that data generated by satellite disaster managers and planners. Being able to integrate satellite data with other geospatial datasets and modern technologies is also equally important.

ITU (2015) stated that awareness on the use of position navigation timing (PNT) data is a vital complement to other geospatial technologies in disaster management. PNT technology is independent of communication networks requiring ground-based stations, such as the Internet and cell phone systems. As it provides near real-time location information with high precision, this technology can help in managing the different disaster life cycle process from beginning to end the integration of data from PNT, Geographical Information Systems (GIS) and remote sensing can contribute to our understanding of disasters and ways to improve each stage of the disaster management cycle.

Pytharoulia and Souter(2018) stated that awareness on use of remote imaging systems is a satellite that provides images based on position navigation timing (PNT) locating data the

data is combined to make a high-resolution surface model and photographic map of the affected area. The information is synchronized with GIS data to assess which buildings, roads, and facilities are damaged. Based on the damage assessment of the affected areas, the information can help authorities to plan an appropriate response.

Adoption of Modern Technology for Disaster Management of Water and Windstorm

In many European countries, mobile phones have been adopted as a technology used in controlling water-related disaster. Mobile phones are used for early warning of people since mobile communications cover a wider range of persons (Guha, Hoyois and below, 2014). According to Sahu (2009),remote sensing as one of the technology has been adopted for management disaster that emulated from water and windstorm. Remote sensing technology is a powerful tool in disaster management. It is an investigative technique that uses a recording instrument or device to measure or acquire information on a distant object or phenomenon with which it is not in physical or intimate contact. This tool is used in locating the area of natural disaster and monitor its growing proportions while the forces of disaster are in full swing, providing information on the disaster rapidly and reliably, and thereby ensuring that the extent of destructions is evaluated precisely Again, remote sensing technology helps in monitoring or assessing the disaster event which provides in turn, a quantitative base for relief operations. Such assessment can be used to map the new scenario and update the database used for the recovery of lost library resources and also in preventing the recurrence of such disaster in future.

In the opinion of Biswajit Mukhopadhyay, Buddhadev Bhattacherjee (2015),adoption of stated that, GIS technology has been adopted in some countries in manage disaster that emulate from water and windstorm, it can provide oneof the primary components for Computer-aided dispatch(CAD) system. Emergency response units based at fixedlocations can be selected and routed for emergency response.The quickest response units can be

selected, routed anddispatched to the emergency zone. Depending on theemergency, GIS can provide detailed information for the rescue so that they can locate the disaster area.

Kirste (2016) stated that Short Message Service (SMS) Technology has also been adopted for management disaster that originates from water and windstorm, the SMS is allowable in most of the mobile phone and permits sending of short messages amount the mobile phone an even landlineIn case of failure of network the SMS can work on a different band and can be sent or received even when phone lines are congested. During 2005 Hurricane Katrina disaster in the USA, many affected residence were unable to contact relatives and friends through telephone but they could be able to communicate with each other through SMS. Other communication technologies are used like Cell broadcasting, satellite radio, internet or e-mail, amateur and community radio to warn the people at stake in case of an impending disaster

Kirste (2016) stated that Radio Frequency Identification(RFID) has beenadopted as atechnology to management disaster of water and windstorm. The RFID technology is integrated circuit and antenna coil that communicates with a reader using a radio frequency signal water is also a greater problem than fire because if the fire has not consumed the materials entirely, they will inevitably be damaged by the water. Most often floodwater carries with it mud and would put it on the document. Flooding can be caused by staff negligence, leakage by taps, roofs and pipes, blocked roofs drains or uncontrolled floods during heavy rains. A minor water accident such as a licking pipe can cause extensive and irreparable harm to collections.

Adoption of Firefighting Equipment for Disaster Management of Fires

Firefighting is risky job to perform, as firefighters are exposed to hazards at incident site firefighting profession is highly technical, structured and supplied with various artifacts, which help to decide actions in unpredictable and complex situation (Michael, Karter and Molis, 2013) stated that the skills of firefighting can usually be learnt from formal training

because they used different types of equipment in controlling fire, so that risk could be minimized by practicing safety procedures and get command over them. Firefighting occupation cannot be practiced without formal training and till the expertise get assured from those institutions. Firefighters perform a unique and risky job as emergency response personnel. They take a risk most of the time to save the lives and properties of others.

Similarly, fire tenders along with all essentials equipment like fire hoses, nozzles, fireman axes, fire hook, extinguishing agent like water and Aqueous film forming foam (AFFF), personal protective equipment, communication equipment and specialized vehicles for rescue and firefighting from height specialized skills of firefighters (includes scene assessment, access, locate and evacuate victims, extinguish fire according to nature of fire, restrict fire to spread, investigation cause of fire, providing first aid) fire safety standards as per building bylaws include (Emergency Exit, Emergency Evacuation Signs, Internal Hydrant System, External Hydrant System, Smoke alarm and Sprinkle System) (Rawalpindi Development Authority Government of Punjab, 2007). The adoption of the fire breaching Inlet and outlet equipment for fire disaster. Firefighters described this work as "organized chaos". They are very much proactive regardless of their training and experience in the field of firefighting. Firefighters do not take any emergency call as a routine emergency call due to unpredictable scenario on each fire emergency. The firefighters perform their work through a framework known as Incident Command System (ICS), which helps them to deal with different scale of emergencies and effectively manage them. Through Incident Command System (ICS) managers from other departments included in decision making know the importance of firefighting as well as their role and responsibility in case of fire emergencies.

Taber, Plumb and Jolemore (2008) stated that sprinklers have been adopted as equipment for fighting fire disaster in the library fire suppression systems including sprinklers are one component of this mix of measures, and current guidance suggests that

design teams should consider the installation of sprinklers. Sprinklers systems are routinely considered in major projects and installed were identified as essential and that the fire sprinkler and other suppression systems are almost exclusively of recent design and that the adoption rate for sprinklers and other fire suppression systems is increasing significantly

Penney (2013) stated that the provision of fire sprinklers as part of a fire safety strategy is project-specific on a case-by-case basis and should be considered alongside the need to comply with statutory standards and the complexity of structural, environmental and management issues. Existing evidence would appear to suggest that fire suppression systems are routinely considered as a component of the design fire strategy in relevant projects. In another view, fire suppression equipment has been adopted for fighting fire disaster in the library and personal protective equipment colloquially known as PPE within fire services represents the final line of defense between personnel and an adverse outcome. Whilst some PPE may, in fact, reduce the potential for realization of an adverse effect, for instance, breathing apparatus theoretically preventing a firefighter inhaling toxic smoke and products of combustion, it must also be considered that the presence of fire suppression may result in firefighters undertaking greater risk-taking behavior due to a perception that the PPE affords them complete or excessive levels of protection

James (2013) stated that carbon dioxide has been adopted in managing a disaster of fire-related, carbon dioxide systems can be feed from banks of carbon dioxide cylinders or a refrigerated tank. They are used in special areas such as electrical switch room or power-intake situations. They are usually designed as total flood systems. This means that they deliver sufficient carbon dioxide to fill the room at a designed concentration in a very short time. Discharge can be automatic, manual or both. Halon systems operate along similar lines as carbon dioxide systems but are more often used for computer installations where discharge

heads are placed overhead in cable ducts, underfloor cable trenches. They can be operated by fire or smoke sensors. In the case of larger units, the operation can be automatic or manual.

James (2013) stated that Smoke and radiation detectors have been adopted for fighting disaster in the library. There are three main types of detectors include heat detectors, smoke and the radiation detectors. They can be combined with fire alarms or kept separate. The alarm must be able to give off an audible warning, unmistakable to the person hearing it. It should give out an ambiguous signal. Heat detectors fall into two categories; fixed temperature and the rate of rising or compensating detector. The choice between the two is made after a careful assessment of the real need for one and additional cost included. Fixed temperature detectors respond to a preset temperature within the areas of the detector head while compensating detectors can distinguish between a slow and a sudden rate of temperature increase. Smoke detectors, on the other hand, respond to smoke around the detector head. They operate in one of the three-ways namely: ionization, light scatter or light obscuration. The ionization type operates on the principle that smoke particles absorb ions, in the detector heading reducing the current flow. This causes an imbalance between current in the test chamber and the scaled companion chamber which triggers an alarm, they are used in managing the disaster in the libraries.

Duke (2012) stated that Fire extinguishershave also beenadopted as equipment for managing the disaster in the library, fire extinguishers can be generally divided into categories according to the extinguishing medium they contain. This includes Pressurized Water Extinguishers (hose reels, fire sprinklers), Carbon Dioxide Extinguishers, Dry Chemical Extinguishers, Halon, Extinguishers (Vaporizing liquids), Wet Chemical, Foam and Fire blankets, they are used in controlling fire outbreak. However, water hose reels are coils of hose carried on a stout reel and frame. It may be sticking out from a wall on hinged brackets or stuck out of site behind stylish panels matching the décor. They may have a valve

for turning on the water supply or be fitted with an automatic system operated via the axle of the reel so that water supply comes on when a few yards of hose has been running out. Some hoses are fitted with a plain jet nozzle or a combination jet/spray nozzle depending on the taste or requirement.

Adoption of Modern Technology to Safeguard Vital Records in Libraries

Access card technology has been adopted to safeguard records, access card can be used in conjunction with video surveillance to control and monitor large collections and equipment's (Dean, 2014). Access cards can be integrated as photo ID cards for library employees and can be used as temporary keys for library clientele to have access to restricted areas. The access system can also be used for monitoring employee time and attendance, security patrols of the property and can limit access to sensitive areas, information or equipment. Electronic access control system enhances safety and protects valuable library assets. Access control solution range from simple authorized access systems to advanced closed circuit monitoring and exception reports delivered through secure internet connections. The most popular types of cards are the magnetic stripe cards, which looks like a credit card and carries two or more tracks of information on the magnetic stripe, these can be used for access control and other services.

Harvey (2010) stated that Dspace technology has been adopted in safeguard records libraries, technological devices like Dspace are naturally important in safeguarding information resources in libraries since one cannot conclude that there is a long-lived electronic storage device, techniques such as back-up of information to a different storage device should be done to try to ensure the information stored is preserved for a longer period of time. The backup information will be retrieved when the original storage device storing the needed information is unavailable or corrupted, the following strategies are needed when handling a media storage device for preserving information moderating and making

temperature and humidity stable helps keep storage alive, having a storage device that can read older media, having hardware that can connect to older media devices and also having software that can read older files from the storage devices. We have two categories of storage devices, magnetic tapes storage devices such as magnetic Hard Disk Drive (HDD) and the optical storage devices such as Compaq Disk (CD) and Digital Video Disk (DVD) According to Goldner (2012), cloud computing technology has been in use in safeguard records, libraries can take advantage of cloud computing to get out of technology headache such as hardware breakdown, software problems, staff training deficiency and focus on collection building, patron services and innovation. Geoffery (2013) also added that with the adoption of cloud computing technology in libraries, will go a long wayin safeguard vital records in libraries and data can be easily stored. Breeding (2012) pointed out that libraries can also take advantages of cloud computing to build digital libraries/repositories, search library data, host website, search scholarly content, store files, in other to safeguard information resources in the library.

Dhanevandin and Tamizhcheven (2014) stated thatcloud computing technology has since been adopted in safeguard records, cloud computing can only be efficient in a digital library, digital library is not an offshoot of cloud computing but cloud computing provides an opportunity for libraries to store their information resources electronically and use a platform to safeguard vital records in the library. It has been observed that cloud computing is not altogether with new technology but an adaption of existing technologies and paradigms. In a similar vein, Maidabino (2010) reported that the adoption of electronic anti-theft devices, to safeguard record in the library. The physical security measures should begin with the physical architecture of the building or management of space where information resources are held, controlling building entrances and exits; requiring identifications to access to general as well as rare and special collections areas; and scheduling patrols within building

parameters. The technical aspect consists of the technology practices and procedures that the security of information resources programmes embraced. It refers to an electronic security system and devices to safeguard vital records in libraries. Maidabino (2010) identified security systems to include electronic anti-theft devices, visual cameras, smoke detection and alarm system at entrances, exits and stack areas in the library in other to safeguard vital records in libraries.

Use of Electronic Resource Management System to Safeguard Library Resources

An electronic record is any information that is recorded in machine-readable form. The Electronic records include numeric, graphic, audio, video, and textual information which is recorded or transmitted in analogue or digital form such as electronic spreadsheets, word processing files, databases, electronic mail, instant messages, scanned images, digital photographs, and multimedia files.Electronic security systems are devices that are used with the aid of an electrical apparatus to secure library materials. They help libraries to control, minimize or avoid library material theft and unethical losses. Madhusudhan (2010) stated that Libraries are no longer operating in a purely physical environment, but more often in a mixed environment that consists of both print and e-resources is a way of protecting the information resource from disaster. With the development of the internet and the wealth of e-resources now available, large portions of library collections are no longer available on shelves in the library, but electronically on CD-ROM (Compact Disc, Read-OnlyMemory), DVD (Digital Video Disc) or the internet. The information resources are kept electronically to safeguard them against disaster. The use of an electronic resource management system to safeguard resources, the advent of information and communication technology (ICT) now has made libraries to preserve their information resources through the electronic method. Information on printed format can now be recorded in the computer using compact disk (CD), diskette, flash drives and through digitization of library information resources.

Aina (2013) stated that Internet services have been used in libraries not only to acquire, but to also preserve and store information that can be accessed by users through browsing, and downloading to protect the information resource from disaster. Aina (2013) further defined digitization as the conversion of traditional library information resources (books and papers) to electronic form using computers, scanners, and digital cameras. To safeguard information resource from disaster. Also, Geoffrey (2013) stated that cloud computing technology can be used as an electronic resource management system to safeguard electronic resources, cloud computing is the process where information resource is been stored in the cloud to prevent against disaster in the library. This provides the library with an opportunity to extend its impact to its users anywhere anytime. Anyone connected to the internet is probably using some type of cloud computing regularly. As pointed out, the interesting thing about cloud computing is a technology that is been used in storing information in the cloud in case of disaster.

Electronic resource management system used in safeguard electronic resources, electronic resources are regarded as the mines of information that are preserved through modern ICT devices, refined and redesigned and more often stored in the cyberspace in the most concrete and compact form and can be accessed simultaneously from infinite points by a great number of audience (Graham, 2013). The phrase electronic resources has broadly been defined as information accessed by a computer may be useful as bibliographic guides to potential sources but, as of yet, they infrequently appear as cited references in their own right. Moreover, electronic resources refer to that kind of documents in digital formats which are made available to library users through a computer-based information retrieval system. Because of the effective presentation with multimedia tools, electronic resources have become the source of information. Tuncay (2010) observed thatelectronic resource is used in safeguard library resources, the library can benefit from using cloud computing technology

by increasing computing performance, storage capacity, universal accessibility and cost reduction. This can help the library in terms of fixed and maintenance cost reduction in the IT investment of both hardware and software as well as computer services. With cloud computing, libraries may prevent financial waste, better track staff activities, and avert technological headaches such as computer viruses, system crashes, and loss of data. When cloud computing is used in the library, this will likely have a significant impact on safeguarding library resource.

According to Spreeuwenberg (2012) stated that cloud computing has provided libraries with the opportunity to store information electronically, to protect them from disaster. Kaushik and Kumar (2013) also reiterated that the use of cloud computing technology in the library. Cloud computing provides libraries with the opportunity of building a digital library in the cloud, digital library built in the cloud safeguard information resources from disasters. However, cloud computing provides an integrated library resource that supports distributed uniform access interface. Simultaneously, the platform can be used in the protection of library resources. They further stressed that since the library, by nature stores, processes, and spreads knowledge, the knowledge service model could provide users with efficient transmission of information and knowledge services. Kaushik and Kumar (2013) submitted that in connection to cloud-based digital library software, Duraspace has two software's; namely, Dspace and Fedora Commons but Duraspace is widely used for building digital libraries/ repositories in other to store information electronically.

Paper (2008) stated that electronic resource has been adopted in safeguard library resources, preserving EIRone should always consider file formatsselecting a file format that is not easily affected by the rapid change of technology is a very vital strategy. File formats that go unsupported within short period of time for the example those created on word processing document and saved as an ASCII file format should be avoided in digital

preservation. On the same point, indicated that crucial information should not be held in files that will no longer be compatible with the future software because as electronic information becomes more and more complex and integrated, the threat of file format obsolescence is set to increase. The file formats that are considered to be popular on the World Wide Web (WWW) are; Hypertext Markup Language (HTML), Portable Document File (PDF) and Extensible Markup Language (XML). Hunter (2000) indicated that file formats that have open specifications, those which are independent of particular software should be considered for digital preservation.

Adoption of Surveillance System for Managing Disaster Arising From Vandalism

Electronic security systems are technological devices that are used with the aid of an electrical apparatus to secure library materials from vandalism. Nancy (2016) wrote extensively on the use of electronic security to combat book theft and the experiences involved in their installation in the United States. Nancy (2016) stress that, adoption of video surveillance and closed-circuit television (CCTV) systems for managing disaster arising from vandalism, video surveillance and closed-circuit television (CCTV) systems serve as a way to monitor vandal in the library. The system can also be used to monitor and record evidence on clientele and employee misconduct.

There are two basic elements of electronic surveillance. Primarily, the device or 'trigger' that is fitted into each book- hardback, paperback or journals; cassettes, records, discs. This trigger is very discreet and when concealed within books are virtually undetectable. Secondly, the free-standing sensing installed at the exit such as the metal detective door of the library also serves as a means for curbing theft and mutilation. Books left on the shelf or the reading tables are sensitized and remain so until a book to be borrowed by a patron is desensitized at the issue desk by the library staff and the patron then exits from the library. Except the book is checked out, the trigger always rings an alarm that alerts the

security personnel at the gate. Both the human body, handbags and briefcases cannot prevent books sensor (Tinuade, 2007). Furthermore, McGinty (2008) and Trapskin (2008) stated that Closed Circuit Television (CCTV), Cameras; Radio Frequency Identification (RFID) system, Surveillance Cameras; metal detectors, door intrusion alarms; delay devices, panic alarms and heat sensors are useful in detecting security pattern and ensuring effective security strategies in the protection of library materials against vandal. Ramana (2010) highlighted that the adoption of Closed Circuit Television (CCTV) for the Surveillance system in managing disaster arising from vandalism, Closed Circuit Television (CCTV) used in the libraries can enhance the ability to control vandal of library resources. The use of electronic surveillance is an effective way to curbing vandal in the library cannot be overemphasized. It not only controls but minimizes and averts vandalism of library resources.

Odaro (2011) suggested that electronic security devices such as Electronic Surveillance Cameras (Closed Circuit Television-CCTV), 3M library security systems (electronic gates), Radio Frequency Identification (RFID) system, Perimeter Alarm System, Movement Detectors could be useful to university libraries in curbing vandalism in the library. The adoption of radio frequency identification systems (RFID), as a surveillance system for managing disaster arising from vandalism, (RFID)Security measures in the libraries can be broadly considered as physical security and electronic security. Physical security measures consist of site and architectural design, regular stock checking, deployment of library security officer (LSO), security staff, written security policy, bag checking, extended library opening hours, keys control, window and door protection, display case protection and use of dummy security devices (Khurshid, 2015). However,electronic security systems for libraries cover access control, radio frequency identification systems (RFID) and Electronic alarm systems, smoke detectors, flame detectors, security sensors, burglary

protection, video surveillance, CCTV, biometric identification and database management programs can be used to control Vandalism in the library.

In the opinion of Njoroge (2014)stated that theadoption of CCTV, surveillance in managing disaster arising from vandalism, wars and riots caused by political differences and selfishness and the damage caused to people and resources can be extensive. This can be physical destruction resulting from bombs that may destroy the resources. However, surveillance technology like closed-circuit television CCTV system is one in which several video cameras are connectedthrough a closed circuit or loop, and the images taken by these cameras aresent to a television monitor or recorder it is used in checkmating vandalism in the library. In furtherance, Parvez (2011) stated that the adoption of computer network, surveillance system for managing disaster arising from vandalism, the integration of computing, networking and information processing technologies and their applications in the use of ICT security systems are used in advanced countries to check any vandalactivities despite the fact that they are too expensive for many average libraries in Nigeria. Various library security technologies and systems are available today in the market; surveillance cameras (Closed Circuit Television-CCTV), 3M library security system (electronic gates), Radio Frequency Identification (RFID) system, perimeter alarm system, movement detectors, cloud computing technologies. The use of CCTV will aid the security operator on duty to view from different cameras, the various activities taking place at the various sections of the library simultaneously while the electronic gates can dictate any suspicious items. This helps in strengthening the library security but however, the information resources can be secured from the destruction of the insurgency by employing cloud computing technologies to serve as a back-up facility for the libraries. Using ICTs will provide maximum and adequate security for both the library employees, patrons, resources, equipment as well as the entire library building thus, these telecommunication systems and devices must be made available

in the library.The adoption of electromagnetic Security (EM) surveillance system for managing disaster arising from vandalism, electromagnetic security (EM) is one of the most used libraries security worldwide, protecting billions of books and other media fromvandal activities (Adam and Abdullahi, 2018).

Adoption of Modern Technology to Manage Disaster That Emanates From Terrorism

Terrorism is defined in many ways by many scholars and institutions. According to Frykberg and Tepas, in McEntire (2015) defined terrorism as an act of unlawful exercise of random and ruthless violence against property or individuals, usually innocent civilians, to intimidate governments or societies for political or ideological purposes. Similarly, Panzer, Butler, and Goldfrank (2003) defined terrorism as the illegal use or threatened use of force or violence to instill fear in populations, and an intent to coerce societies or governments by inducing fear in their populations. While Miron and Cernuşca (2008) defined terrorism as the unlawful use or threatened use of force or violence against people or property to coerce or intimidate governments or societies, often to achieve political, religious, or ideological objectives.

Kawatsuma (2013) stated that Global positioning system (GPS) has been adopted in manage disaster that emanates from terrorism, this technolog**y,** is used in locating area were terrorist activity take place, GPS technology help in locating disaster areas. GPS works by measuring the time it takes a signal to travel the distance between a satellite and the device itself. GPS is commonly used in vehicles and handheld objects such as mobile phones and personal digital assistants. The nature of the technology means the device itself can be adopted to manage disaster arising from terrorism. However, vandalism, theft and arson. Man has also been known to destroy resources by setting them on fire deliberately. These acts of deliberate removal of resources from the institution can be done for personal gratification or reward. Theft and sabotage are not natural disasters as fire and floods but they are disastrous

acts to the organization. They can be controlled with a global positioning system (GPS) and satellite technology**.**

Gauch (2013) stated that RFID technology has been adopted in managing disaster from terrorism, radio frequency identification, RFID is another type of tracking device that is used in manage disaster arising from terrorism. The technology relies on a small transponder, known as a radio frequency tag, to transmit and receive radio signals to and from a scanner, known as a radio frequency reader that is used in controlling disasters. There are two types of RFID tags: active and passive. An active RFID tag ispowered by an internal source, such as a battery, and is constantly functioning. A passive RFID tag is powered by an external source, for example, the e-tag reader on Melbourne freeways. Although a passive RFID tag, such as the e-tag, can be used to monitor the location of an incident.

seek to inflict much suffering on their victims and target places where many people are Sawada and Zen (2014) stated that satellite technology is used in managing disaster that emanates from terrorism, nations in Africa are still at war and involved in conflicts, and terrorist attacks are having serious impacts even on advanced nations. The prevailing terror threats in Africa include groups such as Al-Quaeda, Al-Shabaab and Boko Haram. These terror groups gathered. Learning institutions and libraries happen to be examples of such vulnerable places. A case in mind is the terrorist attack on Garissa University students in April 2015 where 147 students were killed. Terror threats have also been reported at different times in other learning institutions such as Moi University, Egerton University and the University of Nairobi, creating fear among students and the general public. In one incident, 38 Kenyatta University students were injured in a stampede following a scuffle. It is reported that the students jumped out of the five-storey library, which has a capacity of about 13,000 students, following a commotion as two students fought over a laptop. The students who witnessed the fight screamed, scaring others who thought it was a terror attack. However, this

is in line with what is obtainable in Nigeria as many people are afraid of going to public places like libraries.

