



ADRRRI JOURNALS (www.adrri.org)

E-ISSN: 2343-6662 VOL. 31, No. 4 (8), October, 2022-December, 2022

Disaster Preparedness in Selected University Libraries in Ghana

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Available Online: 31st December, 2022

Abstract

The study examined disaster preparedness in academic libraries in Ghana. The researchers adopted a mixed method for this study. Three university libraries in Ghana were selected to find out about their level of disaster preparedness. The population consisted of 52 professionals and paraprofessionals from the selected academic libraries. A questionnaire and interview guide were adopted to collect the data. The quantitative data were analysed using the Statistical Package for the Social Sciences (22.0 version), whereas the qualitative data were analysed using Nvivo software (20.0). The study established that all academic library staff were aware of disasters. However, staff training in disaster management programmes was inadequate. The study confirmed that, besides fire extinguishers, none of the libraries surveyed had any other disaster-resistant equipment. The study revealed that there were no disaster committees in the libraries. It is recommended that all libraries must have smoke detectors, emergency exits, and water-sensing alarms, among others.

Keywords: disaster awareness, disaster management, disaster policy, library disaster, university libraries

[Cite article as: Frempong-Kore, A., Ameyaw, S., and Asante, E. (2022). Disaster Preparedness in Selected University Libraries in Ghana. Africa Development and Resources Research Institute Journal, Ghana: Vol. 31, No. 4 (8), Pp. 74-98, E-ISSN: 2343-6662, 31st December, 2022.]

Received: (September 12, 2022)

Accepted: (December 31, 2022)

INTRODUCTION

Academic libraries are a reservoir of knowledge for the university community, whether small or large, public or private. Indeed, academic libraries are the heartbeat and institutional memory of the university community. In this regard, their collections must be comprehensive to meet users' information needs. According to Curzon and Quinonez-Skinner (2010), universities own a library. The purpose of an academic library is defeated if the university community does not have sufficient and appropriate resources to support research, teaching, and learning. Without a doubt, academic libraries play an important role in the parent institution. Recent disaster occurrences and their negative impacts on human settlements and society have attracted the general public's attention. Natural or man-made disasters, both of which have devastating effects on the socio-cultural and economic health of the entire country. A disaster may be an unexpected event that can cause damage to human lives, buildings or properties, and the environment. Man-made and natural disasters affect each sphere of human activity without prior information about their occurrences. Idiegbeyan- Ose et al. (2019) defined disaster as any occurrence or event that poses a threat to human safety or threatens to cause damage to a library's structure, including its collections, equipment, and systems. Sharma et al. claim that (2018), a disaster is an unanticipated event that harms buildings housing information or puts lives in danger. The occurrence of any type of disaster is unpredictable or unpreventable. However, if appropriate measures are taken, the destruction can be contained to a minimum. Due to the hasty or abrupt removal of collections or resources, disasters in academic libraries result in the loss of valuable information. It also causes damage to some materials or even the entire infrastructure. In the views of Issa and et al. 2012), disaster is any event that compromises human safety or threatens to harm a library's structure, collection, equipment, or systems. According to Nwokedi et al. (2017), a library disaster is the sudden removal of records and documents from the area of accessibility due to perilous conditions. Library disasters not only destroy valuable information but suspend library's operation. The following may serve as agent of disaster; poor drainage system, a burst pipe, a rainstorm, or leakages in the roofing. The rest are arson, poor electrical materials, a fire caused by faulty wiring, and a library without an adequate security system are additional methods. Any of these can adversely influence activities in the library. A few studies have been conducted in this area, however, there are limited literature on disaster preparedness among academic libraries in Ghana. Hence, this study examines disaster preparedness in selected university libraries in Ghana and fill the gap in literature.

A university library is considered as an intellectual repository where teachers, researchers, students, administration staff, and the university community seek information for their educational activities. The special role of academic libraries in providing information and developing users in university environment cannot be over-emphasised. In order to provide users

with access to relevant materials, the management of the selected university libraries makes massive investments. However, these libraries are susceptible to unexpected natural or man-made disasters. Academic libraries, like any other organization, are prone to disasters. They are vulnerable and liable to any kind of disaster. The library's activities are halted when a disaster occurs; therefore, the parent institution must safeguard their collections to avoid unanticipated financial consequences; hence, the library must take measures to reduce the prevalence of disasters. Njoroge (2014; Kostagiolas et al., 2011; Kaur, 2009; Wambiri, 2008) conducted similar studies on disaster planning, preparedness, and management elsewhere in academic libraries. However, their studies did not cover the selected academic libraries in Ghana. In Ghana, Yamson and Cobblah (2016; Ahenkorah-Marfo & Borteye, 2010 a) conducted studies in this area but not in the libraries under investigation, hence, the motivation for this study.

Objectives of the Study

The study seeks to;

- i. examines the staff level of disaster awareness in academic libraries.
- ii. determine whether library staff received disaster management training.
- iii. determine whether academic libraries have disaster management equipment available.
- iv. find out measures to prevent catastrophes in academic libraries,

LITERATURE REVIEW

The context of the disaster(s) in libraries

Even though different libraries may have other measures to prevent disaster, disaster occurs in various institutions and countries. One of the antidotes to disaster is to make every effort to reduce its impact if it occurs. Another critical element that needs to exist in every library is the ability to formulate measures to recover quickly after a disaster; this will help the library achieve the institution's core objectives. In 1966, the Arno River in Florence "burst its banks and caused catastrophic flooding of the Bibliotheca Nazionale Centrale". The flood destroyed one million volumes of documents (Fortson, 1992: vii a). In 1986, the collections of the Los Angeles Central Public Library were also destroyed by arsonists. In 1988, a fire consumed 400 000 materials, including one-quarter of newspapers at the USSR Academy of Sciences Library, through defective wiring (Harvey, 1993, p. 221). In 1997, the Morgan Library at Colorado State University was similarly damaged by flood which destroyed half of its collections (Alire, 2008). According to Hlabaangani and Mnjama (2008), the old Immigration Department building in Gaborone, Botswana, caught fire in the 1990s, which also destroyed a significant amount of records. Numerous resources, including library materials, were destroyed in the attack on U.S. government offices in Kenya and Tanzania (McMichael, 2007). Oluwatola et al. (2015), posited that fire attacked President Kennedy Library of Ahmadu Bello College Zaria, where some library materials were consumed. In Ida, North Central Nigeria, students' protectors set fire to Federal Polytechnic

Library, and destroyed its collections (Jimoh, 2004). Twenty-two academic libraries in the Philippines, in the Northern Panay and Western Visayas, experienced a similar incident during Typhoon Haiyan, resulting in irreparable damage to the library and its facilities (Superio & Alayon, 2015). Idiegbyan–Ose et al. (2018) indicated that two fire disasters at the University of Jos, Plateau State, North–Central, Nigeria, also caused massive library records and document damage.

Disasters in Ghanaian Academic Libraries

In the context of academic libraries, floods and fires are the most common disasters that destroy collections. According to Corral and Brewerton (1999), the term encompasses both natural and man-made phenomena, such as storms, earthquakes, pests, blasts, asbestos, bombs, robberies, and civil disorder. Records show that Ghana has experienced a variety of disasters, including fires, earthquakes, floods, and arson cases (Adinku, 2005). The Aglonby Library in Accra, Ghana, was destroyed in the 1939 earthquake. The Agricultural Development Bank's headquarters caught fire in 1984, destroying valuable records. Akussah (1991) asserted that there were many attacks on Ghana's traditional libraries and archival materials; however, terrorist attacks were minimal. Any disaster is hazardous to humanity and properties, irrespective of the type and where it may occur. The devastating consequences of the disasters are so unpleasant; therefore, institutions like libraries need to put measures in place to prevent disasters more than they need to focus on recovery measures.