Ochieng, Maichuhie and Esekon (2016) postulated that CCTV, technology is used in managing disaster that emanates from terrorism. These emerging trends urgently call for a new approach to disaster management and general reinforcement of security measures in vulnerable areas. They suggest that emergency drills at present must be handled with caution since the team may fall short of the intended outcomes. They also indicate that it is not business as usual concerning real or perceived terrorism in learning institutions and other vulnerable areas. Some of the commonly used security methods in libraries, as outlined by Ochieng, Maichuhie and Esekon, (2016) include security guards, staff observation, closed-circuit televisions (CCTV), are adopted to manage disaster arising from terrorism. Institutions have been prompted to invest more in the reinforcement of security. Security checks are already being undertaken in other places such as churches, offices, business places and meeting areas

Adoption of Modern Technology to Manage Disaster that Emanates from Biological Agent

The destructive role of biological agents to Library holdings cannot be overemphasized. Microbiological element fungi, bacteria, insects, rodents and man himself are a key instrument in the deterioration of library collections either print or electronic. Fungi are the most destructive micro-biological elements. Their spores are ubiquitous and they vegetate, grow and reproduce only under favourable conditions as high relative humidity, temperature and light. This is affirmed by Swartsburg in Isa (2012) stated that fungi grow if the temperature and relative humidity exceed 24^{oc} and 70% respectively. Their presence in the repository is signified by white colouring on document covers or CD -ROMS tapes or slides. The destructive tendencies of insects such as booklice, termites, cockroaches, bookworms,

rodents, mice and rats cannot be underestimated as their destruction is directed at both the building and the materials kept in them. The application of chemical or insecticide will go a long way in controlling the activity of the rodents.

Shuhaimi, in Isa (2012) also observed that adoption of chemical to manage disaster from a biological agent, libraries and archives always provide quiet and darkened homes, full of good nourishing food for insects. They are attracted to the starch in the book bindings glues, the size on paper, emulsions the potential threat of destruction by insects to library materials is more in the prevailing climatic conditions.

Solinet, in Ikegune (2016) stated that adoption of carbon-nitrogen sulpur technology to manage disaster from the biological agent. Biological agents thrive on the organic matter they find in library materials. The use of carbon-nitrogen sulphur will reduce the activities of the insects in the library. Absence of proper ventilation, darkness, high temperature and relative humidity encourage their spread. The biological agents can be grouped into macro-organisms and micro-organisms. Almost all book components, be it paper, leather, textiles or strawboard used for binding are prone to attacks by these biological agents. These biological agents can be subdivided into:-Micro-organisms- Fungus or moulds, and bacteria.

Popoola, inIkegune (2016) stated that adoption of nitroglycerine to manage disaster from a biological agent, the management of libraries and archives in Nigeria have poor maintenance culture of infrastructure facilities such as electricity, water supply, laboratory equipment, buildings, and disaster control devices meant for preservation operation. This factor is responsible for the quick deterioration of both book materials and non-book material. The use of nitroglycerine will reduce the activities of the insects in the library. Popoola, inIkegune (2016) state that “the collection also faces the results of decades of campus-wide deferred facilities maintenance. According to them, periodic roof and foundation leaks led to limited flooding and subsequent mould outbreaks, including a significant mould bloom in the

non-book/document room during the spring of 2001 and multiple stack leaks. Biological agents are a major cause of deterioration of documentary information materials, particularly in the tropics. According to Popoola, inIkegune (2016) such agents as fungus, insects and rodents thrive in conditions where there is dust, inadequate ventilation, poor lighting, high temperature and relative humidity. They caused considerable damage through the weakening of paper, staining of the non-book materials, tearing and chewing up of another document.

Alegbeleye, inIkegune (2016) stated that, adoption of bio-deterioration to Manage disaster from biological agent bio-deterioration. With regards to insects, the most appropriate method of dealing with them is through integrated bio-deterioration pest management measures. According to Alegbeleye, there are two basic approaches to pest management. The first is to ensure that the building in which the library documentary materials are kept free from insects through the following ways:

(a) Removal of vegetation and plant growth near the building

(b) Use of insects' screens on windows

(c) Ensures that drink and food are kept out of the building

Alagbeleye, in Waweru (2014) stated that sulphur dioxide is used in managing disaster from a biological agent, biological agents like insects, fungi and rodents cause damage to books and library materials, particularly in tropical countries. The use of sulphur dioxide will reduce the activities of the insects in the library. Ikonta, in Waweru (2014) believes that insects are identified as enemies of library materials. The most common of these pests are cockroaches, silverfish, termites and moths. Plumbe, in Waweru, (2014) mentions serious termite damage to books in Africa. Termites feed on grass, hummus, timbers, and wood work of buildings, library books, files, photographs, valuable pictures and catalogue cards. When they invade a library in force, they can do serious damage in a single night. Termites have destroyed libraries and archival materials in tropical countries. They

feed on cellulose which clearly shows that they destroy books, records and wooden shelves as noted by (Alegbeleye in Waweru, 2014)

Alegbeleye in Akussah(2017) observed that, nitroglycerin is a chemical substance that is adopted into managing disaster from a biological agent, cockroaches have flat bodies and this enables them to hide behind skirting board and dark corners of all kinds. As soon as it's dark, they emerge from their hiding places, and they excrete a dark liquid which discolors any materials in the library. The use of nitroglycerine will reduce the activities of the insects in the library. However, the common rodent in libraries is the house mouse. Mice cause damage by destroying materials for nesting purposes and also urinating and defecating on library materials. These droppings are corrosive and can leave permanent stains. Rodents can chew the insulation off electrical wires, causing them to short-circuit, and could start a fire in tropical countries.

Empirical Studies

Previous empirical studies conducted on awareness and adoption of modern technology in disaster management that are related to this study will be examined under the following sub-headings:

Librarians Awareness of Technologies Used In Disaster Management in Libraries

A study conducted by Odaro (2014) on awarenessof electronic security systems in academic libraries, with a focus on selected university libraries in South-West Nigeria. The study adopted a survey research design. The population of the study is 109staff. The entire population was used as the sample size because the number was considered manageable by the researcher.The instruments used for data collection were observation, checklist, and structured questionnaire. The instrument was subjected to face and content validation. The instrument was also subjected to reliability measures, and it yielded an overall coefficient of 0.76.Descriptive and inferential statistics of frequency, percentages and tables were used to

analyze data gathered through the survey. The study unveils that academic libraries have suffered adversely from security issues and other anti-social menace and that the adoption of electronic security systems devices would drastically improve the situation. On the other hand, the findings also revealed that librarians had a low level of awarenessofelectronic security systems in academic libraries, with a focus on selected university libraries in South-West Nigeria.

The reviewed work is related to the current study in the sense that both of the studies adopted the survey research design. There is also a difference in terms of population, the above study used 109 staff, while the present study used 227 academic staff. Another difference is that the reviewed study used observation, checklist, and structured questionnaire, descriptive and inferential statisticswere used to analyze data gathered through the survey. While the present study used the questionnaire as an instrument for data collection. The findings further revealed that 65% responded that they are aware of theuse of information communication technologies (ICT) for safeguarding the libraries from threats of insurgency in Nigeria. There is also a difference in terms of the geographical area the reviewed study was conducted in South-West Nigeria, while the present study was conducted in North-East Nigeria.

Adamu and Abdullahi (2018) conducted a study on librarian awareness on theuse of information communication technologies (ICT) for safeguarding the libraries from threats of insurgency in Nigeria. Three research questions guided the study while three null hypotheses were tested at 0.05 alpha level.The population of the reviewed study of 150 staff. The whole population formed the sample size for this study.The study used a survey research design, and a questionnaire was used for data collection. The instrument was subjected to face and content validation. The instrument was also subjected to reliability measures, and it yielded

an overall coefficient of 0.88. Frequency, percentage and tables were used in the analysis of data collected.

The findings revealed that insurgence posed a serious threat to the library, its users, staff and the collections; while manual security systems are not enough to curtail the nefarious acts of insurgency; and using ICT security systems in checkmating any criminal activities is the best method in this age of globalization. The findings further revealed 45% responded that they are aware of theuse of information communication technologies (ICT) for safeguarding the libraries from threats of insurgency in Nigeria.

The study conducted by Adamu and Abdullahi (2018)is related to the current study in the sense that both of the studies used survey research design, and questionnaire were used for data collection. Frequency, percentage and tables were used in the analysis of data collected. There is a difference in the population of the reviewed study, the reviewed study used one hundred and fifty (150) staff, while the present study used two hundred and twenty seven (227) academic staff. There is also a difference is in terms of geographical location the reviewed study used the whole of Nigeria, while the present study was conducted in North-East Nigeria.

Adoption of Modern Technology for Disaster Management of Water and Windstorm Related Disasters

Zaveri (2014) carried out a study on the adoption of (RFID) Radio Frequency Identification technology to manage water related disasters. The study adopted a survey research design. Six research questions guided the study. The above-reviewed study used observation, checklist, and structured questionnaire as instruments for data collection. The population of the study comprised of two hundred and eleven (211) librarian. The instruments used for data collection were observation, checklist, and structured questionnaire.

The instrument was subjected to face and content validation. The instrument was also subjected to reliability measures, and it yielded an overall coefficient of 0.81. The data obtained were analyzed using descriptive statistic. The finding reveals among others that radio frequency identification technology was effectively used to tackle water disaster and other water-related issues.

The reviewed study is related to the current study in the sense that both of the studies adopted the survey research design. The difference is that the above-reviewed study used observation, checklist, and structured questionnaire as instruments for data collection. While the present study used the questionnaire as instruments for data collection. There is also a difference in terms of population the reviewed study used two hundred and eleven (211) staff, while the present study used two hundred and twenty seven (227), academic librarian. The findings further revealed 57% level of awareness on theuse of RFID) Radio Frequency Identification technology to control libraries from threats of insurgency in Nigeria. There is also a difference in terms of the geographical area the reviewed study was conducted in India, while the present study was conducted in North-East Nigeria

Adoption of Firefighting Equipment for Disaster Management of Fires Disasters

A study conducted by Joyce and Arzadon (2016) on the adoption of a fire detection system using CCTV with the fast advancement of technology in the area of CCTV's. The study adopted a survey research design. Four research questions guided the study. The population of the study comprised of two hundred (200) librarian drawn from the ten university libraries. No sampling technique was carried out because the population size is considered manageable in this study. The instruments used for data collection were observation, checklist, and structured questionnaire. The instrument was subjected to face and content validation. The finding reveals among others that CCTV technology was effectively used to tackle vandal in the libraries.

The instrument was also subjected to reliability measures, and it yielded an overall coefficient of 0.88. The data obtained were analyzed using descriptive statistic.

The reviewed study is related to the current study in the sense that both of the studies adopted the survey research design. There are also related in terms of method of data collection, both of the studies used a descriptive statistic in analyzing the data collected. There is a difference in terms of the population of the study, the reviewed study used two hundred (200) librarian while the present study used two hundred and twenty seven (227), academic staff. There is a difference in terms of method of data collection the above-reviewed study used observation, checklist, and structured questionnaire as instrumentsfor data collection. While the present study used a questionnaire as instruments for data collection. The findings revealed 76% responded that CCTV technology has been adopted in control libraries from threats of insurgency in Nigeria. There is also a difference in terms of the geographical area the reviewed study was conducted in the Philippines, while the present study was conducted in North-East Nigeria.

In a study conducted by Gichuru, Jacqueline and Ngema (2013) adoption of firefighting equipment in disaster management in secondary schools libraries in Nyeri central district, Kenya.The above study used survey research design, questionnaire and checklist as instruments for data collection. The instruments were analyzed using Frequency, percentage and tables. The population of the study comprised of one hundred and seventy-eight (178) staff and students of the secondary school. The finding reveals among that firefighting equipment, like an automatic sprinkler, alarm and kitchen hood fire protection and others are life-saving devices should be generously displayed where they can be easily spotted even when one is extremely frightened.

The study is related to the current study in the sense that both of the studies adopted a survey research design questionnaire and checklist were the instrument used for data analysis.

There is a difference in terms of population of the study, the reviewed study used one hundred and seventy-eight (178) staff and students, while the present study used two hundred and twenty seven (227) academic librarian only. The findings further revealed 64% responded that (RFID) Radio Frequency Identification technology has been adopted in controlling libraries from threats of insurgency in Nigeria. There is also a difference in terms of the geographical area the reviewed study was conducted in Nairobi Kenya, while the present study was conducted in North East, Nigeria

Adoption of Modern Technology to Safeguard Vital Records in Libraries

Krishnan, Hemalatha and Giridharan (2018) adoption of smart library management system software to safeguard record in the library. The study adopted a survey research design. The instruments used for data collection were interviews and a structured questionnaire. The data obtained were analyzed using descriptive statistic. The population of the study comprised of one hundred and sixty-seven (160) questionnaires were administered while one hundred and twenty (120) students. The reviewed study used frequency, percentage and tables were used in the analysis of data collected. The finding reveals among others that smart library management system software technology can be used in safeguard record in the library.

The reviewed work is related to the present study which is on the adoption of smart library management system software to safeguard record In a library. Both of the studies adopted a survey research design. There is a difference in the instruments for data collection the above study used interviews, and structured questionnaire as instruments for data collection. While the present study used a questionnaire as the instrument for data collection. There is also a difference in terms of population of the studies, the population of the reviewed study was one hundred and fifty (150) while the population of the present study is two hundred and twenty seven (227) academic staff. The findings further revealed 47% responded that smart library management system software technology has been adopted in controlling libraries from threats of insurgency in Nigeria. There is also a

difference in terms of the geographical area the reviewed study was conducted in India, while the current research study is carried out in North East, Nigeria.

Studies conducted by Jain, Kulshrestra and Vyas (2017) on adoption of (RFID) technologyto safeguard electronic resources management system. The study adopted a survey research design. The instruments used for data collection were observation, checklist, and structured questionnaire.The instrument was subjected to face and content validation. The instrument was also subjected to reliability measures, and it yielded an overall coefficient of 0.79. The population of the study is one hundred and sixty (160) library staff. No sampling technique was conducted because the sample size is considered manageable by the researcher. The data obtained were analyzed and interpreted in the form of table and graphs the results of the study show that majority of the librarian use Radio frequency identification (RFID) in safeguard electronic resources in the library. Use of (RFID) is very important particularly during disaster and rescue operation.

The reviewed work is related to the current study in the sense that both of the studies is on the adoption of (RFID) technology to Safeguard electronic resources records management system. Both of the studies adopted a survey research design, and the data obtained were analyzed using frequency, percentages and table. There are also differences in terms of population of the studies they reviewed study used one hundred sixty (160) as the population of the study, while the present study used two hundred and twenty seven (227) academic staff. There is also a difference in terms of the method of data collection, the above-reviewed study used observation, checklist, and structured questionnaire. While the present study used a questionnaire as instruments for data collection. The findings further revealed 63% responded that (RFID) Radio Frequency Identification technology has been adopted in controlling insurgency in the libraries. There is also a difference in terms of the geographical

area the reviewed study was conducted in India, while the present study was conducted in North-East Nigeria.

Use of Electron Resource Management System to Safeguard Library Resources

In a study conducted by kulkarni (2011) on the use of an electronic resource management system to safeguard electronic resource as cloud computing technology in digital format in university libraries. The survey research design was used as the design of the study. The instruments used for data collection were questionnaire and interviewed. Data collected were analyzed using frequency counts, percentages, mean and standard deviation. The population of the study comprised of one hundred and ninety (190) staff and students. The results of the study show that the majority of the libraries use cloud computing technology in safeguarding electronic resources in the library.

The reviewed study is related to the present study which is on the use of electron resource management system to safeguard electronic resource as cloud computing technology in digital format in university libraries. Both of the studies used a survey research design. There is a difference in terms of population of the study, the reviewed study used one hundred and ninety (190) staff and students as the population of the study, while the present used two hundred and twenty seven (227) academic staff. There is also a difference in terms of instruments used for data collection. The reviewed study used a questionnaire and interviewed as instruments for data collection. The method used for the data analyzed were frequency counts, percentages (%), mean (X) and standard deviation (SD). While the present study, using a questionnaire as an instrument for data collection. The findings further revealed 57% responded that electron resource management system has been adopted to safeguard library resources. The data collected were analyzed using frequency counts, and percentages. There is also a difference in geographical location the above study was conducted in India, while the current research study is carried out in Nigeria

A study conducted by Ezeabasili and Nwosu (2018) on the use of an electronic security system in the security of information resources in federal university libraries in Southern Nigerian. The study adopted a descriptive survey research design. The instruments used for data collection were observation, checklist, and structured questionnaire. The data obtained were analyzed using descriptive statistic. The major findings include that available electronic security system in the libraries are not in use.

The reviewed study is related to the current study in the sense that both of the studies used Federal University Libraries and academic librarians as there respondent. There is a difference in the population the reviewed study did not specify its population. While the present study used two hundred and twenty seven (227) academic staff. The findings further revealed 53% responded on the use of an electronic security system in safeguarding information resource from threats of insurgency in Nigeria. There is also a difference in the reviewed study, the reviewed study used observation, checklist, and structured questionnaire as instruments for data collection. While the present study used the questionnaire as instruments for data collection. There is also a difference in terms of the geographical area the reviewed study was conducted in southern Nigeria, while the present study was conducted in North-East Nigeria.

In a study conducted by Ozowa, Abaand Aba (2016) on use of electronic surveillance systems (RFID) and CCTV on book theft and mutilation in Francis Suleimanu Idachaba Library, University of Agriculture, Makurdi. The descriptive survey research design was used for the study. The population of the study was three hundred (300) library users drawn from the nine (9) colleges in the University of Agriculture, Makurdi. The instruments used for data collection were questionnaire and interviewed. Data collected were analyzed using frequency counts, percentages (%), mean (X) and standard deviation (SD). The results of the

study show that the majority of the libraries are not using (RFID) and CCTV as a result of the expensive nature of the equipment.

The reviewed study is related to the present study which is on the use of electronic surveillance systems (RFID) and CCTV on book theft and mutilation. Both of the studies used a descriptive survey research design. There is also a difference in terms of population, the reviewed study used three hundred (300) as the population of the study drawn from the nine (9) colleges in University of Agriculture, Makurdi. While the present used two hundred and twenty seven (227) academic staff as the population of the study. There is also a difference in the instruments used, the reviewed study used questionnaire and interviewed as a method of data collection, the data collected were analyzed using frequency counts, percentages (%), mean (X) and Standard Deviation (SD). While the present study used the questionnaire as instruments for data collection. The data collected were analyzed using frequency counts, and percentages. The findings further revealed 72% responded that electronic surveillance systems (RFID) and CCTV has been adopted to safeguard library resourcesfrom threats of insurgency in Nigeria. There is also a difference in geographical location the above study was conducted in Northcentral, while the current research study is carried out in North East, Nigeria

Irina, Moira, Sara and Robert. (2015) conducted a study on Adoption and use of technology (RFID) in the aftermath of Hurricane Katrina in New Orleans. Survey method was used for the study. Questionnaire and interviews were the instruments used for data collection. The population of the study is one hundred and seventy (170). Frequency, percentage and tables were used in the analysis of data collected. The findings disclose that the majority of the staff indicated that adoption and use of technology in disaster management help in curtailing disaster incident. As the process shifts from immediate disaster response to

recovery, newly adopted or creatively adapted technologies are used to maintain a community connection and to aid in recovery processes.

The reviewed work is related to the current study in the sense that both of the studies adopted survey research design for the study, the also used the same method for statistical analysis, that is frequency, percentage and tables. There is a difference in terms of instruments used for data collection, the above-reviewed study used questionnaire and interviews as instruments for data collection. While the present study used the questionnaire as instruments for data collection. There is the difference in the population the reviewed study used one hundred and seventy (170) as the population of the study, while the present study used two hundred and twenty seven (227) academic staff as the population of the study. The findings further revealed 57% responded on theuse ofelectronic surveillance systems (RFID) on book theft and mutilation from threats of insurgency in Nigeria.There is also a difference in terms of the geographical area the reviewed study was conducted in America, while the present study conducted in North-East Nigeria

Adoption of Surveillance System for Managing Disaster Arising From Vandalism

In a study conducted by khurshid (2015)onadoption of electronic surveillance and security systems (CCTV) installed in Hec recognized university libraries of Punjab and Federal area library. The study adopted the used of survey research design for the study. The study used both public and private universities. The instrument used for data collection was a structured questionnaire. The data obtained were analyzed using frequency, percentages and tables. The population of the study comprised of three hundred and fifty (350) respondents draw from both the public and private universities. The finding reveals among others that electronic surveillance and other security systems (CCTV) technology were effectively used to tackle vandals in the library.

The reviewed study is related to the current study in the sense that both of the studies used survey research design. Both of the studies used the same statistical method in analyzing the data collected that is frequency, percentages and tables description. There is also differences in terms of the method of data collection, the reviewed used questionnaire only as an instrument for data collection. While the present study used the questionnaire as an instrument for data collection. There is a difference in the population of the study, the reviewed study used three hundred and fifty (350) as respondents draw from both public and private universities public. While the present study used two hundred and twenty seven (227) academic staff. There is also a difference in terms of institutions the above-reviewed study used both public and private universities, while the present study used only public universities.The findings further revealed 63% responded that electronic surveillance systems CCTV has been adopted in controlling book theft and mutilation from threats of insurgency in libraries. There is a difference in the reviewed study, the review used four (4) purpose of the study, while the present study used nine (9) purpose of the study. There is also a difference in terms of the geographical area the reviewed study was conducted in India, while the present study was conducted in North-East Nigeria.

In a study conducted by Dattatraya and Watumull (2013) on Adoption of surveillance security measures to control vandalism. (CCTV) in engineering college libraries in Maharashtra. The study adopted a survey research design. Method of data collection was a structured questionnaire. The population of the study comprised of one hundred and sixty-seven (167) respondents. Frequency, percentage and tables were used in the analysis of data collected. The finding of the study reveals that the majority of the staff indicated that the adoption of security measures to control vandalism will go a long in controlling vandalism in the library.

The reviewed studyis related to the current study in the sense that both of the studies adopted a survey research design. There is a difference in the instruments for data collection the reviewed study used a structured questionnaire only as an instrument for data collection, while the present study used the questionnaire as instruments for data collection. The findings further revealed 72% responded thatelectronic surveillance systems CCTV has been adopted in controlling book theft and mutilation in libraries. There is also a difference in terms of population of the study, the reviewed study used one hundred and sixty-seven (167) as the population of the study, while the present study used two hundred and twenty seven (227), academic staff as the population of the study. There is a difference in terms of the geographical area the reviewed study was conducted in India, while the present study was conducted in North-East Nigeria.

In a study conducted by Higgins (2015) on adoption of surveillance system(RFID) on book theft and vandalism in public and academic libraries. The study adopted a survey research design. The instruments used for data collection were observation, checklist, and structured questionnaire. Descriptive and inferential statistics of frequency counts and percentages were used to analyze data gathered through the survey. Random sampling technique was used to select the sample size of the study. The finding reveals among others that radio frequency identification technology (RFID) was effectively used to tackle book theft and vandals in the library.

The reviewed study is related to the current study in the sense that both of the studies adopted the survey research design. Both of the studies used the same method of data analysis, which is descriptive and inferential statisticswere used to analyze data gathered through the survey. There is also a difference in terms of instruments the above-reviewed study used observation, checklist, and structured questionnaire. While the present study used a structured questionnaire.The findings further revealed 57% responded that (RFID)

technology has been adoption in libraries to control book theft and mutilation from threats of insurgency.There is difference in terms of population of the study, the reviewed study did not spill out its population, while the present study used two hundred and twenty seven (227) academic staff as the population of the study. There is also a difference in terms of the geographical area the reviewed study was conducted in India, while the present study was conducted in North-East Nigeria.

Adoption of Modern Technology to Manage Disaster That Emanates From Terrorism

In a study conducted by Al-Dahash1, Al-Shammari, Kulatungaand Hardman, (2017) on the adoption of cloud technology for disaster response management stemming from terrorism inIraq**.** The study adopted a survey research design. The population of the reviewed study was two hundred and twenty (220). A questionnaire was the instrument used for data collection. Frequency counts, percentages (%), mean (X) and Standard Deviation (SD) Descriptive were used to analyze data. Randomsampling technique was used to select the sample size of the study. The study revealed that cloud computing is considered as a technology for providing synchronous, on-line information management with the accessibility of data regardless of the storage resources' locating area of terrorism.

The reviewed study is related to the current study in the sense that both of the studies adopted the survey research design. There is a difference in terms of instruments for data collection the reviewed used questionnaire as the instrument for data collection. While the present study used the questionnaire as an instrument for data collection. There is also a difference in terms of method of data analysis the reviewed study used frequency counts, percentages (%), mean (X) and standard deviation (SD) to analyze data gathered through the survey. While the present study used frequency, percentage and tables to analyzed data collected. The findings further revealed 53% responded that cloud technology has been adopted to protect libraries from threats of insurgency in Nigeria. There is also a difference in

terms of population of the study the reviewed study used two hundred and twenty (220), while the present study used two hundred and twenty seven (227), academic staff. There is also a difference in terms of the geographical area the reviewed study was conducted in Iraq, while the present study was conducted in North-East Nigeria.

In a study conducted by Eijkman (2011) on the adoption of modern satellite technologies and other forms of ICT technologies used in the fight against terrorism. The study adopted a survey research design. The population of the reviewed study was two hundred and fifteen (215) students. The instruments used for data collection were observation, checklist, and structured questionnaire. The data obtained were analyzed and interpreted in the form of table and graphs. The finding reveals among others that satellite technology was effectively used to tackle fight against terrorist.

The reviewed work is related to the current study in the sense that both of the studies is on the adoption of modern satellite technologies and other forms of ICT technology used in the fight against terrorism. Both of the studies adopted a survey research design. There is a difference in terms of the population of the study, the reviewed study used two hundred and fifteen (215), students. While the present study used two hundred and twenty seven (227), academic staff. The findings further revealed 52% responded that modern satellite technology (ICT) has been adopted in libraries to control book theft and mutilation in libraries.There is the difference in terms of instruments used for data collection, the reviewed study used observation, checklist, and structured questionnaire as instruments for data collection While the present study used the questionnaire as instruments for data collection. There is also a difference in terms of the geographical area the reviewed study was conducted in India, while the present study was conducted in North-East Nigeria.

Adoption of Modern Technology to Manager Disaster ThatEmanates From Biological Agent

Motlagh and Samimi (2013) conducted a study on the adoption of technology to manage a disaster of biological agents. The study adopted a survey research design. The population of the reviewed study was two hundred and nine (209) the instruments used for data collection were observation, checklist, and structured questionnaire. Descriptive and inferential statistics of frequency counts and percentages were used to analyze data gathered through the survey. The finding reveals among others that adoption of technology was effectively used to tackle biological agent in the library.

The above study is related to the current study in the sense that both of the studies adopted the survey research design. There is also a difference in terms of the statistical method the above-reviewed study used descriptive and inferential statistics of frequency counts and percentages were used to analyze data. While the present study used frequency, percentage and tables for data analysis. There is also a difference in terms of the instrument for data collection the reviewed study used observation, checklist, and structured questionnaire. While the present study used a structured questionnaire. There is a difference in terms of population of the study the reviewed study used one hundred and twenty (209) while the population of the present study was two hundred and twenty seven (227) academic staff. There is also a difference in terms of the geographical area the reviewed study was conducted in India, while the present study was conducted in North-East Nigeria.

In a study conducted by Olubanke (2010) on the adoption of modern technology to manage disaster that emanates from the biological agent. The study adopted a survey research design and a questionnaire was the instrument used for data collection. Descriptive and inferential statistics of frequency, percentages and tables were used to analyze data collected. Randomsampling technique was used to select the sample size of the study. The study has five (5) purposes, one of the purposes of the study is to find out the current state on

the various biological agents that could cause deterioration of paper materials and possible intervention strategies against these biotic agents in the tropics. The study identifies moulds as the most important bio deteriorating agents of library materials. Other biological agents include bacteria, insects and rodents. The important insects in a tropical environment are cockroaches and termites. The warm humid tropical conditions and dirty environment trigger/promote bio deterioration processes and make book deterioration to be more pronounced in the tropics than in the temperate regions.

The reviewed work is related to the current study in the sense that both of the studies adopted the survey research design. There is also a difference in terms of instruments used for data collection, the reviewed study used the questionnaire as the instrument for data collection. While the present study used the questionnaire as instruments for data collection. Another difference is that the above-reviewed study used descriptive and inferential statistics of frequency counts and percentages were used to analyze data, random sampling technique was also used to select the sample size of the study. While the present study used frequency, percentage and tables to analyzed data collected. The findings further revealed 45% responded that modern technology has been adopted to safeguard libraries from biological attack. There are also differences in terms of the population of the study, the reviewed study did not specify the population, while the population of the present study was 227 academic staff. There is also a difference in terms of the geographical area the reviewed study was conducted in south-west Nigeria, while the present study was conducted in North-East Nigeria.

Summary of Review of Related Literature

The literature review presents a discussion on the concepts of awareness, adoption, modern technologies and disaster management. Awareness has to do with familiarity and recognition of something based on individual knowledge about it**,** adoption is a state of being

voluntary acceptance of innovation or something that exists. The term modern technology is used to refer to like something new. Whiledisaster management is the actions taken by an organization in response to unforeseen or unexpected events that adversely affect the environment and people in the area surrounding that organization.

The study is supported by two theories that are Dynamic Awareness Theory (DAT). The theory was advocated by Riemer and Haines in 2008, the theory has four elements mechanism and the role of technology in the process of awareness. (DAT) and Technology Acceptance Model (TAM) was also propounded by Davis (1989). The two theories discuses on accepting of technology to perform and action, the degree to which a person believes that using technology will be free of error.

The chapter also reviewed the various types of disaster that affect libraries and information centres, which include natural or man-made. Natural disasters are those events in the environment that occur suddenly within the ecosystem such as flood, hurricane, wind storm, earthquake, volcanic eruption, fire, drought, typhoon, tsunami, mudslide, extreme cold or heat wave. While, Man-made disasters are those caused or influenced by man, causing financial losses, risks, hazards and suffering such as war, explosives, liquid chemical spills, and terrorism. Also, the types of technologies used in managing disaster in libraries are Geographic Information system (GIS), Global Positioning System, (GPS) Forecasting and Warning System, Closed Circuit Television (CCTV) , Metal Detector , Fire Extinguisher, Fire Suppressants, Thermal detectors, Radio Frequency Identification (RFID), Information and Communication Technology (I C T) and photoelectric detectors.

The study reviewed relevant theoretical studies based on awareness and adoption of modern technology in disaster management by librarians, Empirical studies were reviewed and analyzed. From the review it appeared that awareness and adoption of modern technology in disaster management by librarians were not fully covered, and it was also

observed that some of the empirical works cited used similar methods and techniques adopted by this study. There were studies discovered carried out in other countries and some in Nigeria. At the end of the reviewed literature, it has become clear that research on awareness and adoption of modern technology in disaster management by librarians in university libraries in North-east, Nigeria has not been covered in the literature. However, only few studies have integrated use of modern technology in disaster management by librarians in university libraries. Based on the above reasons, the present study intends to fill the gap that exists.

CHAPTER THREE

METHOD

This chapter is presented under the following sub-headings: research design, area of the study, population of the study, sample and sampling technique, instrument for data collection, validation of the instrument, reliability of the instrument, method of data collection, and method of data analysis.

Research Design

The descriptive survey research design was adopted for the study. According to Nworgu (2015), descriptive survey research is one in which a group of people or items are studied by collecting and analyzing data from only a few people or items considered to be representative of the entire group. Accordingly, this design is appropriate for this study because it enables the researcher to use a questionnaire to collect information from the respondents and present it logically.According to Ifidon and Ifidon (2007) descriptive survey describes a current situation with a subject. It involves collecting data to answer questions concerning conditions or relationship that exist, practices that prevail, points of views, or attitudes that are held, effects that are being felt or trends that are developing and reports the way things are.

Area of the Study

The area which constitutes North-East zone of Nigeria has 6 federal universities, one from each state. The study was conducted in North East, Nigeria. North-east region is a former administrative division of Nigeria, created on May 27th, 1967 from parts of the Northern region. Its capital was the city of Maiduguri (Murtala, 2015). The North East (NE) Zone of Nigeria covers close to one-third (280,419km2) of Nigeria's land area (909,890km2). It comprises six (6) states which include: Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe. According to projections for 2011 by the National Bureau of Statistics (NBS), these states have 13.5% (i.e. 27,558,674) of Nigeria's population which is put at 173,905,439. The

zone is characterized by a climate of dry season of six months, alternating with six months rainy season as in other parts of the Nigerian savannah, this precipitation distribution is mainly triggered by seasonal shift of the Inter- tropical Convergence Zone (ITCZ). The zone is blessed with natural resources such as kaolin, quartz, and gypsum. However, the choice of the area is as a result of the high rate of insurgence in the area that has affect the uses from making use of the libraries, also terrorism, as unleashed by Boko Haram, has primarily targeted government security agencies most especially the police, public buildings. Also no work of such nature has been done to the knowledge of the researcher.

The population of the Study

The population of this study consist of all the 227 academic librarians in Federal University Libraries in the North-East zone of Nigeria (Source: Library Guide, 2019).

Sample and Sampling Technique

The entire population of 227 academic librarians in Federal University Libraries in North-East, Nigeria constituted the respondents. No sampling technique was used because the population size was considered manageable by the researcher.

Instrument for Data Collection

The instrument for data collection was structured questionnaire on a four-point scale developed by the researcher. The instrument is titled "Questionnaire on Awareness and Adoption of Modern Technologies for Disaster Management" (QAAMTDM). The instrument consisted of two sections A and B. Section A is concerned with Awareness of Modern Technologies in Disaster Management and then sub-divided into 3 clusters namely A1, A2, and A3. Cluster A1 contains 16 items on awareness ofmodern technologies that could be adopted in managing various disasters inlibraries and information centres; cluster A2 contains 10items moderntechnologies that could be adopted in managing of water related and wind storms, cluster A3 contains nine, firefighting equipment that can be adopted for the

management of fire disasters in the library. The response option were as follows Aware (A) and Not Aware (NA) were be used to answer questions 1, one while a four-point scale of Strongly Agreed (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD) were used to answer questions in sectionAand B. See Appendix A..Pg 137-141, Appendix B..Pg 142,and Appendix C.Pg 143.

Section B is sub-divided into B1, B2, B3, B4 and B5. Cluster B1 contains 6 items on adoption of modern technologies in safeguarding vital records in the library; cluster B2 contains 11 items used for electronic resources management to safeguarding electronic resources; cluster B3 contains 8 items on types of surveillance adopted for managing disaster arising from vandalism; cluster B4 contains 8 items on modern technologies used in managing disaster that emanate from terrorism; and cluster B5 contains 6 items on types of modern technologies used in managing disaster that emanate from biological agents.

Validation of the Instrument

Content validity of the instrument was established by three experts. The experts were ask to validate the questionnaire base on the language, instruments, and wordings. However, two experts were from the Department of Library and Information Science and one lecturer from the Department of Educational Foundations (Measurement and Evaluation) both from the Faculty of Education, Nnamdi Azikiwe University, Awka. Copies of the questionnaire were given to the experts alongside the title of the work, the purpose of the study, the scope of the study, research questions and hypotheses. They objectively and constructively examined the appropriateness, wording, andsuitability of the instrument. Their observations were thereafter reflected in the final draft.

Reliability of the Instrument

Having established the validity of the instrument by experts, the instrument was administered to 20 academic librarians in Bayero University, Kano because they share similar characteristics in terms of insurgency and disaster occurrence. Cronbach Alphawas used to determine the internal consistency of each cluster, thus, it yielded coefficient values of the following clusters, cluster, $A_1$0.70, cluster, $A_2$0.74, cluster, A_3 0.80 cluster, while cluster$B_1$0.76, cluster, B_2 0.88, cluster, B_3 0.59, cluster, $B_4$0.66, and B_5 0.91 respectively. Overall, reliability coefficient value of 0.77was obtained.

Method of Data Collection

The 240 copies of validated instruments were administered to the respondents by the researcher with the help of one research assistant in each university library. However, the following numbers of questionnaire were giving to the research assistants were as follow: Abubakar Tafawa Balewa University, Bauchi State, 30, Federal University Kashere, Gombe State. 38, Moddibo Adama University Yola,Adamawa State, 35. Federal University Wukari, Taraba State, 28. University of Maiduguri, Borno State, 105, Federal University, Gashua, Yobe State,28The research assistants who are staff of the university libraries were briefed on how to administer and retrieve copies of the questionnaire from the respondents. On the spot method of administration and collection was employed by the researcher. The reason for this was to clarify questions that could be raised by the respondents.

Method of Data Analysis

Retrieved copies of the questionnaire were analyzed using frequency counts, percentages, mean and standard deviation to answer the research questions. Specifically, research question 1 was analyzed using frequency counts and percentages while research questions 2 – 8 were analyzed using mean and standard deviation.Chi –square was used to test hypothesis 1 at 0.05 level of significant. For research question one, any item with a

score of 51% was regarded as an indication that the respondents were or not aware with the statement under consideration. The cut-off point for accepting mean score is 1.50 with the decision rule that any weighted mean score from 1- 1.49 was taken as Strongly Disagree (SD), 1.5 – 2.49 – Disagree (D), 2.50 – 3.49 - Agree (A) and 3.50 - 4.00 – Strongly Agree (SA). In the case of hypothesis testing, if the calculated t value is greater than the critical value thehypothesis will be rejected; otherwise, it will not be rejected.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

This chapter contains summary of the analysis of data collected for this study. Data collected with respect to the research questions were analyzed and presented in Table 1-8. Results and the summaries of findings are presented.

Research Question 1: What are the librarians' awareness of modern technologies used in disaster management in libraries in North-East Nigeria?

Table 1: Frequency and Percentage Response on Librarian's Awareness of Modern Technologies Used in Disaster Management in Libraries in North-East Nigeria (*N=227*).

S/N	**Modern Technologies**	**Aware Freq.**	**Percentage**
1	Satellite communication networks	175	77.1
2	Geographic Information system (GIS)	164	72.2
3	Global Positioning System,(GPS)	174	76.7
4	Forecasting and Warning System	164	72.2
5	Close Circuit Television (C C T V) system	161	70.9
6	Metal Detector	175	77.1
7	Fire Extinguisher	162	71.4
8	Photoelectric detectors	169	74.4
9	Fire Suppressants	178	78.4
10	Thermal detectors	166	73.1
11	Automatic Sprinkler system	183	80.6
12	Remote Sensing	149	65.6
13	Carbon dioxide System	130	57.3
14	Halon BC Dry, Dry Chemical	133	58.6
15	Automated Carbon dioxide System	132	58.1
16	De-humification	139	61.2

Results presented in Table 1 show the item by item analysis of librarian's response on their awareness of modern technologies used in disaster management in libraries in North-East. The analysis revealed that automatic sprinkler system 183(80.6%) fire suppressants 178(78.4%) satellite communication network 175 (77.1%) and global positioning system 174(76.7%) had the highest number of awareness as rated by academic librarians.while, carbon dioxide system 130 (57.3%) automatic carbon dioxide system 132 (58.1%) Halon BC

dry, Dry chemical 133(58.6%) and De-huminification 139(61.2%) had the lowest number of awareness as rated by academic libraries as modern technologies used in disaster management in University libraries in North- East Nigeria.

Research Question 2: what are the modern technologies adopted for management of water related disasters and windstorms in Federal University Libraries in North- East Nigeria?

Table 2: Mean and Standard Deviation of Librarians Responses on the Adoption of Modern Technologies Used for Disaster Management of Water related Disasters and Windstorms in Libraries in North-East Nigeria (*N=227*)

S/N	Modern Technologies Items	Mean	SD	Remark
17	Satellite communication networks	1.49	.97	Strongly disagree
18	Geographic Information system (GIS)	1.75	.68	Disagree
19	Global Positioning System(GPS)	1.56	.56	Disagree
20	Forecasting and Warning System	3.65	.43	Strongly agree
21	Close Circuit Television (C C T V) system	2.73	.56	Agree
22	Photoelectric detectors	1.73	.43	Disagree
23	Fire Suppressants	2.60	1.01	Agree
24	Global Integrated Observing System	3.74	.97	Strongly agree
25	Space-based Technology	2.68	1.11	Agree
26	Remote Sensing	1.97	1.02	Disagree

Results presented in Table 2 shows the mean and standard deviation of librarian'sresponses on the adoption of modern technologies used for disaster management of water related disasters and windstorms in libraries in North-East Nigeria. The analysis revealed that librarians strongly agreed to items 20 and 24 with mean scores of 3.65 and 3.74; respectively agreed to 21 and 25 with mean scores of 2.73 and 2.68; respectively and disagreed to items 18, 19, 22 and 26 with mean scores of 1.75, 1.56, 1.73 and 1.97 respectively. On the whole, the results indicate that academic librarians strongly agreed to global integrated observing system, agreed to CCTV, space-based technology and fire suppressants, disagreed to geographic information system and global positioning system, photoelectric detectors, and remote sensing modern technologies adopted for disaster management of water and windstorms related disasters in libraries in North-East Nigeria. On

the other hand, the standard deviation reported shows that the librarians where heterogeneous in the responses.

Research Question 3: What are the types of firefighting equipment adopted for management of fire disasters in Federal University Libraries in North-East Nigeria?

Table 3: Mean and Standard Deviation of Librarian Responses on the types of Fire Fighting Equipment Adopted for Management of Fire Disasters in Federal University Libraries in North East Nigeria (*N=227*)

S/N	Types of firefighting Items	Mean	SD	Remark
27	Fire Extinguisher	4.00	.93	Strongly agree
28	Carbon dioxide System	3.74	1.00	Strongly agree
29	De-humification	1.09	.84	Strongly disagree
30	Automatic Sprinkler system	2.11	.92	Disagree
31	Vacuum Freezer Dyer	3.10	1.01	Agree
32	High expansion foam	1.01	1.00	Strongly disagree
33	A bulldoze Fire extinguisher	3.88	1.09	Strongly agree
34	Halon BC Dry, Dry Chemical	1.09	1.14	Strongly disagree
35	Fire Suppressants	3.77	.99	Strongly agree

Results presented in Table 3 shows the mean and standard deviation of librarians on the types of firefighting equipment adopted for management of fire disasters in Federal University libraries in North -East Nigeria. The analysis reported revealed that librarians strongly agreed to items 27, 28, 33, and 35 with mean scores of 4.00, 3.74, 3.88 and 3.77, respectively agreed to 31 with a mean score of 3.10, respectively disagree to items 30 with a mean score of 2.11 and strongly disagreed to items 29, 32, 34 respectively with mean scores of 1.09, 1.01 and 1.09 respectively. In summary, the respondents strongly agreed to fire extinguisher, carbon dioxide system, a bulldoze fire extinguisher and fire suppressants. The respondents agree to vacuum freezer dyer, disagree to automatic sprinkler system and strongly disagree to De-humification, high expansion foam, Halon BC dry, dry chemical as

types of firefighting equipment adopted for management of fire disaster in University libraries in North- East Nigeria. Similarly, the standard deviation reported show that the librarians were homogeneous in the response.

Research Question 4: What are the types of modern technologies adopted to safeguard vital records in libraries in Federal University libraries in North -East Nigeria?

Table 4: Mean and Standard Deviation of Librarians Responses on the types of Modern Technology Adopted to Safeguard Vital Records in Libraries (*N=227*)

S/N	Types of modern technology Items	Mean	SD	Remark
36	Cloud computing technologies for safeguarding the library resources from annihilation by the insurgence	3.90	1.08	Strongly agree
37	Satellite communication networks, for assisting in safeguarding of records in the libraries	2.32	.95	Disagree
38	Antivirus for safeguarding of records in the libraries electronically	3.99	1.12	Strongly agree
39	Digitization to safeguard records in the libraries (Digital library software such as Duraspace, and Fedora)	2.60	.63	Agree
40	Electromagnetic Security (EM) for safeguarding records in the libraries	1.05	1.12	Strongly disagree
41	LOCKSS (Lots of Copies Keeps Stuff Safe), (Controlled LOCKSS) and Portico tools for safeguarding of records in the libraries	1.01	.97	Strongly disagree

Results presented in Table 4 shows the mean and standard deviation of librarians on the types of modern technologies adopted to safeguard vital documents in Federal university libraries in North- East Nigeria. The analysis reported revealed that librarians strongly agree to items 36 and 38 with mean scores of 3.90 and 3.99, respectively agreed to item 39 with a mean score of 2.60, respectively disagreed to item 37 with a mean score of 2.32 and strongly disagreed to items 40 and 41 with mean scores 1.05 and 1.01 respectively. On the whole, the respondents disagreed to the types of modern technologies adopted to safeguard vital documents in Federal University in North- East. Similarly, the standard deviation reported shows that librarians where homogeneous in the responses on the types of modern technologies adopted to safeguard vital documents in Federal University libraries in North - East Nigeria.

Research Question 5: What types of modern technologies are adopted to safeguard electronic resources in Federal University Libraries in North- East Nigeria?

Table 5: Mean and Standard Deviation of Librarians Responses on the types of Modern Technology Adopted to Safeguard Electronic Resources in Libraries in North-East Nigeria (*N=227*)

S/N	Modern Technology Items	Mean	SD	Decision
42	Library's bibliographic database password	3.80	.97	Strongly agree
43	Antivirus	2.61	.83	Agree
44	CD, DVD	4.00	.78	Strongly agree
45	Firewalls	3.93	1.09	Strongly agree
46	Spyware	3.82	1.17	Strongly agree
47	Software for data recovery in case of damage	3.03	1.07	Agree
48	Uninterruptible power supply (UPS) backed up	3.41	1.16	Agree
49	Flash for the protection of electronic resources in the library	2.56	.87	Agree
50	Cloud Computing technologies for the protection of electronic resources in the library	3.83	.67	Strongly agree
51	External Hard Disc	3.73	.75	Strongly agree
52	Antimalware	2.78	.56	Agree

Results presented in Table 5 shows the mean and standard deviation of librarians on the types of modern technology adopted to safeguard electronic resources in libraries in North-East Nigeria. The analysis reported revealed that librarians strongly agreed to items 42, 44, 45, 46, 50, 51 respectively with mean scores of 3.80, 4.00, 3.93, 3.82, 3.83 and 3.93 and agreed to items 43, 47, 48, 49, 52 respectively with mean scores of 2.61, 3.03, 3.41, 2.56 and 2.78 respectively. On the whole, the respondents rating shows that the respondents agree to the types of modern technologies adopted to safeguard electronic resources in Federal university libraries in North- east. More so, the standard deviation reported shows that librarians where heterogeneous in their responses on the types of modern technologies adopted to safeguard electronic resources in Federal University libraries in North -East Nigeria.

Research Question 6: What are the types of surveillance system adopted for managing disaster arising from vandalism in Federal University Libraries in North- East Nigeria?

Table 6: Mean and Standard Deviation of Librarians Responses on the types of Surveillance Systems Adopted for Managing Disaster Arising from Vandalism in Libraries in North-East Nigeria (*N=227*)

S/N	Types of surveillance Items	Mean	SD	Remark
53	RFID book detection system to check mate vandalism Radio Frequency Identification (RFID)	3.85	1.11	Strongly agree
54	Closed Circuit Television (CCTV) for visual surveillance of library materials	3.96	.99	Strongly agree
55	CCTV footage for recording all activities in the library	2.47	.97	Disagree
56	Magnetic book detection system to check the activities of users at the exit doors of the library	2.12	.91	Disagree
57	Alarmed window screens to protect its assets from theft /vandalism?	2.32	.86	Disagree
58	Motion detectors to protect its assets from theft/vandalism	4.00	.65	Strongly agree
59	Library emergency exits door equipped with alarms	3.62	.83	Strongly agree
60	Sounders (sirens) to protect its assets from theft/vandalism	3.27	.83	Agree

Results presented in Table 6 shows the mean and standard deviation of librarians on the types of surveillance systems adopted for managing disaster arising from vandalism in libraries in North-East Nigeria. The analysis reported that librarians strongly agreed to items 53, 54, 58, 59 respectively with mean scores of 3.85, 3.96, 4.00 3.62 and agreed to item 60 with a mean score of 3.27 respectively and disagreed to items 55, 56, 57 with mean scores of 2.47, 2.12 and 2.32 respectively. On the whole, the respondents agree to the types of surveillance systems adopted for managing disaster arising from vandalism in libraries in North- East Nigeria. More so, the standard deviation reported shows that librarians where heterogeneous in their responses on the types of surveillance systems adopted for managing disaster arising from vandalism in libraries in North-East Nigeria.

Research Question 7: What are the types of modern technology adopted to manage disaster that emanate from terrorism in Federal University Libraries in North- East Nigeria?