Disaster Preparedness and Planning in Academic Libraries

Undoubtedly, the arrival of disasters in any form is spontaneous, unknown, unpredictable, and unavoidable. As a result, information custodians and record managers must develop disaster preparedness plans and techniques to reduce the magnitude of a disaster if it occurs in libraries. The sudden effects of disasters are not only limited to the quantum of damages, but they also put additional financial burdens on the management of the affected institution. Disaster preparedness encompasses all of the measures required to remain prepared and reduce the impact of disasters on business operations (Rodrguez-Espndola et al., 2018).

The International Federation of Red Cross and Red Crescent Societies (2019) defined disaster preparedness as strategies that lessen the effects of disasters. The disaster preparedness document assists the institution in predicting potential disasters. It also allows libraries to respond quickly and cope with the consequences of disasters. Sharma et al. (2018) asserted that appropriate disaster planning is vital to lessen the effects of the disaster. Adequate preparedness for disasters provides an avenue for the management of the university library to develop strategies and efficient plans to handle disasters, decrease duplication of activities, and increase the general response to disaster efforts. Any library, regardless of size, must take every precaution to avoid catastrophe. Libraries should take steps to enact measures that can help them combat a natural or artificial disaster. Institutions should ensure that a disaster plan is written clearly and understood by everyone

without jargon. Asamoah et al. (2018) stated that it is essential for organisations to plan for a disaster. They emphasised the importance of identifying vital records and having backup systems in place to protect these records. Topper (2016) uncovers that organizations might have a disaster plan with respect to what to do in case of a catastrophe, however, in reality, one is never completely ready for a cataclysmic event. Therefore, it is important for libraries to have disaster recovery centres that will assist libraries in disaster prevention, preparedness, response, and recovery.

The written plan should be updated periodically, and there should be backups on- and off-site. As part of the disaster preparedness, the floor plan of the building or the entire building plan should have the following: emergency and exit points, fire extinguishers, sprinklers, smoke and fire detectors, and water hydrants. The rest are emergency call points, an alarm bell, a fire hose, a fire blanket, water spray, elevator controls, and foam fire extinguishers. Promise et al. (2018) listed disaster measures in Nigerian universities as checks on facilities, constant maintenance of electrical equipment, the rightful positions of disaster equipment, and the replacement of expired devices. Issa et al. (2012) studied disaster preparedness and recovery in some selected academic libraries in the North Central Zone of Nigeria. The study revealed that most libraries lacked a disaster management policy, did not have trained or qualified disaster managers, and had low preparedness. Other factors responsible for the library disaster were ignorance of disaster preparedness and lack of funds. A study on disaster preparedness in Malaysian academic libraries was carried out by Juryiah et al. (2015). Their findings revealed that academic libraries lacked disaster plans. Based on their findings, one can draw the conclusion that library staff might not be able to deal with a disaster should it occur. Since disaster strikes are unpredictable, library staff must be trained to take responsibility for disaster preparedness and planning. The team of library staff must have regular training, like workshops and seminars, to update their skills. There should be rehearsals in removing documents and materials and confidence in decision-making about salvage techniques. Akussah and Fosu (2001) conducted research on disaster management in Ghanaian academic libraries. Their results indicated that the twelve (12) academic libraries surveyed lacked recovery and disaster plans, human capital, and material capacity to recover after a disaster. They also lacked conservation units, workshops, or seminars to salvage damaged resources should disasters occur. In order to determine which national libraries have a disaster plan, a global survey of national libraries was conducted in 2003. According to the findings, only 39 (22%) of the 177 libraries surveyed had a disaster plan (IFLA-PAC, 2006). Hasenay and Kritalic (2010) conducted a similar study in Croatian libraries. Their results found that 5 libraries (13%) had official disaster plans in written form, while 3 libraries (8%) had an unofficial plan.

Disasters Risk Assessment in Academic Libraries

Any disaster threatens the lives of human beings, library buildings, and entire library collections and halts operations. Disaster retrogresses the activities of libraries. It places a financial burden on management to recover from the occurrences. Like other libraries, the ones under study are susceptible to related disasters, either artificial or natural. The geographical location of these libraries exposed them to natural and artificial disasters; hence, there is a need for risk assessment. Risk is determined and grouped according to the recurrence and seriousness of the event (Kostagiolas et al., 2011). The risk assessment process may include identifying external and internal environmental threats and evaluating current preventive measures.

Asamoah et al. (2018) recommended that institutions should conduct proper risk assessment and analysis. It should be the key pillar of an organisation's disaster plan. This assists organisations in identifying, analyzing, and evaluating the risks that are likely to affect them should disaster occur. According to Halsted et al. (2014), risk assessment is a systematic approach to prevent specific risks and provide ways to reduce the effect of disasters. Risk assessment involves determining the likelihood of losses by analysing potential risks. It also includes assessing the current conditions and the inefficacy or harm they cause to property, individuals, jobs, and the environment they depend on (UN-ISDR, 2009). Lyall (2009) showed steps to follow in risk appraisal; they are establishing potential dangers, conducting vulnerability analysis, evaluating current strengths and weaknesses, assessing inventory assets, assessing insurance policies, and implementing prevention measures as well as updating policies. In line with these factors, libraries must carry out a risk assessment before they experience the consequences of disasters in their operations. Risk assessment aims to identify the risk, understand the circumstance, and supply a framework to determine proficiency, prevention, and risk relief in disaster management. According to Nieto-Morote and Ruz-Vila (2011), a "risk assessment group" in disaster management could be a group of experts tasked with assessing the likelihood of a disaster occurring and determining the most effective strategy for dealing with it. A risk assessment team should be formed by academic library management to identify the most vulnerable areas. Recommendations by the team after the completion of the exercises should be documented and made available to all stakeholders.

Staff Awareness Level of Disasters in Academic Libraries

Awareness is having knowledge about a particular situation, object, or phenomenon.

Oluwatola et al. (2015) concentrated on disaster management practices in five public libraries in Southwest Nigeria. According to their findings, most of the respondents knew about disaster preparedness techniques and how to apply the equipment. Five public libraries were used by the authors. Due to the differences in the study areas, methods employed, and the size of the population, the results could not be generalized. An investigation into disaster preparedness was carried out by Ahenkorah-Marfo and Borteye (2010) at the Kwame Nkrumah University of Science

and Technology in Kumasi, Ghana. Their results found that the majority of the staff were aware of emergency exits and the location of fire extinguishers. Nwokedi et al. (2017) found that campus emergency preparedness and stakeholder awareness of disasters were low at the University of Jos Library. Addai et al. (2016) revealed that most of the fire disasters in Ghanaian institutions were attributed to staff negligence and ignorance. In a similar vein, Chittaro and Ranon (2009) asserted that having a fundamental understanding of fire disasters is crucial for evacuation. Academic library heads in North-Eastern Nigeria were surveyed by Abareh (2014) regarding disaster preparedness. The researchers revealed that the library staff were aware of disaster preparedness. Aminu (2014) claimed that public libraries in Nigeria lacked awareness of disaster management and also lacked adequate security. Zaveri (2013) study on disaster management in Indian libraries revealed that the majority of India's libraries were not prepared for natural disasters. The author indicated a lack of awareness and the absence of a written document on disaster management plans. One of the difficulties discovered was how to handle disaster cases if they occurred. According to Juryiah, et al. (2015) on disaster preparedness in Malaysian academic libraries established that respondents were aware of disasters in academic libraries. The destruction of the institution's collections was caused by a lack of good coordination and insufficient awareness about disaster preparedness and risk reduction among library staff for protecting materials in the libraries (Choji, 2017). Superio et al. (2017) looked at how academic libraries in the Philippines manage disasters: Lessons from Hurricane Haiyan. According to the study, the most significant obstacle affecting disaster management was librarians' lack of disaster management knowledge and expertise.