Table 7: Mean and Standard Deviation of Librarians Responses on the types of modern Technology Adopted for Managing Disaster that Emanate from Terrorism in Libraries in North-East Nigeria (*N=227*)

S/N	Modern technology Items	Mean	SD	Remark
61	GPS to locate disaster incidents in the libraries	4.00	.86	Strongly agree
62	Geographic information systems to enable efficient organization of disaster dataset	3.67	.65	Strongly agree
63	GIS to tackles a disaster in a much better way	3.42	1.01	Agree
64	ICT security systems to checkmate any criminal activities in the libraries	3.51	.74	Strongly agree
65	ICTs for safeguarding library resources from terrorism	2.11	.94	Disagree
66	Geographic Information Systems and Web Technologies for disaster management	2.37	.62	Disagree
67	Satellite-based communication to help plan and improve DRR	2.67	.82	Agree
68	Remote Sensing for sensing incidence of disaster in the libraries	2.87	.73	Agree

Results presented in Table 7 shows the mean and standard deviation of librarians on the types of modern technology adopted for managing disaster that emanate from terrorism in libraries in North- East Nigeria. The analysis reported that librarians strongly agreed to items 61, 62, 64 with mean scores of 4.00, 3.67 and 3.51, respectively agreed to items 63, 67, 68 with mean scores of 3.42, 2.67 and 2.87 and disagree to items 65, 66 with mean scores of 2.11 and 2.37 respectively. On the whole, the respondents agree to the types of modern technologies adopted to manage disaster that emanate from terrorism in libraries in North-east Nigeria. More so, the standard deviation reported shows that librarians where homogeneous in their responses on the types of modern technology adopted to manage disaster that emanate from terrorism in libraries in North-East Nigeria.

Research Question 8: What are the types of modern technology adopted to manage disaster that emanate from biological agents in Federal University Libraries in North- East Nigeria?

Table 8: Mean and Standard Deviation of Librarians Responses on the types of Modern Technology Adopted for Managing Disaster that Emanate from Biological agents in Libraries in North-East Nigeria (*N=227*)

S/N	Modern technology Items	Mean	SD	Remark
69	Fumigation of the library to reduce insects in the library	3.89	1.01	Strongly agree
70	Biological agents like insects, fungi and rodents can cause damages to books and other library materials	4.00	.87	Strongly agree
71	Termite proofing to control termite in the library	3.78	.99	Strongly agree
72	Air-condition to deal with pest through freezing at extremely cold temperatures.	4.00	.74	Strongly agree
73	Frequent application of chemical, to help in protection agents pest	2.89	.63	Agree
74	Well-ventilated and climate-controlled environment to prevent infestation by rodent / pests.	2.97	.81	Agree

Results presented in Table 8 shows the mean and standard deviation of librarians on the types of modern technology adopted for managing disaster that emanate from biological agents in libraries in North- East Nigeria. The analysis reported that librarians strongly agreed to items 69, 70, 71 and 72 respectively with mean scores of 3.89, 4.00, 3.78 respectively and 4.00, agreed to items 73, 74 with mean scores of 2.89 and 2.97 respectively. On the whole, the respondents agreed to the types of modern technologies adopted for managing disaster that emanate from biological agents in libraries in North- East Nigeria. More so, the standard deviation reported shows that librarians where heterogeneous in their responses on the types of modern technology adopted to manage disaster that emanate from biological agents in libraries in North-East Nigeria.

Hypotheses Testing

The hypothesis postulated for thus study was tested at 0.05 level of significance using appropriate statistical tools as follows.

Hypothesis 1: Librarians awareness of modern technologies used in disaster management in libraries in North- East will not be independent on gender.

Table 9: Chi-square Summary Analysis Table on Librarians Awareness of Modern Technologies used in Disaster Management in Libraries in North -East Nigeria (*N=227*)

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	32.339[a]	1	.009
Likelihood Ratio	39.728	1	.001
Linear-by-Linear Association	3.351	1	.067
N of Valid Cases	227		

Results presented in Table 9 shows the chi-square contingency table on librarians awareness of modern technologies used in disaster management in libraries in North -East Nigeria with respect to gender. The table reports that the Pearson chi-square significance value of 0.09 is greater than the alpha value of 0.05. This reveals that librarians awareness of modern technologies used in disaster management in libraries in North- East were not independent on gender. Hence the null hypothesis is not rejected *(N=227, df =1, p>0.05).*

Hypothesis 2: Librarians awareness of modern technologies used in disaster management in libraries in North- East will not be independent on years of working experience.

Table 10: Chi-square Summary Table on Librarians Awareness of Modern Technologies Used in Disaster Management in Libraries in North- East Nigeria (*N=227*)

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	52.821[a]	1	.000
Likelihood Ratio	55.339	1	.034
Linear-by-Linear Association	.370	1	.543
N of Valid Cases	227		

Results presented in Table 10 shows the chi-square contingency table on librarians awareness of modern technologies used in disaster management in libraries in North- East Nigeria with respect to gender. The table reports that the Pearson chi-square significance value of 0.000 is less than the alpha value of 0.05. This reveals that librarian's awareness of modern technologies used in disaster management in libraries in North- East will be

dependent based on years of working experience. Hence the null hypothesis is rejected *(N=227, df =1, p<0.05).*

Hypothesis 3: There is no significant difference in the mean responses of male and female librarians on modern technologies adopted for management of water and windstorm related disaster in university libraries in North- East

Table 11: t-test Summary of the Mean Responses of Male and Female Librarians on Modern Technologies Adopted for Management of Water and Windstorm Disaster in University Libraries in North -East (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
Male	123	39.60	5.55				
				225	0.048	0.05	Significant
Female	104	37.53	4.66				

Results presented in Table 11 shows the t-test summary on the mean responses of male and female librarians on modern technologies adopted for management of water and windstorm disaster in University libraries in North -East. The result revealed that at 0.05 level of significance, the significant value of 0.048 is lesser than the alpha value of 0.05. Hence the null hypothesis is rejected *(N=227, df =225, p<0.05).* Based on this there is a significant difference in the mean response of male and female librarians on modern technologies adopted for management of water and windstorm disaster in University libraries in North - East.

Hypothesis 4: There is no significant difference in the mean responses of librarians on modern technologies adopted for management of water and windstorm related disaster in University libraries in North- East based on years of working experience

Table 12: t-test Summary of the Mean Responses of Librarians on Modern Technologies Adopted for Management of Water and Windstorm Disaster in UniversityLibraries in North -East based on years of working experience (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
0 – 5 years	98	41.57	11.18				
				225	0.006	0.05	Significant
6 years and above	129	36.85	7.73				

Results presented in Table 12 shows the t-test summary on the mean responses of librarians on modern technologies adopted for management of water and windstorm disaster in university libraries in North- East based on years of working experience. The result revealed that at 0.05 level of significance, the significant value of 0.006 is lesser than the alpha value of 0.05. Hence the null hypothesis is rejected *(N=227, df =225, p<0.05)*. Based on this there is a significant difference in the mean response of librarians on modern technologies adopted for management of water and windstorm disaster in university libraries in North- East based on years of working experience.

Hypothesis 5: There is no significant difference in the mean responses of male and female librarians on the types of firefighting equipment adopted for management of fire disasters in university libraries in North- East.Results related to this hypothesis is presented in table 13.

Table 13: t-test Summary Analysis Table of the Mean Responses of Male and Female Librarians on the type of Fire Fighting Equipment adopted for Management of fire d\Disaster in University Libraries in North -East (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
Male	123	39.53	10.55				
				225	0.275	0.05	Not Significant
Female	104	37.33	5.48				

Results presented in Table 13 shows the t-test summary on the mean responses of male and female librarians on the type of firefighting equipment adopted for management of fire disaster in university libraries in North- East. The result revealed that at 0.05 level of significance, the significant value of 0.275 is greater than the alpha value of 0.05. Hence the null hypothesis is not rejected *(N=227, df =225, p>0.05)*. Based on this there is no significant difference in the mean response of male and female librarians on the type of firefighting equipment adopted for management of fire disaster in university libraries in North- East.

Hypothesis 6: There is significant difference in the mean responses of librarians on the types of firefighting equipment adopted for management fire disasters in university libraries in North- East based on years of working experience.

Table 14: t-test Summary Analysis of the Mean Responses of Librarians on the types of Fire Fighting Equipment Adopted for Management of Fire Disaster in University Libraries in North- East Based on Years of Working Experience (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
0 – 5 years	98	39.61	3.90				
				225	0.626	0.05	Not Significant
10 years and above	129	38.85	8.15				

Results presented in Table 14 shows the t-test summary on the mean responses of librarians on the type of firefighting equipment adopted for management of fire disaster in university libraries in North- East based on years of working experience. The result revealed that at 0.05 level of significance, the significant value of 0.626 is greater than the alpha value of 0.05. Hence the null hypothesis is not rejected *(N=227, df =225, p>0.05)*. Based on this there is no significant difference in the mean response of librarians on the type of firefighting equipment adopted for management of fire disaster in university libraries in North- East based on years of working experience.

Hypothesis 7: There is no significant difference in the mean responses of male and female academic librarians on modern technologies adopted to safeguard vital records in university libraries in North- East.

Table 15: t-test Summary Analysis Table of the Mean Responses of Male and Female Librarians on Modern Technologies Adopted to Safeguard Vital Records in University Libraries in North -East (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
Male	123	41.63	7.74				
				225	0.932	0.05	Not Significant
Female	104	41.50	7.05				

Results presented in Table 15 shows the t-test summary on the mean responses of male and female librarians on modern technologies adopted to safeguard vital records in university libraries in North- East. The result revealed that at 0.05 level of significance, the significant value of 0.932 is greater than the alpha value of 0.05. Hence the null hypothesis is not rejected *(N=227, df =225, p>0.05)*. Based on this there is no significant difference in the mean response of male and female librarians on modern technologies adopted to safeguard vital records in university libraries in North- East.

Hypothesis 8: There is no significant difference in the mean responses of librarians on modern technologies adopted to safeguard vital records in university libraries in North -East based on years of working experience.

Table 16: t-test Summary Analysis of the Mean Responses of Librarians on Modern Technologies Adopted to Safeguard Vital Records in University Libraries in North-East Based on Years of Working Experience (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
0 – 5 years	98	43.68	6.15				
				225	0.010	0.05	Significant
10 years and above	129	39.92	8.23				

Results presented in Table 16 shows the t-test summary on the mean responses of librarians on modern technologies adopted to safeguard vital records in university libraries in North- East based on years of working experience. The result revealed that at 0.05 level of significance, the significant value of 0.010 is lesser than the alpha value of 0.05. Hence the hypothesis is not rejected *(N=227, df =225, p<0.05).* Based on this there is a significant difference in the mean response of librarians on modern technologies adopted to safeguard vital records in University libraries in North- East based on years of working experience.

Hypothesis 9: There is no significant difference in the mean responses of male and female academic librarians on modern technologies adopted to safeguard electronic resources in libraries in North- East.

Table 17: t-test Summary Analysis of the Mean Responses of Male and Female Librarians on Modern Technologies Adopted to Safeguard Electronic Resources in University Libraries in North- East (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
Male	123	41.63	7.74				
				225	0.932	0.05	Not Significant
Female	104	41.50	7.05				

Results presented in Table 17 shows the t-test summary on the mean responses of male and female librarians on modern technologies adopted to safeguard electronic resources in university libraries in North- East. The result revealed that at 0.05 level of significance, the significant value of 0.932 is greater than the alpha value of 0.05. Hence the null hypothesis is not rejected *(N=227, df =225, p>0.05)*. Based on this there is no significant difference in the mean response of male and female librarians on modern technologies adopted to safeguard electronic resources in University libraries in North -East.

Hypothesis 10: There is significant difference in the mean responses of librarians on modern technologies adopted to safeguard electronic resources in libraries in North- East based on years of working experience.

Table 18: t-test Summary Analysis of the Mean Responses of Librarians on Modern Technologies Adopted to Safeguard Electronic Resources in UniversityLibraries in North -East based on years of working experience (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
0 – 5 years	98	20.68	6.32				
				225	0.009	0.05	Significant
10 years and above	129	19.92	6.92				

Results presented in Table 18 shows the t-test summary on the mean responses of librarians on modern technologies adopted to safeguard vital records in university libraries in North- East based on years of working experience. The result revealed that at 0.05 level of significance, the significant value of 0.009 is lesser than the alpha value of 0.05. Hence the null hypothesis is rejected *(N=227, df =225, p<0.05)*. Based on this there is a significant difference in the mean response of librarians on modern technologies adopted to safeguard vital records in University libraries in North- East based on years of working experience.

Hypothesis 11: There is significant difference in the mean responses of male and female academic librarians on the types of surveillance system adopted for managing disaster arising from vandalism in libraries in North- East.

Table 19: t-test Summary Analysis of the Mean Responses of Male and Female Librarians on the types of Surveillance system Adopted in Managing Disaster Arising from Vandalism in University Libraries in North- East (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
Male	123	21.49	3.00				
				225	0.359	0.05	Not Significant
Female	104	21.13	3.56				

Results presented in Table 19 shows the t-test summary on the mean responses of male and female librarians on types of surveillance system adopted for managing disaster arising from vandalism in University libraries in North East. The result revealed that at 0.05 level of significance, the significant value of 0.359 is greater than the alpha value of 0.05. Hence the null hypothesis is not rejected *(N=227, df =225, p>0.05).* Based on this there is no significant difference in the mean response of male and female librarians on the type of surveillance system adopted in managing disaster arising from vandalism in university libraries in North- East.

Hypothesis 12: There is significant difference in the mean responses of academic librarians on the types of surveillance system adopted for managing disaster arising from vandalism in libraries in North -East based on years of working experience.

Table 20: t-test Summary Analysis of the Mean Responses of Librarians on types of Surveillance system Adopted for Managing Disaster Arising from Vandalism in University Libraries in North East Based on years of Working Experience (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
0 -5 years	98	35.73	5.31				
				225	0.039	0.05	Significant
6 years and above	129	35.15	5.76				

Results presented in Table 20 shows the t-test summary on the mean responses of librarians on modern technologies adopted to safeguard vital records in university libraries in North East based on years of working experience. The result revealed that at 0.05 level of significance, the significant value of 0.039 is lesser than the alpha value of 0.05. Hence the null hypothesis is rejected *(N=227, df =225, p<0.05)*. In view of this there is a significant difference in the mean response of librarians on modern technologies adopted to safeguard vital records in University libraries in North- East based on years of working experience.

Hypothesis 13: There is no significant difference in the mean responses of male and female academic librarians on modern technologies adopted to manage disaster that emanate from terrorism in libraries in North- East.

Table 21: t-test Summary Analysis of the Mean Responses of Male and Female Librarians on Modern Technologies Adopted to Manage Disaster that Emanate from Terrorism in University Libraries in North- East (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
Male	123	32.66	4.55				
				225	0.459	0.05	Not Significant
Female	104	32.22	5.36				

Results presented in Table 21 shows the t-test summary on the mean responses of male and female librarians on modern technologies adopted to manage disaster that emanate from terrorism in university libraries in North- East. The result revealed that at 0.05 level of significance, the significant value of 0.459 is greater than the alpha value of 0.05. Hence the null hypothesis is not rejected *(N=227, df =225, p>0.05).* Based on this there is no significant difference in the mean response of male and female librarians on modern technologies adopted to manage disaster that emanate from terrorism in University libraries in North- East.

Hypothesis 14: There is significant difference in the mean responses of librarians on modern technologies adopted to manage disaster that emanate from terrorism in libraries in North-East based on years of working experience.

Table 22: t-test Summary Analysis of the Mean Responses of Librarians on Modern Technologies Adopted to Manage Disaster that Emanate from Terrorism in University Libraries in North- East Based on years of Working Experience (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
0 – 5 years	98	14.62	1.00				
				225	0.019	0.05	Significant
6 years and above	129	10.98	2.56				

Results presented in Table 22 shows the t-test summary on the mean responses of librarians on modern technologies adopted to manage disaster that emanate from terrorism in university libraries in North- East based on years of working experience. The result revealed that at 0.05 level of significance, the significant value of 0.019 is lesser than the alpha value of 0.05. Hence the null hypothesis is rejected *(N=227, df =225, p<0.05)*. Based on this there is a significant difference in the mean response of librarians on modern technologies adopted to manage disaster that emanate from terrorism in university libraries in North -East based on years of working experience.

Hypothesis 15: There is no significant difference in the mean responses of male and female academic librarians on modern technologies adopted to manage disaster that emanate from biological agents in libraries in North- East.

Table 23: t-test Summary Analysis of the Mean Responses of Male and Female Librarians on Modern Technologies Adopted to Manage Disaster that Emanates from Biological agents in University Libraries in North -East (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
Male	123	48.19	11.00				
				225	0.000	0.05	Significant
Female	104	37.16	10.56				

Results presented in Table 23 shows the t-test summary on the mean responses of male and female librarians on modern technologies adopted to manage disaster that emanates from biological agents in university libraries in North- East. The result revealed that at 0.05 level of significance, the significant value of 0.000 is greater than the alpha value of 0.05. Hence the null hypothesis is not rejected *(N=227, df =225, p<0.05)*. Based on this there is no significant difference in the mean response of male and female librarians on modern technologies adopted to manage disaster that emanates from biological agents in university libraries in North- East.

Hypothesis 16: There is significant difference in the mean responses of male and female academic librarians on modern technologies adopted to manage disaster that emanate from biological agents in libraries in North- East based on years of working experience.

Table 24: t-test Summary Analysis of the Mean Responses of Librarians on Modern Technologies Adopted to Manage Disaster that Emanate from Biological agents in University Libraries in North- East Based on years of Working Experience (*N=227*).

Variable	N	Mean	SD	Df	Sig, value	Alpha value	Decision
0 – 5 years	98	61.09	13.00				
				225	0.039	0.05	Significant
6 years and above	129	55.10	18.41				

Results presented in Table 24 shows the t-test summary on the mean responses of librarians on modern technologies adopted to manage disaster that emanate from biological agents in University libraries in North- East based on years of working experience. The result revealed that at 0.05 level of significance, the significant value of 0.039 is lesser than the alpha value of 0.05. Hence the null hypothesis is rejected *(N=227, df =225, p<0.05)*. Based on this there is a significant difference in the mean response of librarians on modern technologies adopted to manage disaster that emanate from biological agents.

Summary of the findings

Based on the analysis, the findings are summarized as follows:

1. A substantial number of the librarians are aware of all the listed modern technologies used in disaster management in libraries in North- East Nigeria.
2. Librarians disagreed to adoption of modern technologies used for disaster management of water and windstorms related disasters in libraries in North-East Nigeria.
3. Librarians agreed to the types of firefighting equipment adopted for management of firedisaster in university libraries in North- East Nigeria.
4. Librarians disagreed to the types of modern technologies adopted to safeguard vital

documents in federal university libraries in North East.

5. Librarians agreed to the types of modern technologies adopted to safeguard electronic resources in federal university libraries in North- East.
6. Librarians agreed to the types of surveillance systems adopted for managing disaster arising from vandalism in libraries in North- East Nigeria.
7. Librarians agreed to the types of modern technologies adopted to manage disaster that emanate from terrorism in libraries in North -East Nigeria.
8. Librarians agree to the types of modern technologies adopted for managing disaster that emanate from biological agents in libraries in North- East, Nigeria.
9. H_0 1 There is no significant difference in the mean response of male and female librarians on awareness of modern technologies used in disaster management in libraries in North- East is dependent on years of working experience
10. H_0 2 There is no significant difference in the mean response of male and female librarians on awareness of modern technologies used in disaster management in libraries in North- East is not dependent on gender.
11. H_0 3 There is a significant difference in the mean response of male and female librarians on modern technologies adopted for management of water and windstorm disaster in University libraries in North- East. North- East is years of working experience
12. H_0 4 There is a significant difference in the mean response of male and female librarianson modern technologies adopted for management of water and windstorm disaster in University libraries in North- East. North- East is not dependent on gender.
13. H_0 5 There is no significant difference in the mean response of male and female librarianson the type of firefighting equipment adopted for management of fire disaster in university libraries in North East is based on years of working experience

14. H_0 6 There is no significant difference in the mean response of male and female librarians on the type of firefighting equipment adopted for management of fire disaster in university libraries in North East is dependent on gender
15. H_0 7 There is a significant difference in the mean response of male and female librarians on modern technologies adopted to safeguard vital records in University libraries in North- East is based on years of working experience
16. H_0 8 There is a significant difference in the mean response of male and female librarians on modern technologies adopted to safeguard vital records in University libraries in North-East is dependent on gender
17. H_0 9. There is a significant difference in the mean response of male and female librarians on modern technologies adopted to safeguard electronic resources in University libraries in North- East is based on years of working experience
18. H_0 10. There is a significant difference in the mean response of male and female librarians on modern technologies adopted to safeguard electronic resources in University libraries in North- East is dependent on gender
19. H_0 11. There a significant difference in the mean response of male and female librarians on the type of surveillance system adopted in managing disaster arising from vandalism in University libraries in North –East is based on years of working experience
20. H_0 12. There a significant difference in the mean response of male and female librarians on the type of surveillance system adopted in managing disaster arising from vandalism in University libraries in North –East is dependent on gender
21. H_0 13. There is a significant difference in the mean response of male and female librarians on modern technologies adopted to manage disaster that emanate from

terrorism in University libraries in North –East is based on years of working experience.

22. H_0 14. There is a significant difference in the mean response of male and female librarians on modern technologies adopted to manage disaster that emanate from terrorism in University libraries in North –East is dependent on gender
23. H_0 15. There is a significant difference in the mean response of male and female librarians on modern technologies adopted to manage disaster that emanate from biological agent in University libraries in North –East is based on years of working experience
24. H_0 16. There is a significant difference in the mean response of male and female librarians on modern technologies adopted to manage disaster that emanate from biological agent in University libraries in North –East is dependent on gender

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter discusses the findings of the study, conclusion, recommendations, implications of the study, limitations of the study, and suggestion for further studies.

Discussion of Findings

Findings of the study were discussed as follows:

Librarians Awareness of Technologies used in Disaster Management in Libraries

The finding revealed that substantialnumber of the librarians were aware of the technologies used in disaster management in University libraries, they included satellite communication networks, global information system, global positioning system, forecasting and warning system, close circuit television system, metal detector, fire extinguisher, photoelectric detectors, fire suppressant, thermal detectors, automatic sprinkler system, remote sensing, carbon dioxide system. However, veryfew number (57.s3%) of the librarians were unaware of the technologies used in disaster management. This finding align with the findings of Odaro (2014) which revealed that academic libraries have suffered adversely from security issues in the libraries and the adoption of electronic security systems devices would drastically improve the situation.

On the other hand, academic librarians' awareness of modern technologies used in disaster management in libraries in North East was not independent on gender. On the contrary, librarians' awareness of modern technologies used in disaster management in libraries in North East was dependent on years of working experience. This was evident from the analysis conducted. This findings supports that of Adamu and Abdullahi (2018) who reiterated that insurgence posed a serious threat to the library, its users, staff and the collections; while manual security systems is not enough to curtail the nefarious acts of

insurgence; and using ICT security systems in checkmating any criminal activities is the best method in this age of globalization. This could be due to the enormous necessity of modern technologies in disaster management in libraries in North- East, Nigeria. These could be due to the fact that academic libraries have suffered adversely from security issues and other anti-social menace and that the adoption of electronic security systems devices would drastically improve the current unappealing situation.

Adoption of Modern Technology for Management of Water and Windstorm Related Disasters

Librarian agreed to the types of modern technologies adoption for management disaster of water and windstorm related disasters is based on gender. The finding showed that librarians agree to adoption of modern technologies for management of water and windstorms related disasters in libraries in North-East Nigeria.H_0 2 stated that there was a significant difference in the mean response of male and female librarians on modern technologies adopted for management of water and windstorm disaster in University libraries in North- east. This finding disagrees with the findings of Zaveri (2014) which revealed that radio frequency identification technology was effectively used in academic libraries worldwide to tackle water disaster and other water related issues.

Also, the finding from the hypothesis tested reveals a significant difference in the mean response of librarians on modern technologies adopted for management of water and windstorm disaster in university libraries in North East based on gender and years of working experience.This finding supports the findings of Zaveri (2014) which found among others that gender affect the use of radio frequency identification technology in tackle water disaster and other water related issues. Through this finding, libraries will effectively employ the use of radio frequency identification technology to evacuate libraries resources before water and windstorm related disaster arises. This will in turn save academic library resources in libraries

in North East Nigeria. In addition if the management of this institutions will adopt the use of the technologies in North –East it will go a long way in address security issues in the libraries,

Adoption of Firefighting Equipment for Management of Fire Disasters

Librarian agreed to the types of firefighting equipment adopted for management of fire disaster in University libraries in North East Nigeria. H_0 3 stated that there is no significant difference in the mean response of librarians on the type of firefighting equipment adopted for management of fire disaster in university libraries in North East is based on gender and years of working experience. This findings aligns with the findings of Gichuru, Jacqueline and Ngema (2013) which revealed that firefighting equipment, like automatic sprinkler, alarm and kitchen hood fire protection and others are life saving devices and should be generously displayed where they can be easily spotted even when one is extremely frightened. This findings is also supported by Joyce and Arzadon (2016) who found that the adoption of fire detection system using CCTV is adopted as the trending and fast advancement of technology in the area of libraries and disaster management. However, the North East has suffered from different types of disaster such as leaking roof, vandalism, fire disaster, mutilation, with the adoption of this technologies by this institutions it will reduce rate of vandalization of information resources in the libraries in North-East

On the other hand, the findings also conforms to the findings of Gichuru, Jacqueline and Ngema (2013) which revealed that firefighting equipment, like automatic sprinkler, alarm and kitchen hood fire protection and others are life saving devices should be generously displayed where they can be easily spotted even when one is extremely frightened. And as well aligns with the findings of Joyce and Arzadon (2016) who found that the adoption of fire detection system using CCTV is adopted as the trending and fast advancement of technology in the area of libraries and disaster management. The adoption of CCTV usage in libraries in

North -East Nigeria through this finding will curtail the insurgency crises in the North- East and further preserve library resources both hard copies and e-resources.

UNDP (2003) the finding revealed that using CCTV is adopted as the trending and fast advancement of technology in the area of libraries and disaster managementwomen, girls, boys and men belonging to different age and socioeconomic strata have distinct vulnerabilities and this shapes the way they experience disaster and their ability to recover from it.In countries where gender discrimination is tolerated, women and girls are particularly vulnerable to natural hazards. Yet, the same destructive forces of disasters also create opportunities for women as agents of change Disasters can also provide an opportunity to redress gender disparities.

Adoption of Modern Technology to Safeguard Vital Documents in Libraries

Librarian disagreed on the adoption of modern technology to safeguard vital records in libraries. The study designated that librarians disagree to the types of modern technologies adopted to safeguard vital documents in Federal university in North east. This findings disagrees with the finding of Krishman, Hemalatha and Giridharan (2018) which revealed that smart library management system software technology is being used to safeguard records in libraries. This finding also contradicts the findings of Jain, Kulshrestra and Vyas (2017) which found that librarians use Radio frequency identification (RFID) to safeguard electronic resources in the library. It further stated that the use of (RFID) is very important particularly during disaster and rescue operation.

Furthermore, with adoption of this technologies in this institutions by the management, it will go a long way in safeguarding electronic resources in the libraries by reducing the rate of damage done to the physical resource. The findings of the study further revealed that there is no significant difference in the mean response of male and female

librarians on modern technologies adopted to safeguard vital records in University libraries in North- East. This findings is supported by the findings of Krishman, Hemalatha and Giridharan (2018) which revealed that majority of the librarians use Radio frequency identification (RFID) to safeguard electronic resources in the library. In the same vein, Krishman et al. (2018) further stated that gender and years working contribute in the use of (RFID) in the sense that any person who has work in an organization will know how to make use of those technologies more than a newly employed staff, however, (RFID) is very important particularly during disaster and rescue operation.

Similarly, the study revealed a significant difference in the mean response of librarians on modern technologies adopted to safeguard vital records in university libraries in North east based on years of working experience. This finding conforms with the findings of Krisham et al (2018) which found that smart library management system software technology can be used to safeguard record in library. Through the finding, the use of modern technologies to safeguard vital records will be on for front of academic libraries. This is because modern technologies will assist in speedy information dissemination in the case of evacuation of information resources during disaster.

Use of Modern Technologies to Safeguard Electronic Resources

Librarian agreed to the use of electronic resources management system to safeguard library resources. The study specified that librarians agree to the types of modern technologies adopted to safeguard electronic resources in Federal university libraries in North east. This finding agrees with the findings of Kulkani (2011) which revealed that majority of the libraries use cloud computing technology which is an electronic resource in safeguarding electronic resources in the library. On the contrary, the finding disagrees with the findings of Ezeabasili and Nwosu (2018) which revealed that available electronic security system in

libraries are not in use. However, it's contrary to their view in the since that in the area of the study which is North-east some of the technologies are available and they are in use.

The H_0 5 revealed that there is no significant difference in the mean response of male and female librarians on modern technologies adopted to safeguard electronic resources in university libraries in North east. This findings disagrees with the findings of Ezeabasili and Nwosu which revealed that that available electronic security system in libraries are not in use. Cloud computing is the delivery of different services through the internet. This resource include tools and application like data storage, server, database, networking, and software. As long as an electronic device has access to the web it has access to the data and software programme to run it. This further helps in storage and retrieval of information particularly academic library information anywhere in the world.

The H_0 5 stated that there is a significant difference in the mean response of librarians on modern technologies adopted to safeguard electronic resources in university libraries in North east based on years of working experience. This finding aligns with the findings of Ozowa, Aba and Aba (2016) which reveals that majority of the libraries are not using (RFID) and CCTV as a result of the expensive nature of the equipment. This in turn leads to increase in loss of electronic resources in libraries. On the other hand, this finding is supported by Irina, Moira, Sara and Robert (2015) which revealedthat majority of the staff indicated that adoption and use of technology in disaster management help in curtailing disaster incident. As the process shifts from immediate disaster response to recovery, newly adopted or creatively adapted technologies are used to maintain a community connection and to aid in recovery processes. The adoption of this technologies by this institutions will curtail the rate of disaster in the libraries, it will also change the method of security system from the physical way to the use of technologies in safeguarding information resources in the libraries in North –east. This further helps in storage and retrieval of information particularly

academic library information anywhere in the world. Hence through the findings of the study, the used of this modern technology to safeguard electronic resources in university libraries is of enormous importance.

Adoption of Surveillance System for Managing Disaster Arising From Vandalism

Librarian agree on the adoption of surveillance system for managing disaster arising from vandalism. The study indicated thatlibrarians agree to the types of surveillance systems adopted for managing disaster arising from vandalism in libraries in North east Nigeria. This finding aligns with the findings of Khurshid (2015) which revealed that electronic surveillance and other security systems (CCTV) technology was effectively used to tackle vandals in the library.

H_0 6 revealed that there is no significant difference in the mean response of male and female librarians on the type of surveillance system adopted in managing disaster arising from vandalism in university libraries in North east. This findings agrees with the findings of Dattatraya and Watumull (2013), which reveals that majority of the staff indicated that adoption of security measures to control vandalism will go a long in controlling vandalism in the library. Analysis relating to the hypothesis reveals a significant difference in the mean response of librarians on the type of surveillance system adopted in managing disaster arising from vandalism in university libraries in North east based on years of working experience. This disagree with the findings of Higgins (2015) which reveals that among other technologies being aware of by librarians, radio frequency identification technology (RFID) was effectively used to tackle book theft and vandals in the library. The findings agrees with the findings of Dattatraya and Watumull (2013), which reveals that majority of the staffs indicated that adoption of security measures to control vandalism will go a long in controlling vandalism in the library.

Through these findings, the use of surveillance system and its importance in curtailing disaster arising for vandalism. The use of surveillance system is important in the North east region in that it helps provide information through satellites on the oncoming disaster in a particular location. Through this information, librarians will devise means to avert oncoming disaster in libraries in North East Nigeria. Furthermore, this technologies will be important in the North- East because thearea hasexperience different types of disaster, if this technologies are adopted by this institutions it will go a long way in controlling disaster in the libraries.

Adoption of Modern Technology to Manage Disaster that Emanate From Terrorism

Librarian agreed on the adoption of modern technology to manage disaster that emanate from terrorism. The finding indicated that librarians agree to the types of modern technology adopted to manage disaster that emanate from terrorism in libraries in North East Nigeria. The finding agreed with the findings of Ejikman (2011) which revealed that satellite technology was effectively used in controlling terrorist. The findings further revealed a significant difference in the mean response of male and female librarians on modern technologies adopted to manage disaster that emanate from terrorism in university libraries in North east. This finding supports the finding of Al-Dahash, Al-Shammari, Kulatunga and Hardman (2017) which revealed that cloud computing is considered as a technology for providing synchronous, on-line information management with accessibility of data regardless of the storage resources locating area of terrorism.

On the other hand, the analysis also revealed a significant difference in the mean response of librarians on modern technologies adopted to manage disaster that emanate from terrorism in University libraries in North East based on years of working experience. This finding supports the findings of Eijkman (2011) which reveal that satellite technology was effectively used to tackle fight against terrorist. Also supports the findings of Al-Dahash, Al-

Shammari, Kulatunga and Hardman (2017) which revealed that cloud computing is considered as a technology for providing synchronous, on-line information management with accessibility of data regardless of the storage resources locating area of terrorism.

Owning to the level of terrorist activities in the North East, which is Boko Haram, it becomes pertinent to adopt modern technologies to manager disaster emanating from terrorism. When such technology like satellite, GIS, RFID are adopted, the library user will be aware of when to use the library and in turn safe lives on other individuals in the library environment in particular and academic environment at large. However, Boko Haram has cripple the activities in the North East, both education and economic activity has been affected people in the area find it difficult to go on with their normal activity as a result of the Boko Haram activities in the area.

Adoption of Modern Technology to Manage Disaster thatemanate from Biological Agent

Librarian agree on the adoption of modern technology to manage disaster that emanate from biological agent. The study establish that librarians agree to the types of modern technology adopted for managing disaster that emanate from biological agents in libraries in North East Nigeria. This finding aligns with the finding of Motlagh and Samimi (2013) which reveal among others that adoption of technology was effectively used to tackle biological agent in the library.

Analysis revealed that there is no significant difference in the mean response of male and female librarians on modern technologies adopted to manage disaster that emanates from biological agents in University libraries in North East. This finding agrees with the findings of Olubanke (2010) which identifies moulds as the most important bio deteriorating agents of library materials. Olubanke (2010) further stated that other biological agents include bacteria, insects and rodents. The important insects in tropical environment are cockroaches and

termites. The warm humid tropical conditions and dirty environment trigger/promote bio deterioration processes and make book deterioration to be more pronounced in the tropics than in the temperate regions. On the other hand, the analysis reveals a significant difference in the mean response of librarians on modern technologies adopted to manage disaster that emanate from biological agent in University libraries in North East based on years of working experience. This finding disagrees to the findings of Olubanke (2010) which found that other biological agents include bacteria, insects and rodents. The important insects in tropical environment are cockroaches and termites. The warm humid tropical conditions and dirty environment trigger/promote bio deterioration processes and make book deterioration to be more pronounced in the tropics than in the temperate regions.

Overtime, thousands of people are killed in North East Nigeria in disaster that emanate from biological agents. Several rescue measures have been made by several governmental and non-governmental organizations, but the use of modern technologies still prevails. The finding of this study provides that modern technologies can be used to fast tract disaster management emanating from biological agents in academic libraries in North east Nigeria. Furthermore, Boko Haram activities has contributed to the poor utilization of information resources in the area, were user find it difficult to visit the libraries as a result of the insurgency activities in the area, if this technologies will be adopted in various institutions in North-East it will check mate the activities of the insurgency in the area by allowing people to go on with their normal activity in the area.

Conclusion

The awareness and adoption of modern technologies in federal university libraries in North east Nigeria is a sine qua non to efficient library service delivery and disaster

management. The study concluded that majority of academic librarians indicated they are aware of the use of modern technologies such as satellite communication networks, global information system, global positioning system, forecasting and warning system, close circuit television system, metal detector, fire extinguisher, photoelectric detectors, fire suppressant, thermal detectors, automatic sprinkler system, remote sensing, carbon dioxide system, halon BC dry, dry chemical, automated carbon dioxide and De-humification in managing disaster in North east Nigeria. It was further concluded that based on gender and years of working experience of academic librarians, they expressed varied opinion in the adoption of these modern facilities in combating different disaster related problems in libraries in North East Nigeria.

Implications of the Study

Based on the findings of the study, the following implications arise made.

The ultimate purpose of the study was to ascertain the awareness and adoption of modern technologies in disaster management in federal University libraries in North East Nigeria.One of the finding showed thata substantial number of the librarians are aware of all the listed modern technologies used in disaster management in libraries in North- East Nigeria. The findings in regard to types of modern technologies adopted in managing disaster in library. Showed that some of the modern technologies were adopted in managing disaster in University libraries.

To academic librarians, the finding of this study implies that there was the need for awareness of modern technologies. These modern facilities will be used by academic librarians to improve library activities and in turn manage disaster related crises emanating therein. To federal and state Universities, the findings implies that through the use of modern technologies to manage disaster, the school libraries will be safe and healthy for study and

research based activities. Also, the use of these modern technologies will foster academic excellence among students and better service delivery among academic librarians.

Also, from the findings it was revealed that librarian disagree to the types of modern technologies adopted in safeguarding vital document is not based on gender, this findings of this study implies that both male and female can make use of the technology in safeguarding vital document in the library.

Moreover the findings revealed that the librarians agreed to the types of firefighting equipment adopted for managing fire disaster is not based on gender, implies that any staff that has acquired formal training on the use of modern technologies in disaster management will make use of these technologies in the library regardless of any sex.

Furthermore, librarians agreed to the types of modern technologies adopted to safeguard electronic resources in University libraries is based on years of working experiences. This implies that any staff that has been working in the library for a long time will get used to those modern technologies than any newly employed staff.

In addition, awareness and adoption of modern technologies in disaster management discussed above appear to show the adoption of these modern technologies by academic libraries as the crux of the study as rated by librarians based on gender and years of working experience. In view of this, the findings of this study have implication on academic librarians, universities (federal and state) and the society.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. The University management should educate the staff on the types ofmodern technology that can be used in managing disaster in libraries.Frequent training/seminars/workshops should be

done frequently to make them to beaware of the contents of the disaster management policy which will enable the library as a team to fight disasters more efficiently and effectively. Efforts should be made by federal university administrators and library management to improve on the level of awareness on modern technologies by academic librarians in the federal, state and private university libraries.

2. The library management should make appropriate allocation of fund for purchase and installation of modern disaster technological equipment to detect and fight disaster. Equipment such as fire alarm, smoke detector, fire tracer, remote sensory technology should be acquired and installed in the library.
3. The University management should provide more relevant, adequate and up-to-date technological facilities should be made available to the federal and state university libraries at all times to enable them manage possible disasters they face.There is the need for the library to install fire detector, water sensing alarm and more fire extinguishers as well as regular maintenance of drainage and plumbing system. There should be a regular building inspection so as to remedy the factors which constitute potential hazards.
4. The University management should encourage the use of improved electronic security systems in the libraries that do not have as they are quit efficient and effective such as fire alarms, CCTV, RFID, ICT, smoke detector. Disaster management should be a priority of the library management so as to be able to preserve their materials to meet the information needs of their parent institutions. Frequent training/seminars/workshops should be done to make awareness of the contents of the disaster management policy which will enable the library as a team to fight disasters more efficiently and effectively.
5. The University management should have comprehensive insurance scheme over the library and its contents so as to reduce and share the possible risk of loss. The cost of maintaining such libraries is alarming and astounding. Because of the cost of developing a balanced and

up-to-date collation in a University library, it becomes necessary to put in place measures to safeguard and preserve them. This implies that a policy framework or disaster plan is needed to achieve this. This plan will include a comprehensive insurance policy for both library staff and resources against disaster eruptions.

6. There is need for the University management in North-East to adopt the use of this technologies in curtailing disaster in the libraries, because North- East has experience insurgency that has denied users from making use of information resources in the libraries. However, this surveillance system technologies will curtail the rate of damage done to information resources in North-East.

7. The University management should have modern technologies that can be used as surveillance system in the library especially now that the country is experiencing terrorism attacks. There should be collaboration between the library and other essential services, such as state fire service, police, conservators, National Emergency Management Agency (NEMA), and the Ministry of Health. Telephone and GSM numbers of these essential services and members of the disaster committee should be written and placed where all staff can easily see.

8.The University management should have maintenance culture as poorly maintained building especially from unattended leakages can cause the building to collapse. Building premises should be monitored diligently to detect signs of termites' encroachment and once detected, they should be exterminated promptly. Library can also enforce prohibition of food eating inside the library as pieces of food that remain can invite termites, cockroaches and rats to the library. Serious consideration should also be given to fumigation of university library materials, provision of vacuum thermal freezers, dehumidifiers, and back up for resources.

Suggestions for Further Studies

The following suggestions for further studies were made

1. Accessibility and extent of utilization of modern technologies by undergraduate and postgraduate students in federal University libraries in North East, Nigeria.
2. Awareness and adequacy of modern technologies in federal and state university libraries for information retrieval and dissemination in North East, Nigeria.
3. Comparative analysis of the utilization and functionality of modern technologies in academic libraries in federal Universities Nigeria

REFERENCES

Aba, J. & Ozowa, V. O. (2016). Impact of electronic surveillance systems on theft and mutilation in Francis Suleimanu Idachaba Library, University of Agriculture Makurdi. *University Library Philosophy and Practice (e-journal),* 40(2), 231-240.

Adam, R. & Abdullahi, N. (2018). Security in the library;The planner, using information and communication technologies (ICTs) for safeguarding the libraries from threats of

insurgency in Nigeria. *Research Journal of Library and Information Science, 2(12), 45-56.*

Adams, B. (2010). The cautions faculty: Their awareness and attitude towards institutional repositories. *Malaysian Journal of Library & Information Science, 14*(2), 17 – 39.

Adams, D. A., Nelson, R.R. & Tod, P.A., (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. Masters of information science *MIS Quarterly*, 16(2).

Adekunle, A, &Unuabor, B (2018). Theft and vandalism: effect and control mechanism on information resources in academic libraries in Osun State, Nigeria..*Journal Of Humanities And Social Science, 23 (1), 71-78.*

Ahenkorah-Marfo, M. & Borteye, E. M. (2010). Disaster preparedness in academic libraries: the case of Kwame Nkrumah University of Science and Technology Library, Kumasi, Ghana. Retrieved from http://dx.dol.org/10.1080/01960075. 2010.501417.

Aina, L. O. (2005). Acquisition and use of electronic resources in a library consortium: some obstacles to its implementation in Africa. In Igbokwe, J.C (2009) Strategies to enhance effective marketing of services in university libraries in Nigeria. (Unpublished masters 'Thesis). University of Nigeria Nsukka.

Akhter, S. (2014). Adoption of Firefighters equipment view on improving fire emergency response: a case study of Rawalpindi. *International Journal of Humanities and Social Science, 7(1), 137-* 143

Akor, P. U. (2013). Security management for prevention of book thefts in university libraries. A case study of Benue State university library, Nigeria *Library Philosophy and Practice (e-journal),7(1), 212-* 220

Akussah, H., & Bentil, W. (2010). Abuse of library materials in academic libraries: a study of the Ghana". *Africa Journal of library Archives and information Science, .4(6),56-67*

Akuezuilo, E. O. & Agu, N. (2003). *Research and Statistics in Education and Social Sciences: Methods and Applications*. Awka: Nuel CentiPublishers and Academic Press Ltd.

Akussah, H.,& Fosu,. V. K. (2001). Disaster management in academic libraries in Ghana. *Africa Journal of library Archives and information Science, 3(5),16-23*

Al-Dahash1, H, Al-Shammari, S, Kulatunga, U & Hardman, M (2017).Cloud computing for disaster response management stemming from terrorism in Iraq. *1 School of the Built Environment, University of Salford, Salford M5 4WT, UK*

Alegbeleye, B., (1993). Disaster control planning for libraries, archives and electronic data processing centres in Africa. Ibadan: *Option Book and Information Services*, 5 (11), 34-43.

Alphonsa, A. & Ravi, G. (2016). Earthquake early warning system by IOT using wireless sensor networks. 2016 International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET). American Library Association. Guidelines to the Development of the Human Resources

Anderson, K. (2016). Integrating multiple scales of remote sensing measurement – from satellites to kites. *Progress in Physical Geography*, 40(2), 187-195.

Anuj, T. & Kamal, J. (2015).Used of 3D GIS architecture for disaster management department of civil engineering, Indian institute of technology Roorkee, , Uttarakhand, India cloud publications *International Journal of Advanced Remote Sensing and GIS*, *4*(1), 980-989,

APCICT., (2010). Asian and pacific training centre for information and communication technology for development) "ICT Incheon City, Republic of Korea, may. archives: Northeast Document Conservation Centre.

AREG, (2018) .*High altitude balloon tracking*, [online] Available retrieved from http://www.areg.org.au/activities-old/project-horus/high-altitude-balloon-tracking*: A Study of Babcock University Library, Nigeria*, from *SAGE Open: journals.sagepub.com/doi/full/*

Arthur, W. B (2009). Reducing hazard vulnerability: Towards a common approach between disaster risk reduction and climate adaptation. , 30(1),39-48.

Ashir A. (2015). Adoption of GIS, RFID and Handheld computers in emergency management :.information systems, entrepreneurship and logistics faculty of business & law EN building, room 610a swinburne university of technology John Street Hawthorn 3122 Victoria, Australia

Asongwa, B. & Ezema, I. (2012). The challenges of preservation of archives and records*: A Study of Babcock University Library, Nigeria*. From SAGE:*journals.sagepub.com/doi/ Association of Governing* Boards of Universities and Colleges (2009). *The State of Enterprise Risk Management at Colleges and Universities Today*, Washington D.C. retrieved from http//www.agb.org/sites/agb.org/files/u3/AGBUE_FINAL.pdf

Beeker, J. Saunders, W. Hopkins, L. Wright, K. & Johnston, D. (2012). Preplanning For Recovery In Community Disaster Recovery And Resiliency; *Explority Global Opportunities And Challenges. Edited by Miller, D, River*, J. pp 525-549.

Biswajit , M & Buddhadev, B (2015)Adoption of information technology in emergency and disaster management. *American Journal of Environmental Protection. Kolkata Metropolitan Water & Sanitation Authority, City: Kolkata, India, 4 (2), 2015. 101-104. doi: 10.11648/j.ajep.*

Blackburn, H. (2016) .Millennials and the adoption of new technologies in libraries through the diffusion of innovations process *Asian Journal of Applied Sciences, 04*(01),124-134.

Blagg, E. (2007). *Disaster control planning.* Loughborough University. Retrieved from www.com.google,Disaster control plan articles.

Borneman, R. (2014). Satellite rainfall estimating program of noaa/nesdis satellite analysis branch.*National Weather Digest*, 13(2), 7-15.

Boulos, M..K., Bernd, R., Crowley, D.N., Breslin, J.G., Sohn, G., Burtner, R. & Chuang, K.S., (2011). Crowd sourcing, citizen sensing and sensor web technologies for public and environmental health surveillance and crisis management: trends, OGC standards and application examples. *International Journal of Health Geographic*,10(67),at: retrieved fromhttp://www.ij-healthgeographics.com/ content/10/1/67>

Breeding, M. (2012). *Adoption of cloud computing technology insafeguarding library resources* Chicago: ALA technology source 1–8.

Bruice, A. (2016). Stratospheric '*space-balloons' set to revolutionize global satellite industry,* [online] Available at: retrieved from https://www.forbes.com/sites/brucedorminey/stratospheric-space-balloons-set-to-revolutionize-global-satellite-

Buchanan, S. (1988). Disasterplanning: preparedness and recovery for libraries and Archives" a RAMP study with guides. Paris: UNESCO. Building fires, federal emergency management agency (FEMA), Washington, DC, .1-20.

Carter, G. & Belanger, A. (2005). Policy for audio-recording of classes: retrieved from Retrievedfromhttp://www.law.georgetown.edu/campusservices/registrar/bulletin/recording.cfm

Chisamba, T. (2015). *Mzuni students brand Mzuzu city firefighters*, retrieved January 5, 2016, retrieved from http://malawi24.com/2015/12/19/mzunistudents-brands-Mzuzu-city-firefighters/Clareson.

Christine, J. O. A. (2016). Adoption of fire detection system using CCTV. University of the Philippines Manila College of Arts and Sciences,(unpublished dissertation) Department of Physical Sciences and Mathematics

Christopher B. F, Vicente B, Thomas F. S. & Qin, D (2012). *Managing the risks of extreme events and disasters to advance climate change adaptation*. special report of the intergovernmental panel on climate change. Cambridge University Press.

Chuttur, M. Y. (2009). Overview of the technology acceptance model: origins, developments and future directions, Indiana University, USA, sprouts: working papers on information systems.

Coppola, D. P. (2015*). Introduction to International Disaster Management(3rd ed.). Oxford:* Butterworth-Heinemann

Coppoll, B. & Danon, P. (2011). *Introduction to international disaster management,* Burlington, USA: Elsevier-Butterwort Hinemann

Creeger, M. (2009). Cloud computing: An overview. A summary of important cloud computing issues distilled from association of computing machinery (ACM) CTO roundtables. Retrieved from http://queue.acm.org/detail.cfm?id=1554608

Dattatraya, J. &Watumull, S. (2013). Adoption of security measures to control vandalism In engineering college libraries in Maharashtra: The Agricultural College Libraries In Maharashtra: *International Journal of Emerging Trends in Library and Information. 1(3), .273-284*

Davis, F. D. Bagozzi, R. P.& Warshaw, G. (1989). User acceptance of computer technology: A comparison of two theoretical constructs. Management Science, *35.*

Davis, S. & Kern, K. (2003). Cooperative activity in the USA, or misery loves company. In Matthews, Graham & Feather, John (eds.) Disaster management for libraries and archives (pp. 117-141). Hampshire: Ashgate

Davou, G. C. (2014). Disaster management in academic libraries in Plateau State unpublished MlS thesis department of library and information science university of Nigeria, Nsukka

DeFenn, J. & Mark, R. (2007). *Mastering the hype cycle : How to choose the Right Innovation at the right time* gartner, Inc./Harvard Business School Press Series. p p 23-31

Dean, C. (2014). Adoption of Smart Library Management System to Safeguard Record In Library Asian *Journal of Applied Science and Technology (AJAST) (Open Access Quarterly International Journal, 2 (1), 67-79*

Dhanavandan, S. & Tamizhchelvan, T. (2014). Adoption of technology to safeguard e-resources in academic libraries in Tamil Nadu. *Journal of Emerging Trends in Computing and Information Sciences*,3 (3), 421-426

DMO, (2018). Number of smartphone users in the Philippines from 2015 to 2022 (in millions). [online] Available at: retrieved from <https://www.statista. com/statistics/467186/forecast-of-smartphone-users-in-the-philippines/>

Dorasamy, M. (2013). Knowledge management systems in support of disasters management: a two decade review, *Technological Forecasting and Social Change, Retrieved from http://dx. doi.org/,*

Dudley, W. C. Whitney, R. Faasisila, J. Fonolua, S. Jowitt, A. & Chan-K. M.. (2011). Learning from the victims: New physical and social science information about tsunamis from victims of the September 29, 2009 event in Samoa and American Samoa. *Earth-ScienceReviews,* 107(1), 201–206

Duka, W. A. (2012). Adoption of firefighting equipment in disaster-control planning for academic libraries in West Africa. *The Journal of Academic Librarianship, 34*(3), 223-235.

Echezona, R.I, Ugwu, C. I. & Ozioko, R. E. (2012). Disaster management in university libraries: perceptions, problems and strategies. *International Research:Journal of Library & Information Science*, 2(1),*34-42*

Eijkman, Q. (2011). Police technology and human rights: a quest for accountability in E. de Pauw, P. Ponsaers & K. van der Vijver (Eds.), Technological-Led Policing, Cahier Politie studies, 3,20, (pp). 193-204. Electronic. Retrieved from http://unllib.unl.edu/LPP/PNLA%20Quarterly/asogwa-ezema76-3.htm

Ezeabasili, C. A. & Nwosu, O. (2018). Use of electronic security systems in the security of information resources in federal university libraries in southern Nigeria.*Library PhilosophyandPractice(e-journal)*

Farruggia, S. (2003). Geo- information and municipality information system Mohanty, A., (2006). Disaster manual community trust fund, Srilanka, 2005-2006. Federal Emergency Management Agency (FEMA) (2008), US Fire Administration-Residential Structure.

Fernald, J. (2014). Disaster planning and risk communication with vulnerable communities: lessons from Hurricane Katrina. Am J Public Health. : (suppl [**PMC free article**] [**PubMed**] [**Google Scholar**]

Fisayo, A. A. Olalekan, A. A. & Stanley, O. U. (2018). Theft and vandalism: Effect and control mechanism on information resources in Academic Libraries In Osun State, Nigeria.*IOSR Journal of humanities and social science, 23 (7), 71-78. Retrieved from www.iosrjournals.org*DOI:

Fish, S. (2009). Training for impact: The international training programme development-orientated Psycho-social care for communities affected by the tsunamis and other disasters,basic Needs, http://basicneeds.org/download/BasicNeeds International Training Publication_WEB.pdf

Frykberg, S. & Tapas, J. (2015). RFID systems in libraries: An empirical examination of factors affecting system use and user satisfaction. *International Journal of Information Management*, *33*(2), 367–377. Retrieved from http://doi.org/10.1016/j.ijinfomgt.

Gauch, S. (2013). User profiles for personalized information. Access. Arvind, pp 20-29.

Gaurav, J. Abhijit, K. & Vyas, N.L. (2017). Used of cloud computer technology in safeguard library resource International archive of applied sciences and technology Int. Arch. App. Sci. Technol; Vol 8 [1]

Gbaje, E. S. (2011). Digital preservation strategies: A case study of Nigerian national information centres, *International Federation of Library Associations and Institution*, 37, (3), 218-227. Retrieved from http://www.ifla.org/files/assets/hq/publications/ifla-journal/ifla-

Geoffrey, M. (2013). Adoption of safeguard record using cloud computing strategy in Computer World Servers andData Center pp 45-50.

Ghali, W.A. & Lorenzetti, D.L. (2013) . Reference management software for systematic reviews and meta-analyse an exploration of usage and usability. BMC Medical Research Methodology. doi:10.1186/1471-2288-13-1

Gianmarco, B. & Franco, O. (2016). Securing disaster supply chains with cryptography enhanced RFID joint research centre – european commission, Ispra, Italy Michael Braun university of applied sciences Darmstadt, Darmstadt, Germany, and Hermann Seuschek and Erwin Hess torporate technology, siemens AG, Munich, Germany

Gichuru, f. Jacguel, & Ngema, A. (2013). Disaster mitigation and humanitarian assistance training for uniformed service medical personnel. *International Journal of Research Review in Engineering Science and Technology. | 5 (3),* 67-75

Gold, F. (2013). Adoption of RFID technologies in UK logistics: Moderating roles of size, barcode experience and government support. *Expert Systems With Applications, 41*(1), 220–231. Retrieved from http://doi.org/10.1016/j.

Goldner, .M. (2012) .Winds of Change: Adoption of technology in safeguard record libraries and cloud computing, multimedia information and technology, 37 (3), 24-28.

Graham, A. (2013). Use of electronic records management system to safeguard libraryresources *Yemen International journal on advanced science engineering information technology. Research Center for Software Technology and Management,* Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, Bangi, Malaysia

Gunes, F. & Kovel, B. (2015). A review of geospatial information technology for natural disaster management in developing countries. *International Journal of Applied Geospatial Research, 3(2), 24-62.*

Guha, S. Hoyois, T. & Below, F.(2014). Classes of Fire. Retrieved, from safety duke: www.safety.duke.edu/ safetymannuals/lab/section3firesafety/chap4classes of fires.pdf

Gupta, A. (2015). Information technology and natural disaster management in Indian. Retrieved from http://wwwgisdevelopment. Net/aars/2000/ts8/hmi 0001. Asp.

Guttman, E. (2014). Auto configuration for IP networking: enabling local communication, IEEE internet computing mobile broadband for emergency and safety applications: MESA project, retrieved from http://www.projectmesa.org

Harvey, R. (2010). Adoption of technology in safeguarding record in *digital curation: a how-to-do-it manual*. London: Facet Publishing.

Hasenay, D. & krtalic, M.(2010). Disaster and after what have Croatian libraries learned about preservation and disaster management after the war experience? *76th IFLA General Conference and Assembly.* 3. Aug 2010, Gothenburg, Sweden.

Hassan A. A. (2015) Role of ICT in natural disaster management of Bangladesh. postgraduate programs in disaster management (Ppdm) brac University, Dhaka, Bangladesh

Hayes, J. (2015). After the flood, rebuilding a university library, retrieved from https://www.elsevier.com/connect/after-the-floodrebuilding-a-university-library

Higgins, S. P. (2015). Theft and vandalism of books, manuscripts, and related materials in public and academic libraries, archives, and special collections. *Library Philosophy and Practice (e-journal) Libraries at University of Nebraska-Lincoln*

Hlabaangani, K. & Mnjama, N. (2008). Disaster preparedness in information centres in Gaborone, Botswana. *African Journal of Library, Archives and Information Science, 18 (1), 3-10*

Hosburgh, N. & Hosburgh, N. (2014). Managing the electronic resources lifecycle: creating a comprehensive checklist using techniques for electronic resource managementretrieved from http://www.businessdictionary.com/definition/disaster-plan.html

Ifidon, S. E. and Ifidon, E. I. (2009). *Basic principles of research methods*. Benin: Good news Express Communication.

IFRC, (2014). World disasters report 2013; Focus on technology and the future of humanitarian retrieved fromhttp://www.ifrc.org/PageFiles/134658/WDR.

Ikegune, D. O (2016). Management and preservation of non-book materials in *AcademicInternational Journal of Library and Information Science Studies. 6(3), 56-64*

Ikota, D.(2014) Wireless Ad hoc and sensor network architecture for situation *management in disaster response. IEEE Communications Magazine*, 3 (56) 34-47 2015.

Imran, M. Castillo, C. Lucas, J. Meier, P. & Vieweg, S. (2018). AIDR: awareness of artificial intelligence for disaster response. In proceedings of the 23rd International Conference on World Wide Web (WWW '14 Companion). ACM, New York, NY, USA, 159-162.

International federation of red cross and red crescent societies. types of disasters. (2017) Retrieved from http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/definition-of-hazard/.

International telecommunication union (ITU),(2013) Measuring the information society;retrievedfromhttps://www.itu.int/en/ITUD/Statistics/Documents/publications/

International Ttelecommunication Union (2015). Awareness of technical report on telecommunications and disaster mitigation; retrieved from http://www.itu.int/en/ITU-T/focusgroups/drnrr/Documents/fg-drnrr-tech-rep-2014-2-1-Framework-usecase-part-1-2-3.pdf

Irina, S. Moira, B. Sara, K. & Robert, K. (2015). Adoption and use of technology in the aftermath of disaster, Botswana. *African Journal of Library, Archives and Information*, 19(4), 38-51.

ISDR, (2010). Strategy outline for the 2010-2011 ISDR world disaster reduction campaign on building resilient cities, a dressing urban risk (Online). International strategy for disaster reduction retrieved from: www.unisdr.org/campaigns

Isebe, L. & Marcus, E . (2015). Vandalism of information material in colleges of education In Delta State, library department, Delta State University Abraka, *Nigeria International Journal Of Library And Information Science Studies, 1 (1), 1-11*

Islam, S. Khan, S. &, Sharma, R.K. (2012). Role of recent technology in disaster management. *International Journal of Research Review in Engineering Science and Technology)* |

Issa, A. & Olanrewaju, S. (2012). Disaster preparedness at the state public library, Ilorin,Kwarastate,Nigeria,*LibraryPhilosophyandPractice,2012,fromhttp://unllib.unl.edu/LPP/issa-.htm Issue Not to be Neglected in Greece*", *Library Management,*32, (5), 124-135.

Jain, G. Kulshrestra, A. & Vyas, N. (2017). Use of electronic resources management system to safeguard electronic resources. *International Archive of Applied Sciences and TechnologyInt. Arch. App. Sci. Technol*; *8 [1] society of education, India*

James, O. J (2013). Adoption of fire equipment in university of Nairobi school of built environment influence of fire disasters on mitigation and preparedness in Kenya; A survey study of Kisumu Kenya

Jato, M. (2015). Causes and effects of delinquent behaviour in academic libraries Kenneth Dike library as a case study. *Owena Journal of Library and Information Science, 2*(1): 25-34

Jeong, K.O. (2015). Integrating the social networking system as the course management platform. *International Journal of Software Engineering and its Applications. 2015; 9(12):155–64*

Juriyiah, S. Khalid, M. & Doi, N. (2015). Disaster preparedness for academic libraries in Malaysia: An exploratory study. *International Journal of Social, Behavioral, Educational and Management Engineering*. 9(10). Retrieved from: http://waset.org/publications/0002555

Kafi, K.M. Barakat, A. & Gibril, M..B. (2016) .GPS Application in disaster management: a review department of civil engineering, faculty of engineering, universities Putra Malaysia, 43400 UPM, Serdang, Selangor Darul-Ehsan, Malaysia

Kalbande, D. (2018) Networking and resource sharing of the agricultural college libraries in Maharashtra: A study view project. International *Journal Of Emerging Trends In Library And Information Society, 2320-5040, 1, (5)*

Kamel , M. N. Resch, B. Crowley, D. N. Breslin, J. G., Sohn, G. Burtner, R.. & Chuang, K.-Y. S, . (2011). Crowdsourcing, citizen sensing and sensor web technologies for public and environmental health surveillance and crisis management: trends, OGC standards

and application examples. *International journal of health geographics*, *10*, 67. *Retrieved from :10.1186/1476-072X-10-67*

Kanini,M. A., (2016). Disaster management practices in research libraries in Kenya with reference to The Kenya agricultural and livestock research organization

Kapucu, N. & Watt, M. (2011).The emerging of public sector in managing extreme even administration and society 38- 40.

Karahanna, E. Agarwal, R. & Angst, C. (2006). Reconceptualizing Compatibility Beliefs *MIS Quarterly,* 30(4).

Kaushik, A. & Kumar, A. (2013) .Use of cloud computing technology safeguarding libraries resources. *International Journal of Information Dissemination and Technologies 3(4), 270-276*

Kenya Red Cross., (2009) . The state of disaster management in Kenya and the role of Kenya Red Cross, Nairobi.

Keralapura, M. (2009) .Technology and customer expectation in academic libraries: a special reference to technical/management libraries in Karnataka. *The information and Library Review, 41 (3)67-79*

Ketnerse, K. Silovsa,, M. Malahovab,,J Ievinsc, J & Jemeljanovsd, V. (2015). Wind-related disasters management and prevention improvement strategy. 20th International Scientific Conference Economics and Management –retrieved from at www.sciencedirect.com 1877-0428

Khalid, S. Juryiah M. & Dol, N. (2015). Disaster preparedness for academic libraries in Malaysia: An exploratory study, *International Journal ofSocial, Behavioral, Educational, Economic, Business and Industrial Engineering*, 9(10), 3204-3210

Khan, R. A. Khan, F. A. & Khan, M. A. (2011). Impact of training and development on organizationof staff in disaster management. *Journal of Library and Information Science, 5*(7), 25-34

Khurshid, A (2015)Adoption of electronic surveillance and security systems installed In Hec recognized university libraries of Punjab and Federal areaThesis · April 2015 DOI: 10.13140/RG.2.2.35433.70245

Kim, R. (2012). Advances in multi-agency disaster management: Awareness to key elements in disaster research Information system, Iss.12:1-7., retrieved from, doi: 10.1007/s0796-917–x, sea/drbcccis 340pp 400-408 (c) springer -verlageberlin Heidelberg.

Kirste, T. Chavez, E., & Ide, R., (2016). Adoption of technology in interactive applications of personal situation aware assistants. Computers & Graphics, 23(6),903-915.

KIzza, J M. (2013) Guide To Computer Net Working Security Computer Communication And Net Works 2nded . Springer.

Krishnan, B. S, .Hemalatha, P.H & .Giridharan, S. (2018) .Adoption of smart library management system software to safeguard record in *library Asian Journal of Applied Science and Technology (AJAST) (Open Access Quarterly International Journal)* 2, (1*), 269-274, www.ajast.*

Kulkarni, S. (2011) .Design challenges for an integrated disaster management communication and information system. in first IEEE workshop on disaster recovery networks. New York.

Kumar, A. (2012). Application of Cloud Technology in digital library in *IJCSI International Journal of Computer Science Issues. 9 (3), 374-378.*

Kumar, S.M & Singh, G.A. (2015). Electronic resource management in university and institutional libraries of India in changing environments: an overview. in: embedded librarianship and technological challenges of the digital Age chandigarh (Indian Library Association, Delhi, . 470-478

Kwaghga, A. & Dooms, D. (2014) . Strategies for combating theft and vandalism in Francis Suleimanu Idachaba library, University of Agriculture Makurdi. Erudite *Journal of Educational Research Reviews and Essa,y 1(1), 7-15, retrieved from.www.eruditejournals.org/ejerre © 2014*

Lai, P. C .(2017) .The literature review of technology adoption models and theories for the novelty technology *Journal of Information Systems and Technology Management Brazil, 14 (1), 21-38*

Lasswell, H.D. (1948). The Structure and Function of Communication in the Society. In Bryon, L. (ed.). The Communication Ideas. New York: Harper and Bros.

Lawal, U. (2016). Adoption of risk management strategies in information resources and services provision in university libraries in northern states of Nigeria information impact: *Journal of Information and Knowledge Management, 7 (1) 1 –14*

Lerbinger, G. K. (2012). Emergency management in encyclopedia of natural hazards (263-271). springer netherlands *Libraries in Bangladesh.Library Philosophy and Practice (e-journal) Libraries at University of Nebraska-Lincoln*

Loster, T. & Reinhard, D (2010). Microinsurance and climate change. In: microinsurance- An innovative tool for risk and disaster management [Morelli, E., G.A. Onnis, W.J. Amman, and C. Sutter (eds.)]. Global Risk Forum, Davos, Switzerland, . 39-42.

Lovecy, *I. (2014).* Awareness of disaster management for libraries and archives *retrieved from .fromhttp://www.ariadne.ac.uk/issue44/ lovecy.ruw/intro.html.*

Lucas, H. C. & Spitler,V. K. (1999) .Technology use and performance: A field study of broker workstation. *Decision Sciences,*30(2)

Mahitha, O. & Sona V. (2009). Effective disaster management to enhance the cloud stability., retrieved from www.niot.res.in/HRD/report.view.php

Maidabino, A.A. (2010). Collection security issues in Malaysian academic libraries: An exploratory survey. Unpublished master's thesis, faculty of computer science and information technology, university of Malaya, Malaysia.

Maidabino,A A & Zainab, A . (2011) . Collection security management at university libraries: assessment of its implementation status *Malaysian Journal of Library & Information Science, 16, (1) 15-33*

Maliene, V. Grigonis, V. Palevičius, V. & Griffiths, S. (2011). Geographic information system: Old principles with new capabilities. *Urban Design International, Retrieved from http://www.scopus.com/inwardManagement, 16*(1), 5-10.

Malik, K. M. (1993). Let's save our cultural heritage: an introduction to library management, managerial perspective. [Article]. *International Journal of Management, Managing the,*16(1), 5-10.

Marfo, M. & Borteye, E. (2010). Disaster preparedness in academic libraries. The case of the Kwame Nkrumah university of science and technology library,Kumasi, Ghana. *Library and Archival Security,*23 (2), 117-*136 http://fileiiic:users/HP/Desktop/disas/233050962*

Martel, L. D. & Mueller, C. W. (2011). The effect of anticipated service interruptions on disaster preparedness intentions. *Journal of Applied Social Psychology, 41*(2), 298–311.

Mathews, G. (1988). Disaster management. sharing experience, working together across the sector, *Journal Librarians and Information Science, 37(2), 63-74.*

McEntire, D.A. & Myers, A. (2004). Preparing communities for disasters: issues and processes for government readiness. *Disaster Prevention and Management, 13 (2),140*

McGinty, J. (2008). Adoption of surveillance system for controlling of vandalism in libraries against risk. *Library & Archival Security, 21(2), 177-186.*

Mcmillan, E. K. & Murray, J. R. (2010). Risk Management- a strategy for success. Retrievedfromhttp://conferences.alia.org.au/shllc2010/papers/murray.mcmillan.html, 5 (4) .1-4

Michael, A. M. & Edward, M. B. (2010). Adoption of technology in disaster preparedness in academic libraries: The case of the Kwame Nkrumah university of science and technology library, Kumasi, *Ghana, library & archival security, 23 (2), 117-136*

Mimin, A. (2013). Current Awareness News: Legal oriented research engines knowledge of today's' legal issues. Retrieved from http://www.arl/org/newsltr/226/ir.html.

Monsourian, A. Rajabifard, A. Valadan, Z .M..& Willianson, I. (2005). Facilitating disaster management using S D I, *Journal of Geo-spatial Engineering,. 6 (1),16-23*

Montoya, A.L. (2013). GIS and remote sensing in urban disaster management. In: proceedings of the 5th AGILE conference on geographic information science, 25-27 April 2007, palma Spain ed, by M. Riuz, M. Gould and J. Raman-unversitat deles iiles Balear, 2002. 102-107

Morgan, G. & Smith, J. (1997). Disaster management in libraries, the role of a disaster plan. *South African Journal of Library and Information Science*, 65(1), 62-71 retrieved from: http://sajlis.journals.ac.za/pus/article/view/1502

Motlagh, M. . R. & Samimi, Z. (2013) .Evaluation of trichoderma., as biological agents in some of plantpathogens annals of biological research, *Scholars Research Library retrieved from(http://scholarsresearchlibrary.com/archive.html)* 4 (3),173-179.

Moustafa, F. R. (2015). Global assessment report on disaster risk reduction 2013, retrievedfromhttp://www.preventionweb.net/english/hyogo/gar/2013/en/garpd_EN.

Mpofu, M. & Hlatywayo, C. K. (2015). Training and development as a tool for improving basic service delivery: The case of selected municipality .*Journal of Economics, Finance and Administrative. 6(3), 34-45*

Muir, S. & Shnton, T. (2012). *Disaster preparedness framework.* 2nd ed. university of wisconsin:Disaster management centre.

Mukred, M. Yusof, Z. M. Mokhtar, U. A. & Manap, N. A. (2016). Electronic records management system adoption readiness framework for higher professional education FXinstitutions in *Yemen International journal on advanced science engineering information technology*

Namudemi, M. (2017). Awareness disaster management and human health reducing risk improving outcomes. International journal of environmental impacts, 10(2), 56-62

Nancy, H.K. (2016). Adoption of surveillance system for managing theft and vandalism : A survey, library, *Technology Report*, 12(6) 576

Ngang, B. J. & Kuo, B. C .(2010) . Use of information and communication technology in safeguarding library resource in natural disaster management (The case of Cameroon) Master‟s thesis within business administration, Cameroon University.

Ngemu, G.(2015) . International disaster response law, The hague, The Netherlands; New York: T.M.C. Asser Press. *British Journal of Environmental Sciences.* Retrieved from (www.eajournals.org), 43,(online) *3(1),43-57.*

Njogo, B. O. (2012). Risk management in the Nigerian banking industry. *Kuwait Chapter of Arabian Journal of Business and Management Review,7*(10), 100-109.

Njoroge, R. W. (2014). Adoption of surveillance system for disaster preparedness and mitigation for computer based information systems in selected university libraries in Kenya Nkrumah University of Science and Technology, Kumasi, *Ghana*. *Journal of Science, 6(4), 23-34.*

Nwokedi, G. I, Panle, P.P & Samuel, N. (-2017) .Disaster management and preparedness: A case study of university of Jos *Library Philosophy And Practice (E-Journal) Libraries At University Of Nebraska-Lincoln*

Nworgu, B.G. (2015) . Educational research basic issues and methodology 3rd, University Trust Publishers, Nsukka Enugu

O'Conell, M. (1983). Disaster planning: writing and implementing plans for collections holdinginstitutions. Technology and Conservation. *Disaster management of Journal, Economic Research Institute for ASEAN and East Asia (ERIA*

Obati, C. (2015). One killed in Strathmore security drill, *The Standard*, p. 4.

Ochieng, P. Maichuhie, K & Rogers, E. (2016). 38 university students injured in stampede after scare. *The Standard, .* 8

Odaro, O. (2011). Adoption of surveillance system to manage vandalism in electronic security systems in academic libraries: A case study of three university libraries in South-West Nigeria. Covenant university, Ota Nigeria osasodaro@yahoo.com. *Research Journal of Library and Information Science. 2(2), 1-11.*

Ogden, U. (2009). Emergency surveillance after seven flooding in Louisiana prephospital and disaster medicine *International Journal of Library and Information Science Studies,8(3) 23-35*

Oghenetega U.L, Emojorho, D Emmanuel, J & Omah J. E (2015) Security measures adopted to prevent theft of libraryresources in selected academic libraries university library, university of medical sciences, Ondo State. Nigeria

Ojo-Igbinoba, M.E. (1993). Monograph on African librarianship No. 3: The practice of conservation of library materials in sub-Saharan Africa.

Okogwu, F. I. & Dike, V. W. (2017). Evaluation practices of electronic resources in university libraries in South East Nigeria *Library Philosophy and Practice (e-journal)*

Olayiwola, A. O. (2007). *Procedures in educational research.* Ibadan: Kaduna Hanijam Publisher

Olaniyan, D.A. & Oji, B. I. (2006) Climate change and disaster management. Disasters, 30(1),64–80.

Oluwatola, K. Ogbuiyi, U. Oriogu, D. & Ogbuiyi, C. (2015). Disaster management practices in five public libraries in south- west Nigeria. *IOSR Journal of Humanities and Social Science (IOSR- JHSS), 20*(11), 78-83. from: www.oisrjournals.org.

Onwubiko, E. (2012). Disaster in Nigeria's disaster management. retrieved from http://www.huriwa blogspot.com

Onwuka, S. (2013).Manet a reliable network in disaster areas . Jorind 9(2) December, 1596 –. Retrieved from**www.transcampus.org**., www.ajol.info/journals/jorind

Osayande, O. (2018*).* Electronic security systems in academic libraries: Acase study of three university libraries in south-west Nigeria. Ota Nigeria*osasodaro@yahoo.com International Journal of Library and Information Science Studies 4,(1),* .1-10, Published by European Centre for Research Training and Development UK (www.eajournals.org)

Osayande, O. (2011). Electronic security systems in academic libraries: A case study of three university libraries in South-West Nigeria .*Chinese Librarianship: an International Electronic Journal*, 2 (32), 1-10.

Ottong, E. J. (2013). Disaster management of library materials in federal universities in Cross River and Akwa Ibom State, Nigeria. International Journal of Education Research and Development, 2 (4), 98-104.

Ottong, E.J. & Ottong, U.J. (2013). Disaster management of library materials in federal universities in Cross River and Akwa Ibom State, Nigeria. *International Journal of Educational Research and Development*, 2(4), 98-104.

Page, J. A. (2013). Remote sensing and GIS based soil erosion vulnerable area mapping and mitigation modelling for madurai, theni and Dindigul Districts, Tamil Nadu, India. paper presented in national symposium on remote sensing and GIS for environment with special emphasis on Marine and Coastal Dynamics (ISG 2013), Andhra University, Vishakapattnam.

Page, J. A., Clareson, T. F. & Teper, Thomas, H. (n.d.). Disasters knows noborders: the crucial nature of disaster planning, *Thinking Outside the Borders*, 90

PAHO, (Pan American Health Organization). (2012). Mental health and psychosocial support in disaster situations in the Caribbean. Washington, D.C.: PAHO.: 978-92-75-11664-7.

Paper, W. (2008).Use of technology in safeguarding library resource. The long-term preservation of digital information. Retrieved from http://www.tessella.com/wp-content/uploads/2008/03/DigitalArchiving.pdf

Pardeep, R. (2013). Role of library and information centres in disaster management. University of Nebraska - *Lincoln Library Philosophy and Practice (e-journal*

Paul, C. Dewald V. Niekerk, H & Gerrit, Der W. (2016). An exploration of objectivism and social constructivism within the context of disaster risk, *Disaster prevention and Management*, 25(2), 261 – 274.

Paul, .P. & Naomi, S. (2016). Disaster management and preparedness: a case study ofuniversity of Jos library (2017). *Library Philosophy and Practice (e-journal). 1590. at: Retrieved from*http://digitalcommons.unl.edu/libphilprac

Pearce, L. (2012). Disaster management and community planning, and public participation; how to achieve sustainable hazard mitigation natural hazard Pp 221-229 performance. *Global Journal of Management and Business Research, 5(4), 63-67.*

Penney, M. (2013). Adoption of fire equipment and risk mitigation. *Disaster Prevention and Management: An International Journal, 7 (5),396-400.*

Píša, D., Neˇmec, F. Parrot, M. & Santolík, O.(2012). Attenuation of electromagnetic waves at the frequency 1.7 kHz in the upper ionosphere observed by the DEMETER satellite in the vicinity of earthquakes. *Annales Geophysicae,* 55 (1), 157-163.

Plank, P.O. (2012). Understanding how the brain works Cambridge, Harvard university press.planning and land management. *Journal of sustainable development in Africa,*14(1), 45-58.

Plumbe, D. (2014) . Cultural aspects of risk to environmental changes and hazards: A review of perspectives'. The impact of disasters on livelihoods and cultural survival: opportunities, losses, and mitigation, Companion (ed.). CRC Press, Boca Raton, Florida, USA.

Popoola, .A .(2016) . Risk factors and nature of disaster in the physical distribution and utilization of liquefied petroleum gas in Port-Harcourt city of Nigeria.*Journal of disaster risk management, 2 (1), 62-81.*

Raja, R. &. Nagasubramani, P.C (2018).Impact of modern technology in education *Published by European Centre for Research Training and Development UK Retrieved from www.eajournals.org*

Raman, A. (2014). Importance and measures of disaster management in libraries: *European Scientific Journal June 2014* /SPECIAL/ edition. 1.(4), 34-46

Ramana, Y.V. (2012). Security in libraries need surveillance and Biometrics 5th International Caliber -2007, Panjab University, Chandigarh, 08-10

Rattan, P. (2013). Role of library and information centres in disaster management and awareness*LibraryPhilosophyandPractice.*88.6Retrieved.from:http://www.digitalcommon.un.edu.cgi/viewcontent.cgi?article=2204

Ray, P. Mukherjee, M. & Shu, L.(2017). Internet of things for disaster management: state-of-the-art and prospects. *IEEE Access*, 5 (32), 18818- 18835.

Rehman, A. (2014). Importance and measures of disaster management in libraries: *EuropeanScientificJournal*1.(3)retrievedfromhttps://www.elsevier.com/connect/after-the-floodrebuilding-

Reitz, J. M. (2004). *Dictionary for library and information science*. Westport, Connecticut: Libraries Unlimited.

Rio, D. (2014) . Plan to manage disaster could save money for development. *Imperial Journal of Interdisciplinary Research. India , 8(3), 23-34.*

Ronald, T. E. Charles, K. H. Shubharoop, G.& Beverley, J. A. (2008) . The application of remote sensing technologies for disaster managementworld conference on earthquake engineering, Beijing, China

Roper, F. & Millar, S.(2009) .Adoption of technology for the recovery of water damaged business records. Prairie village, KS: Association of records managers and administrators, Available from ARMA International, 4200 Somerset Drive, Suite 215, Prairie Village, KS 66208 USA

Rosenberg, M . (2013). The disaster cycle: preparedness, response, recovery and mitigation are the disaster cycle. Retrieved from The disaster cycle mht.

Rowley, J. (1995). Management Development: New Agenda for Information Professionals. *Library and Information Science, 2 (2), 1-11.*

Ruth, A. & Sunday, O. (2015) The role of information technology (It) in the academic library paper presented at the 3rd school of education and humanities international conference on the future of higher education in Africa Held At Babcock University

Saade, R. G. (2003) . Web-based educational information system for enhanced Learning EISEL : students assessment. *Journal of Information Technology Education,*2.(4),4557.Retrievedfromsafetymannuals/lab/section3firesafety/chap4classes of fires.pdf.

Saha, H. Auddy, S. Pal, S. Kumar, S. Pandey, S. Singh, R. Singh, A. Banerjee, S. & Saha, S. (2017).Adoption of technology in disaster management using internet of things. 2017 8th Annual industrial automation and electromechanical engineering conference (IEMECON).

Sahu,S.(2009).Guidebookontechnologiesfordisasterpreparednessandmitigation.http://www.technologies for disaster preparedness & mitigation. pdf.

Sakamoto, I. (2005). One step forward relief work for damaged documents at Aceh, Indonesia. from: http://www.ndl.go.jp/en/iflapac/pdf/Sakamoto.pdf

Salami, K. A. (2006). *A Textbook on Library And Information Science.* Zaria: Micsons press.

Sanusi, L. (2007). Minimising Risk Exposure in Nigerian Banks. *Bullion: A publication of the Central Bank of Nigeria, 31,* (3), 20-25

Sawada, Y. & Oum, S (2012), 'Economic and Welfare Impacts of Disasters in East Asia and Policy Responses', in Sawada, Y. and S. Oum (eds.), *Economic and Welfare Impacts of Disasters in East Asia and Policy Responses*. ERIA Research Project Report 2011-8, Jakarta: ERIA.1-25.

Sawant, S. (2014). A study on preservation and conservation practices in academic libraries Retrieved .from:http://www.nopr.niscarin/bitotream/

Scotti, V. & Osteria, G. (2017). The electronics and trigger system of the HEPD onboard CSES. In: *35th International Cosmic Ray Conference*. 30. *Security* 21(2), 115 125.

Senior, G. & Copley, T. (2015). Centers for disease control and prevention. Identifying vulnerable older adults and legal options for increasing their protection during all-hazardsemergencies:Retrievedfrom at:http://www.cdc.gov/phpr/documents

Senyah, Y. & Lamptey, R. B. (2011). Personal security and safety in academic libraries : a case study of the Kwame Nkrumah University of Science and Technology Library,

Sharma, U. & Patt, A. (2012). Disaster warning response: the effects of different types of personal experience. *Natural Hazards,Library Philosophy and Practice(e-journal)*–

Shuhaimi, in Isa. (2012) . Using seasonal climate forecasts to guide disaster management: The red cross experience during the west Africa floods.*International Journal of Geophysics, 16 (12), 84-97.Retrieved from*http://dx.doi.org/10.1155/2012/986016

Silva, L. de Mello Bandeira, R. & Campos, G.V. (2017). The use of UAV and geographic information systems for facility location in a post-disaster scenario. *Transportation Research Procedia*, 7 (27) 1137-1145.

Simoens, P. Mahieu C. & Ongenae, F. (2016). Context-aware and personalized interventions of assistive social robots. sources-of-computer-virus-attack.phpSpencer. Retrieved From: http; // www.raconline.org/inf guides/ preparedness.

Solinet, in Ikegume, (2016). Improve disaster preparedness and urban resilience, Japan shares best practices with Armenia, Kyrgyz Republic, and Tajikistan. *International Journal of Geophysics, 8(4) 47-58.*

Spreeuwenberg, P. (2012) .Use of Cloud Computing technology in safeguarding library resource in Learning Environment..pp 67- 85.

Star, G. & Spens, K.M..(2007) . Humanitarian logistics in disaster relief operations.*International Journal of Physical Distribution Logiest Manage* 37(2), 99-114.

Stoimenov, L. Predie, B. Mihajlovic, v. & sfankovic, M.. (2005) . GIS interoperability platform for emergency management in local community Environment, AGILE study of the university of Cape Coast main library.*African Journal. 6 (5)45-56*

Styblinska, M. K. (2009). Disaster governance: social, political and economic dimensions'. Annual Review of Environment and Resources, 6(37), 341–363.

Taabu, L. (2014) .Assessment of disaster management practices, at the ministry of energy and petroleum , Kenya

Taber, N. Plumb, D. & Jolemore, S. (2008). Grey" areas and organized chaos in emergency response. Pp *20*-34.

Tan, K. S. & Chong, S . (2009). Internet-based ICT adoption: Evidence from Malaysian SMEs.Industrial Management and Data Systems, 10(2), 78-89.

Tana, K. C. (1986) 'New fault lines on responsibility and disasters', *European Journal of Risk Regulation, 5(2), 137-145.*

Tatum, M. (2010). Emergency disaster management. Edited by Bronyn Harris September,2010.Technology,105-113.Technology.Retrievedfrom http://www.proceedings.imcsit.org/pliks/149.pdf

Tekeli-yesil, S. Dedeolu, N. Braun-fahrlaender, C. & Tanner, M. (2011). Earthquake awareness and perception of risk among the residents of Istanbul. *Natural Hazards*, *59*(1), 427–446.

Thiel, P. (2014). Zero to One: Notes on How to Build the Future. Lincoln. *Library Philosophy and Practice (e-journal) University of Nebraska-Lincoln*

Tinuade, A. O. (2007). Book Theft and its preservation. *Gateway Library Top 5 Sources of Computer VirusAttack. ComboFix. Retrieved from* http://www.combofix.org/top-5-

Tornatsky, G. G. (1982) . Educause evolving technologies committee. "pioneering new territory and technologies." *Educause* 112-35

Toro, T. (2011). Disaster management in library university of Cape Coast main library. [Article]. *African Journalof Library, Archives & Information Science, 20*(2), 103-112.

Toups, S. (2015) . Preparedness for emergency response: Guidelines for the emergency planning process. Disasters, 6 (27)336-350.

Toups, T. B.A. (2008) .A changing of the guard : Emerging trends in public library security, Toyosi O, Owolabi, S.& Ekechi, C., (2014). Communication as critical factor in disaster management and sustainable development in Nigeria *International Journal Of Development And Economic Sustainability, 2 (3),58-72.*

Trapskun, M. S. (2008). Adoption of surveillance system in controlling vandalism with the implementation of RFID at the Pilkington library Loughborough university. Loughborough University Institutional Repository.

Tuncay, E. (2010) . Effective use of cloud computing technology in safeguard library resource in educational institution, 2 (4), 938-942.

Tziavou, O. Pytharoulia, S. & Souter, J. (2018). Awareness of unmanned aerial vehicle (UAV) based mapping in engineering geological surveys: Considerations for optimum results, *Engineering Geology*, 2 (32), 12-21.

Ugwu, M.E. Richard, N. & Ugwuanyi, C. (2015). Managing disasters in university libraries in South East Nigeria: preventive, technological and coping measures.University of Nebraska –*Library Philosophy and Practice (e-journal)*

UNAPCICT, (2010). ICT for disaster risk reduction, Asian and pacific training centre for information and communication technology for development from retrievedfrom: .*Library Philosophy and Practice (e-Journal), 958*.

Urhiewhu1, L. O. Emojorho, D. & Emmanuel, J.O. (2018) . Security measures adopted to prevent theft of libraryresources in selected academic libraries.*International Journal of Library and Information Science Studies, 4 (1), 1-10, retrieved from (www.eajournals.org)*

USGSLatestearthquakes,(2018).ImageonlineAvailableat:https://earthquake.usgs.gov/earthquakes/mapValsamakis, A.C. Vivian R.W. & Du Toit, G.S. Risk Management: Managing Enterprise Risks. 3rd ed. Sendton: Heinemann Higher

Usman, H. (2013). Role of remote sensing and GIS in natural- disaster management cycle. *International Journal of Research Review in Engineering Science and Technology, 1 (3), 45-56.*

Valsamakis, A.C., Vivian R.W. & Toit, G.S. (2005). Risk Management: Managing EnterpriseRisks. 3rd ed. Sendton: Heinemann Higher

Van, L.N.(2006) . Humanitarian aid logistics: supply chain management in high gear. *J Operational Research Society, 6(*57) 475-489.

Venkatachary, K.V. Manikian, B. & Srivastava, S.K..H. (2015). Harnessing information and technology disaster management and awareness in library retrieved fromhttp://www.aia.org./ indians/Disaster management. pdf.

Venkatesh, V.Morris, M. G., & Aukerman, P. L. (2000). ALongitudinal field investigation of gender differences in individual technology adoption, decision making processes, organizational behaviour and human processes, 83.

Verstsppen, H. (1995) .Role of recent technology in disaster management IJRREST: *International Journal of Research Review in Engineering Science and Technology*, 7(5), 45-56.

Verzosa, F. M. (2012). Security management and disaster preparedness for archival collections. A paper presented at the PAARL Seminar-workshop on "Strategic organisation and management of archives programs" held at Vigan, Ilocas Sur, Philippines from security management and disaster preparedness for archival collections, mht.

Vijayaraghavan, C, D. Thirumalaivasan, D. & Venkatesan, R.. (2012). Utilization of remote sensing and GIS in managing disasters a *review International Journal of Scientific & Engineering Research, 3, (1),* retrieved from http://www.ijser.org, 4 (1), 1-10.

Wattegama, C. (2005). *ICT for Disaster Management.* Asa pacific development information programme e-primers for the information economy,Society and polity.UNDP Keen media:Bangkok,Thailand

Waweru, K. (2014). Assessment of disaster management practice in school libraries with reference to Aga Khan academic library Nairobi Kenya

Westgarth,A.(2017).Retrieved from hptt://www.wikipedia.com/wiki/climat

Weare, W. (2015), "Succession Planning in Academic Libraries: A Reconsideration", *Library Staffing for the Future* (*Advances in Library Administration and Organization*, Emerald Group Publishing Limited, 4 (34),313-36.

Yap, N. T. (2015). Disaster management, developing country communities and climate change: The role of ICTs, institute for development policy, management, and awareness. Canada,: 6-7, retrieved from http://www.niccd.org.

Zaveri, P.(2015) .Damage to libraries due to water related disasters university of Nebraska - *Library Philosophy and Practice (e-journal)*

Zlatanova, S. & Fabbri, A. G. (2015). Geo-ICT for risk and disaster management. retrieved from http://link.springer.com, 10.(54) 878-890.

Appendix A

Questionnaire

Awareness and Adoption of Modern Technologies in Disaster Management in Federal University Libraries in North- East Nigerian

SECTION: A: AWARENESS

SECTION: A_1: Awareness of Modern Technologies that could be Adopted in Managing various disaster in libraries

Instruction: Below is list some of types of modern technologies that could be adopted in managing various disasters in the library. Indicate by ticking, (√) which of them you are aware of. You can tick as many of them as you are aware of

S/N	**Are you aware that these new technologies could be used in managing disaster in libraries**	**Aware**	**Not Aware**
1	Satellite communication networks, ,		
2	Geographic Information system (GIS)		
3	Global Positioning System,(GPS)		
4	Forecasting and Warning System,		
5	Close Circuit Television (C C T V) system		
6	Metal Detector		
7	Fire Extinguisher		
8	Photoelectric detectors		
9	Fire Suppressants		
10	Thermal detectors,		
11	Automatic Sprinkler system		
12	Remote Sensing		
13	Carbon dioxide System		
14	Halon BC Dry, Dry Chemical		
15	Carbon dioxide System		
16	Dehumification		

SECTION: A_2 Modern Technologies that could be Adopted for Managing of water related Disaster and wind storms.

Instruction: Below are listed some types of modern technologies that could be adopted in managing various disasters in the library. Tick as many of them as apply to you. Indicate by ticking (√) one of the response option Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

S/N	**Which of these modern technologies that could be adopted for management of water related disasters and windstorms**	**SA**	**A**	**D**	**SD**
1	Satellite communication networks				
2	Geographic Information system (GIS)				

3	Global Positioning System,(GPS)				
4	Forecasting and Warning System.				
5	Close Circuit Television (C C T V) system				
6	Photoelectric detectors				
7	Fire Suppressants				
8	Global Integrated Observing System				
9	Space-based Technology				
10	Remote Sensing				

SECTION: A $_3$ Firefighting Equipment that could be Adopted for Management of Fire Disasters in the Library.

Instruction: Below are listed some types of modern technologies that could be adopted in managing fire disasters in the library. Tick as many of them as apply to you. Indicate by ticking (√) one of the response option Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

S/N	Which of these firefighting equipment could be adopted in managing disaster in libraries	SA	A	D	SD
1	Fire Extinguisher				
2	Carbon dioxide System				
3	Dehumification				
4	Automatic Sprinkler system				
5	Vacuum Freezer Dyer				
6	High expansion foam				
7	A bulldoze Fire extinguisher				
8	Halon BC Dry, Dry Chemical				
9	Fire Suppressants				

SECTION B: ADOPTION OF TECHNOLOGIES

Section B1: Adoption of Modern Technologies in Safeguarding Vital Records in the Library

Instruction: Below are listed modern technologies which could be adopted in safeguarding vital records in the library. Indicate by ticking, which of them you adopt in safeguarding vital records in your university library. Tick as many of them as apply to you. Indicate by ticking (√) one of the response option Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

S/N	Which of these modern technologies could be adopted to safeguard vital records in libraries	SA	A	D	SD

1	Cloud computing technologies for safeguarding the library resources from annihilation by the insurgence				
2	Satellite communication networks, for assisting in safeguarding of records in the libraries				
3	Antivirus for safeguarding of records in the libraries electronically				
4	Digitization to safeguard records in the libraries. (Digital library software such as Duraspace, and Fedora)				
5	Electromagnetic Security (EM) for safeguarding records in the libraries				
6	LOCKSS (Lots of Copies Keeps Stuff Safe), (Controlled LOCKSS) and Portico tools for safeguarding of records in the libraries				

SECTION: B_2Modern Technologies Adopted in Safeguarding Electronic Resources.

Instruction: Below are listed modern technologies that could be used for safeguarding electronic resources in the library. Indicate by ticking which of them you adopt in your library. Indicate by ticking, which of them you adopt in safeguarding vital records in your university library. Tick as many of them as apply to you. Indicate by ticking(√) one of the response option Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

S/N	Which of these moderntechnologies Adopted in Safeguarding Electronic Resources in libraries.	SA	A	D	SD
1	Library's bibliographic database password				
2	Antivirus				
3	CD, DVD,				
4	Firewalls				
5	Spyware				
6	Software for data recovery in case of damage				
7	Uninterruptible power supply (UPS) backed up				
8	Flash for the protection of electronic resources in the library				
9	Cloud Computing technologies for the protection of electronic resources in the library				
10	External Hard Disc				
11	Antimalware				

SECTION: B_3Types ofsurveillance Adopted for Managing Disaster Arising from Vandalism?

Instruction Below are listed modern technologies that could be adopted for managing disaster arising from vandalism in the library. Indicate by ticking which of them you adopt in your library. Indicate by ticking, which of them you adopt in safeguarding vital records in your university library. Tick as many of them as apply to you. Indicate by ticking (√) one of the response option Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

S/N	**Which of these surveillance system could be adopted for managing disaster arising from vandalism**	**SA**	**A**	**D**	**SD**
1	RFID book detection system to check mat vandalism. Radio Frequency Identification (RFID)				
2	Closed Circuit Television (CCTV) for visual surveillance of library materials				
3	CCTV footage for recording all activities in the library				
4	Magnetic book detection system to check the activities of users at the exits door of the library				
5	Alarmed window screens to protect its assets from theft /vandalism?				
6	Motion detectors to protect its assets from theft/vandalism				
7	Library emergency exits door equipped with alarms				
8	Sounders (sirens) to protect its assets from theft/vandalism				

SECTION: C $_4$ Modern Technologies Adopted to Manage Disaster that Emanate from Terrorism

Instruction Below are listed modern technologies that could be used manage disaster that Emanate from Terrorism in the library. Indicate by ticking which of them you adopt in your library. Tick as many of them as apply to you. Indicate by ticking (√) one of the response option Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

S/N	**Which of these modern technologies could be adopted to manager disaster that emanate from terrorism**	**SA**	**A**	**D**	**SD**
1	GPS to locate disaster incidents in the libraries				
2	Geographic information systems to enable efficient organization of disaster dataset				
3	GIS to tackles a disaster in a much better way				
4	ICT security systems to checkmate any criminal activities in the libraries				
5	ICTs for safeguarding library resources from terrorism				
6	Geographic Information Systems and Web Technologies for disaster management				
7	Satellite-based communication to help plan and improve DRR				
8	Remote Sensing for sensing incidence of disaster in the libraries				

SECTION: B_5 Types of Modern Technologies Adopted to Manage Disaster that Emanate from Biological Agents?

Instruction: Below are listed modern technologies that could be used to manage disaster that emanate from biological agents resources in the library. Indicate by ticking, which of them you adopt in safeguarding vital records in your university library. Tick as many of them as apply to you. Indicate by ticking (√) one of the response option Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

S/N	Which of these modern technologies could be adopted to manager disaster that emanate from biological agents	SA	A	D	SD
1	Fumigation of the library to reduce insects in the library				
2	Biological agents like insects, fungi and rodents can cause damages to books and other library materials				
3	Termite proofing to control termite in the library				
4	Air-condition to deal with pest through freezing at extremely cold temperatures.				
5	Frequent application of chemical, to help in protection agents pest				
6	Well-ventilated and climate-controlled environment to prevent infestation by rodent / pests.				

Appendix B

VALIDATION OF QUESTIONNAIRE

Department of Library and Information Science

Nnamdi Azikiwe University, Awka

Anambra State

Sir/Madam,

REQUEST FORVALIDATION OF QUESTIONNAIRE

I am a postgraduate student currently undergoing my Ph.D program in the Dept of Library and Information Science. I am conducting a research on **Awareness and Adoption of Modern Tchnologies for Disaster Management in Federal University Libraries in North- East Nigerian**

Please, you are requested to validate the instrument by making necessary inputs, corrections and modifications where necessary.

The purpose of the study, research questions and hypothesis are attached.

Thank you for your timely response and usual corporation.

Yours sincerely

Basaka Abubakar Aminu

2016207001F

(P G Student)

Appendix C

LETTER TO THE RESPONDENTS

Department of Library and Information Science

Nnamdi Azikiwe University, Awka

Anambra State

Dear Respondents,

I am a postgraduate student currently undergoing my Ph.D program in the Dept of Library and Information Science. I am conducting a research on **Awareness and Adoption of Modern Technologies for Disaster Management in Federal University Libraries in North- East Nigerian**

Your responses to the attached questionnaire will be required and will be held in high regard and for academic purposes only.

Thank you for your corporation

Yours sincerely

Basaka Abubakar Aminu

(P G Student)

AppendixD

POPULATION DISTRIBUTION OF ACADEMIC LIBRARIANS IN FEDERAL UNIVERSITIES IN NORTH EAST, NIGERIA

S/N	NAMES OF FEDERAL UNIVERSITIES	NUMBER OF ACADEMIC LIBRARIANS IN EACH UNIVERSITIES
1	Abubakar Tafawa Balewa University, Bauchi State	28

2	Federal University, Kashere, Gombe State	28
3	Moddibo Adama University of Technology, Yola, Adamawa State	32
4	Federal University Wukari, Taraba State	26
5	University of Maiduguri, Borno State	99
6	Federal University Gashua, Yobe State	27

Appendix E

CALCULATION OF RELIABILITY USING CRONBACH ALPHA BY SPSS

Section B1: Reliability

Scale: Awareness of various Disaster that Affect Libraries and Information centers

RELIABILITY

```
  /VARIABLES=A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14
A15 A16 A17 A18 A19
  /SCALE('awareness of various disaster that affect libraries
and information centers') ALL
  /MODEL=ALPHA.
```

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.863	19

Section B2: Reliability

Scale: Awareness of Modern Technologies that can be Adopted in Managing various disaster in libraries

```
RELIABILITY
  /VARIABLES=B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14
B15 B16 B17
  /SCALE('awareness of modern technologies that can be adopted
in managing various disaster in libraries') ALL
  /MODEL=ALPHA.
```

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.696	17

Section B3: Reliability

Scale: Awareness of Modern Technologies that can be Adopted for Managing of water related Disaster and wind storms

```
RELIABILITY
  /VARIABLES=C1 C2 C3 C4 C5 C6 C7 C8 C9 C10
  /SCALE('awareness of modern technologies that can be adopted for managing
of water related disaster and wind storms ') ALL
  /MODEL=ALPHA.
```

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.742	10

Section B4: Reliability

Scale: Awareness of Firefighting Equipment that can be Adopted for Management of Fire Disasters in the Library

```
RELIABILITY
  /VARIABLES=D1 D2 D3 D4 D5 D6 D7 D8 D9
  /SCALE('awareness of fighting equipment that can be adopted for
management of fire disasters in the library') ALL
  /MODEL=ALPHA.
```

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.802	09

Section C1: Reliability

Scale: Adoption of Modern Technologies in Safeguarding Vital Records in the Library

```
RELIABILITY

  /VARIABLES=C11 C12 C13 C14 C15 C16
  /SCALE('adoption of modern technologies in safeguarding vital records in
the library') ALL
  /MODEL=ALPHA.
```

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.761	06

Section C2: Reliability

Scale: Modern Technologies Adopted in Safeguarding Electronic Resources

```
RELIABILITY

  /VARIABLES=C21 C22 C23 C24 C25 C26 C27 C28 C29 C30 C31
  /SCALE('modern technologies adopted in safeguarding electronic
resources') ALL
  /MODEL=ALPHA.
```

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.882	11

Section C3: Reliability

Scale: Types of surveillance Adopted for Managing Disaster Arising from Vandalism

```
RELIABILITY

  /VARIABLES=C31 C32 C33 C34 C35 C36 C37 C38
  /SCALE('types of surveillance adopted for managing disaster arising from
vandalism') ALL
  /MODEL=ALPHA.
```

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.589	08

Section C4: Reliability

Scale: Modern Technologies Adopted to Manager Disaster that Emanate from Terrorism

```
RELIABILITY

  /VARIABLES=C41 C42 C43 C44 C45 C46 C47 C48
  /SCALE('modern technologies adopted to manage disaster that emanate from
terrorism') ALL
  /MODEL=ALPHA.
```

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.661	08

Section C5: Reliability

Scale: Types of Modern Technologies Adopted to Manage Disaster that Emanate from Biological Agents

```
RELIABILITY

  /VARIABLES=C51 C52 C53 C54 C55 C56
  /SCALE('types of modern technologies adopted to manage disaster that
emanate from biological agents') ALL
  /MODEL=ALPHA.
```

Case Processing Summary

		N	%
Cases	Valid	20	100.0

	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.911	06

Reliability

Scale: Overall Reliability

```
RELIABILITY
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.767	94

Appendix

SPSS DATA OUTPUT

Research question 1

Frequency Table

Gender of Respondent					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	140	62.5	62.5	62.5
	Female	87	37.5	37.5	100.0
	Total	227	100.0	100.0	

Academic qualification of Librarians					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ph D.	24	10.0	10.0	10.0
	M Phil	31	14.2	14.2	24.2
	Masters	65	27.1	27.1	51.2
	B LIS (Degree)	107	48.8	48.8	100.0
	Total	277	100.0	100.0	

Working Experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 -5 years	88	36.7	36.7	36.7
	6 - 10 years	87	40.4	40.4	77.1
	11 years and above	52	22.9	22.9	100.0
	Total	227	100.0	100.0	

Satellite communication networks				
	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Aware	175	77.1	77.1	77.1
	Not aware	52	22.9	22.9	100.0
	Total	227	100.0	100.0	

Geographic information system (GIS)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	171	72.5	72.5	72.5
	Not aware	56	27.5	27.5	100.0
	Total	227	100.0	100.0	

Global positioning system (GPS)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	174	76.7	76.7	76.7
	Not aware	53	23.3	23.3	100.0
	Total	227	100.0	100.0	

Forecasting and warning system					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	174	72.5	72.5	72.5
	Not aware	53	27.5	27.5	100.0

	Total	227	100.0	100.0	

Close Circuit Television (CCTV)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	161	71.3	71.3	71.3
	Not aware	66	28.7	28.7	100.0
	Total	227	100.0	100.0	

Metal detector					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	175	77.1	77.1	77.1
	Not aware	52	22.9	22.9	100.0
	Total	240	100.0	100.0	

Fire extinguisher					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	172	71.7	71.7	71.7
	Not aware	55	28.3	28.3	100.0
	Total	227	100.0	100.0	
Photoelectric detectors					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	169	74.6	74.6	74.6
	Not aware	58	25.4	25.4	100.0

	Total	227	100.0	100.0	

Fire suppressant					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	178	78.3	78.3	78.3
	Not aware	49	21.7	21.7	100.0
	Total	227	100.0	100.0	

Thermal detector					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	166	73.3	73.3	73.3
	Not aware	61	26.7	26.7	100.0
	Total	227	100.0	100.0	

Automatic sprinkler system					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	183	80.4	80.4	80.4
	Not aware	44	19.6	19.6	100.0
	Total	227	100.0	100.0	

Remote sensing					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	160	70.8	70.8	70.8

	Not aware	67	29.2	29.2	100.0
	Total	227	100.0	100.0	

Carbon dioxide					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	aware	149	66.3	66.3	66.3
	Not aware	78	33.8	33.8	100.0
	Total	227	100.0	100.0	

Halon BC dry, dry chemical					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	132	59.2	59.2	59.2
	Not aware	95	40.8	40.8	100.0
	Total	227	100.0	100.0	

De-humification					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	139	62.1	62.1	62.1
	Not aware	88	37.9	37.9	100.0
	Total	227	100.0	100.0	

RESEARCH QUESTION 2

```
DESCRIPTIVES VARIABLES=B17 B20 B19 B20B21 B22 B23 B24 B25 B26
  /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Satellite communication networks	227	1.00	4.00	1.4868	.99535
Geographic information system (GIS)	227	1.00	4.00	1.7571	1.00701
Global positioning system (GPS)	227	1.00	4.00	1.5660	.99496
Forecasting and warning system	227	1.00	4.00	3.6506	.94933
Close circuit television (CCTV) system	227	1.00	4.00	2.7323	.89475
Photo electric detector	227	1.00	4.00	1.7372	.87917
Fire suppressants	227	1.00	4.00	2.6025	.92319
Global integrated observing system	227	1.00	4.00	3.7493	.92638
Space-based technology	227	1.00	4.00	2.6854	.90082
Remote sensing	227	1.00	4.00	1.9719	.94577
Valid N (listwise)	227				

RESEARCH QUESTION 3

DESCRIPTIVES VARIABLES=C27 C28 C29C30 C31 C32 C33 C34 C34 C35

/STATISTICS=MEAN STDDEV MIN MAX.

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Fire extinguisher	227	1.00	4.00	4.0068	.99535
Carbon dioxide system	227	1.00	4.00	3.7571	1.00701
De-humification	227	1.00	4.00	1.0660	.99496
Automatic sprinkler system	227	1.00	4.00	2.1106	.94933
Vacuum freezer dryer	227	1.00	4.00	3.1023	.89475
High expansion foam	227	1.00	4.00	1.0172	.87917
A bulldoze fire extinguisher	227	1.00	4.00	3.8825	.92319
Halon BC dry, Dry chemical	227	1.00	4.00	1.0993	.92638
Fire suppressant	227	1.00	4.00	3.7754	.90082
Valid N (listwise)	227				

RESEARCH QUESTION 3

DESCRIPTIVES VARIABLES=D36 D37 D38D39 D40 D41

/STATISTICS=MEAN STDDEV MIN MAX.

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation

Cloud computing technologies for safeguarding the library resources from annihilation by the insurgence	227	1.00	4.00	3.9068	.99535
Satellite communication networks, for assisting in safeguarding of records in the libraries electronically	227	1.00	4.00	2.3271	1.00701
Digitization to safeguard records in the libraries electronically	227	1.00	4.00	2.6060	.99496
Electromagnetic security (EM) for safeguarding records in libraries	227	1.00	4.00	1.0506	.94933
LOCKSS (lots of copies keeps stuff safe), (controlled LOCKSS) and portico tools for safeguarding pf records in libraries	227	1.00	4.00	1.0123	.89475
Valid N (listwise)	227				

RESEARCH QUESTION 5

DESCRIPTIVES VARIABLES=E42 E43 E44E45 E46 E47 E48 E49 E50 E51

/STATISTICS=MEAN STDDEV MIN MAX.

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Libraries bibliographic database password	227	1.00	4.00	3.8068	.99535
Antivirus	227	1.00	4.00	2.6171	1.00701
CD, DVD	227	1.00	4.00	4.0060	.99496

Spyware	227	1.00	4.00	3.9306	.94933
Software for data recovery	227	1.00	4.00	3.8223	.89475
Uninterrupted power supply (UPS) backed up	227	1.00	4.00	3.0368	.99535
Flash for the protection of electronic resources in the library	227	1.00	4.00	2.5671	1.00701
Cloud computing technologies for the protection of electronic resources in the library	227	1.00	4.00	3.8360	.99496
External hard disk	227	1.00	4.00	3.7306	.94933
Animalware	227	1.00	4.00	2.7823	.89475
Valid N (listwise)	227				.99535

RESEARCH QUESTION 5

```
DESCRIPTIVES VARIABLES=F51 F52 F53F54 F55 F56 F57 F58 F59 F60
 /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
RFID book detection system to check mat vandalism. Radio Frequency Identification (RFID)	227	1.00	4.00	3.8068	.99535
Closed Circuit Television (CCTV) for visual surveillance of library materials	227	1.00	4.00	3.9671	1.00701
CCTV footage for recording all activities in the library	227	1.00	4.00	2.4760	.99496

Magnetic book detection system to check the activities of users at the exits door of the library	227	1.00	4.00	2.1206	.94933
Alarmed window screen to protect its assets form theft/vandalism	227	1.00	4.00	2.3223	.89475
Motion detectors to protect its assets from theft/vandalism	227	1.00	4.00	4.0068	.99535
Library emergency exist door equipped with alarms	227	1.00	4.00	3.6271	1.00701
Sounders (sirens) to protect its assets from theft/vandalism	227	1.00	4.00	3.2760	.99496
Valid N (listwise)	227				.99535

RESEARCH QUSETION 6

DESCRIPTIVES VARIABLES=G61 G62 G63G64 G65 G66 G67 G68

/STATISTICS=MEAN STDDEV MIN MAX.

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
GPS to locate disaster incident in the library	227	1.00	4.00	4.0068	.99535
Geographic information system to enable efficient organization of dataset	227	1.00	4.00	3.6771	1.00701
GIS to tackle a disaster in a much better way	227	1.00	4.00	3.4260	.99496

ICT security systems to checkmate any criminal activities in the libraries	227	1.00	4.00	3.5106	.94933
ICT for safeguarding library resources from terrorism	227	1.00	4.00	2.1123	.89475
Geographic information systems and web technologies for disaster management	227	1.00	4.00	2.3772	.87917
Satellite based communication to help plan and improve DRR	227	1.00	4.00	2.2725	.92319
Remote sensing for sensing incidence of disaster in the library	227	1.00	4.00	12.873	.92638
Valid N (listwise)	227				

RESEARCH QUESTION 7

DESCRIPTIVES VARIABLES=H69 H70 H71H72 H73 H74 H75 H76

/STATISTICS=MEAN STDDEV MIN MAX.

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Fumigation of the library to reduce insects in the library	227	1.00	4.00	3.8968	.99535
Biological agents like insects, fungi and rodents can cause damages to books and other library materials	227	1.00	4.00	4.0071	1.00701

Terminate proofing to control terminate in the library	227	1.00	4.00	3.7860	.99496
Air-condition to deal with pest through freezing at extremely cold temperatures	227	1.00	4.00	4.0006	.94933
Frequent application of chemical, to help in protection agents pest	227	1.00	4.00	2.8923	.89475
Well ventilated and climate controlled environment to prevent infestation by rodent/pest	227	1.00	4.00	2.9772	.87917
Valid N (listwise)	227				

NULL HYPOTHESIS TESTING

HYPOTHESIS 1

CROSSTABS

/TABLES=librarians awareness of modern technologies used in disaster management in libraries

/FORMAT=AVALUE TABLES

/STATISTICS=CHISQ CC

/CELLS=COUNT

/COUNT ROUND CELL.

Crosstabs

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	32.339[a]	1	.000
Likelihood Ratio	39.728	1	.001
Linear-by-Linear Association	3.351	1	.067
N of Valid Cases	227		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 36.06.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Contingency Coefficient	.866	.000
N of Valid Cases		227	

HYPOTHESIS 2

CROSSTABS

/TABLES=librarians awareness of modern technologies used in disaster management in libraries

/FORMAT=AVALUE TABLES

/STATISTICS=CHISQ CC

/CELLS=COUNT

/COUNT ROUND CELL.

Crosstabs

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	52.821[a]	1	.000
Likelihood Ratio	55.339	1	.034
Linear-by-Linear Association	.370	1	.543
N of Valid Cases	227		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 36.06.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Contingency Coefficient	.866	.000
N of Valid Cases		227	

HYPOTHESIS 3

T-TEST GROUPS=Gender(1 2)

/MISSING=ANALYSIS

/VARIABLES=modern technologies adopted for management of water and windstorm related disaster in university libraries

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Modern technologies adopted for management of water and windstorm related disaster in university libraries	Male	123	39.6042	5.55068	.56651
	Female	104	37.5333	4.66634	.85195

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Modern technologies adopted for management of water and windstorm related disaster in university libraries	Equal variances assumed	.947	.332	1.848	124	.067	2.07083	1.12049	-.14693	4.28859
	Equal variances not assumed			2.024	56.919	.048	2.07083	1.02311	.02202	4.11965

HYPOTHESIS 4

T-TEST GROUPS=Yearsofworkingexperience(1 2)

/MISSING=ANALYSIS

/VARIABLES= modern technologies adopted for management of water and windstorm related disaster in university libraries

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Years of Experience	N	Mean	Std. Deviation	Std. Error Mean
Modern technologies adopted for management of water and windstorm related disaster in university libraries	0-5 Years	98	41.5759	11.18290	.43586
	6 Years and Above	129	36.8500	7.73100	.79136

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Modern technologies adopted for management of water and windstorm related disaster in university libraries	Equal variances assumed	8.864	.004	1.558	122	.122	1.52593	.97955	-.41320	3.46505
	Equal variances not assumed			1.689	104.672	.006	1.52593	.90345	-.26552	3.31737

HYPOTHESIS 5

T-TEST GROUPS=Gender(1 2)

/MISSING=ANALYSIS

/VARIABLES=librarians on the types of firefighting equipment adopted for management of fire disasters in university libraries

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
librarians on the types of firefighting equipment adopted for management of fire disasters in university libraries	Male	123	39.5313	10.52611	1.07432
	Female	104	37.3333	5.48561	1.00153

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
librarians on the types of firefighting equipment adopted for management of fire disasters in university libraries	Equal variances assumed	2.243	.137	1.096	124	.275	2.19792	2.00541	-1.77135	6.16719
	Equal variances not assumed			1.496	95.525	.138	2.19792	1.46875	-.71771	5.11354

HYPOTHESIS 6

T-TEST GROUPS=Yearsofexperience(1 2)

/MISSING=ANALYSIS

/VARIABLES=firefighting equipment adopted for management fire disasters in university libraries in North east based on years of working experience

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Years of Experience	N	Mean	Std. Deviation	Std. Error Mean
firefighting equipment adopted for management fire disasters in university libraries in North east based on years of working experience	0-5 Years	98	39.9259	3.20290	.43586
	6 Years and Above	129	38.4000	6.62100	.79136

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
firefighting equipment adopted for	Equal variances assumed	8.864	.004	1.558	122	.122	1.52593	.97955	-.41320	3.46505

management fire disasters in university libraries in North east based on years of working experience	Equal variances not assumed			1.689	104.672	.0626	1.52593	.90345	-.26552	3.31737

HYPOTHESIS 7

T-TEST GROUPS=Gender(1 2)

/MISSING=ANALYSIS

/VARIABLES=modern technologies adopted to safeguard vital records in university libraries in North east

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
modern technologies adopted to safeguard vital records in university libraries in North east	Male	123	39.4063	5.38532	.54964
	Female	104	38.8333	4.95555	.90476

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper

modern technologies adopted to safeguard vital records in university libraries in North east	Equal variances assumed	.507	.478	.085	124	.932	.13542	1.58582	-3.00337	3.27420
	Equal variances not assumed			.090	52.656	.929	.13542	1.51010	-2.89391	3.16475

HYPOTHESIS 8

T-TEST GROUPS=Yearsofexperience(1 2)

/MISSING=ANALYSIS

/VARIABLES=firefighting equipment adopted for management fire disasters in university libraries in North east based on years of working experience

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Years of Experience	N	Mean	Std. Deviation	Std. Error Mean
modern technologies adopted to safeguard vital records in university libraries in North east based on years of working experience.	0-5 Years	98	39.9259	3.20290	.43586
	6 Years and Above	129	38.4000	6.62100	.79136

Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means

		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
fmodern technologies adopted to safeguard vital records in university libraries in North east based on years of working experience.	Equal variances assumed	8.864	.004	1.558	122	.122	1.52593	.97955	-.41320	3.46505
	Equal variances not assumed			1.689	104.672	.0010	1.52593	.90345	-.26552	3.31737

HYPOTHESIS 9

T-TEST GROUPS=Gender(1 2)

/MISSING=ANALYSIS

/VARIABLES=modern technologies adopted to safeguard vital records in university libraries in North east

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
academic librarians on modern technologies adopted to safeguard electronic resources in libraries in North east.	Male	123	39.4063	5.38532	.54964
	Female	104	38.8333	4.95555	.90476

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
academic librarians on modern technologies adopted to safeguard electronic resources in libraries in North east.	Equal variances assumed	.507	.478	.085	124	.932	.13542	1.58582	-3.00337	3.27420
	Equal variances not assumed			.090	52.656	.929	.13542	1.51010	-2.89391	3.16475

HYPOTHESIS 10

T-TEST GROUPS=Yearsofexperience(1 2)

/MISSING=ANALYSIS

/VARIABLES=modern technologies adopted to safeguard electronic resources in libraries in North east based on years of working experience

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Years of Experience	N	Mean	Std. Deviation	Std. Error Mean
modern technologies adopted to safeguard electronic resources in libraries in North east based on years of working experience	0-5 Years	98	20.9259	6.32290	.43586
	6 Years and Above	129	29.4000	6.62100	.79136

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
modern technologies adopted to safeguard electronic resources in libraries in North east based on years of working experience.	Equal variances assumed	8.864	.004	1.558	122	.009	1.52593	.97955	-.41320	3.46505
	Equal variances not assumed			1.689	104.672	.0010	1.52593	.90345	-.26552	3.31737

HYPOTHESIS 11

T-TEST GROUPS=Gender(1 2)

/MISSING=ANALYSIS

/VARIABLES=academic librarians on the types of surveillance system adopted for managing disaster arising from vandalism in libraries in North east /CRITERIA=CI(.95).

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
academic librarians on the types of surveillance system adopted for managing disaster arising from vandalism in libraries in North east.	Male	123	21.4963	5.38532	.54964
	Female	104	21.1333	4.95555	.90476

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
academic librarians on the types of surveillance system adopted for managing disaster arising from vandalism in libraries in North east.	Equal variances assumed	.507	.478	.085	124	.359	.13542	1.58582	-3.00337	3.27420
	Equal variances not assumed			.090	52.656	.929	.13542	1.51010	-2.89391	3.16475

HYPOTHESIS 12

T-TEST GROUPS=Yearsofexperience(1 2)

/MISSING=ANALYSIS

/VARIABLES=the types of surveillance system adopted in managing disaster arising from vandalism in university libraries in North east /CRITERIA=CI(.95).

T-Test

Group Statistics

	Years of Experience	N	Mean	Std. Deviation	Std. Error Mean
the types of surveillance system adopted in managing disaster arising from vandalism in university libraries in North east	0-5 Years	98	35.4959	6.32290	.43586
	6 Years and Above	129	35.1300	6.62100	.79136

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
the types of surveillance system adopted in managing disaster arising from vandalism in university libraries in North east	Equal variances assumed	8.864	.004	1.558	122	.0390	1.52593	.97955	-.41320	3.46505
	Equal variances not assumed			1.689	104.672	.0010	1.52593	.90345	-.26552	3.31737

HYPOTHESIS 13

T-TEST GROUPS=Gender(1 2)

/MISSING=ANALYSIS

/VARIABLES=modern technologies adopted to mange disaster that emanate from terrorism in libraries in North east

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
modern technologies adopted to mange disaster that emanate from terrorism in libraries in North east.	Male	123	32.6663	5.38532	.54964
	Female	104	32.2233	4.95555	.90476

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
modern technologies adopted to mange disaster that emanate from terrorism in libraries in North east	Equal variances assumed	.507	.478	.085	124	.459	.13542	1.58582	-3.00337	3.27420
	Equal variances not assumed			.090	52.656	.929	.13542	1.51010	-2.89391	3.16475

HYPOTHESIS 14

T-TEST GROUPS=Yearsofexperience(1 2)

/MISSING=ANALYSIS

/VARIABLES=modern technologies adopted to mange disaster that emanate from terrorism in libraries in North east

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Years of Experience	N	Mean	Std. Deviation	Std. Error Mean
modern technologies adopted to mange disaster that emanate from terrorism in libraries in North east	0-5 Years	98	14.6259	1.00290	.43586
	6 Years and Above	129	10.9800	2.56100	.79136

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
modern technologies adopted to mange disaster that emanate from terrorism in libraries in North east	Equal variances assumed	8.864	.004	1.558	122	.0390	1.52593	.97955	-.41320	3.46505
	Equal variances not assumed			1.689	104.672	.0019	1.52593	.90345	-.26552	3.31737

HYPOTHESIS 15

T-TEST GROUPS=Gender(1 2)

/MISSING=ANALYSIS

/VARIABLES=modern technologies adopted to mange disaster that emanate from biological agents in libraries in North east

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
modern technologies adopted to mange disaster that emanate from biological agents in libraries in North east.	Male	123	48.1963	11.0032	.54964
	Female	104	37.1633	10.56555	.90476

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
modern technologies adopted to mange disaster that emanate from biological agents in libraries in North east	Equal variances assumed	.507	.478	.085	124	.459	.13542	1.58582	-3.00337	3.27420
	Equal variances not assumed			.090	52.656	.000	.13542	1.51010	-2.89391	3.16475

HYPOTHESIS 16

T-TEST GROUPS=Yearsofexperience(1 2)

/MISSING=ANALYSIS

/VARIABLES=modern technologies adopted to mange disaster that emanate from biological agents in libraries in North east

/CRITERIA=CI (.95).

T-Test

Group Statistics

	Years of Experience	N	Mean	Std. Deviation	Std. Error Mean
modern technologies adopted to mange disaster that emanate from biological agents in libraries in North east	0-5 Years	98	61.0959	13.00290	.43586
	6 Years and Above	129	55.1000	18.56100	.79136

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
modern technologies adopted to	Equal variances assumed	8.864	.004	1.558	122	.0039	1.52593	.97955	-.41320	3.46505

mange disaster that emanate from biological agents in libraries in North east	Equal variances not assumed			1.689	104.672	.0019	1.52593	.90345	-.26552	3.31737