Staff Training in Disaster Management Programme

Staff at public and private libraries cannot manage and salvage library collections during disasters unless they receive adequate disaster management training. The library staff should be aware of crises and at the forefront of issues. They ought to know when to act based on the gravity of the circumstances. The kind of performance that library staff will put up during a disaster will reveal whether or not they have received adequate training. According to Gibson and Pupulidy (2015), the effectiveness of the staff training has a significant impact on the necessary skills for disaster mitigation, restoration, and prevention during a disaster. Evacuation, flood control, coordination of warnings, and crowd control were some of the immediate responses that could benefit libraries during disasters (Coppola, 2011). Without adequate training, any staff member would find it difficult to handle disasters. According to Dimersar Academy (2010), the core of disaster training extends beyond mitigation, preparedness, response, and recovery. Unexpected guests are disasters; some happen without notice, while others offer early alerts or hints. Risk assessment is required for institutions to identify disaster-prone areas and mitigation strategies. According to Wani and Ganaie (2017), there are significant concerns regarding an organization's records,

particularly those of libraries, in the event of a disaster. They emphasized that inadequate disaster management practices and the absence of security protocols resulted in the loss of crucial records in Kashmiri libraries.

The library staff must have adequate training on disaster cases. Training is an essential element of disaster preparedness. It is crucial that all library staff, including the disaster team, must have the requisite skills in disaster responses and familiarise themselves with the roles of other staff members. Jeff (2014) indicated that since many institutions are unable to meet their financial obligations, the cost of training, fire equipment, and fire drills has an impact on emergency preparedness. Owolabi (2014; Kolawole et al., 2015; Sawant, 2014) uncovered that the majority of the libraries they studied lacked sufficient funds, qualified staff, and low staff commitment towards disaster. The authors stressed further that in addition to the training, the entire library building, including equipment, should be constantly inspected to identify early warning signs and prevent any disaster. Disaster planning in libraries includes planning, prevention, response, recovery, preparedness, and training (Wong & Green, 2007). The remaining tasks include surveying the building and staff practices, determining the effects of potential disasters, creating floor plans for the library, and setting priorities based on the collection's value (Wong & Green, 2007). The level of training a person receives determines how well they can participate in various disaster preparedness activities (Sutton & Tierney, 2016). Library staff must have practical disaster management skills, training, and drill activities (Deen, 2015).

Availability of Disaster Equipment in Academic Libraries

Disaster preparedness is a thoughtful approach that all library staff must embrace before a disaster happens. The availability of disaster equipment in academic libraries is the only procedure that can be relied on to diminish the rate of damage that may be caused by a disaster. Human capital, equipment, and facilities, or entire library buildings, may lose everything to disaster if they are not safe. Hence, these assets must be protected since they support the library's day-to-day operations. Promise et al. (2018) stated that Nigerian university libraries have adequate fire extinguishers, sand buckets, emergency exits, anti-virus programmes and lightning arresters.

However, the authors indicated that the libraries lacked disaster equipment such as dehumidifiers, dryers, dust extractors, plastic sheet covers, and warning alarms. Interestingly, Ilo et al. (2019) studied the challenges of disaster training: implications for Federal and State University Libraries in Nigeria. Their results found that the university libraries they studied were more equipped to fight fire disasters than any other emergency. Nonetheless, they lamented inadequate disaster facilities or equipment and poor funding that impeded disaster training. Academic libraries must ensure that there are enough facilities and equipment available to provide disaster warnings or early signs.

The accessibility of disaster equipment is fundamental in the battle against any calamity in the library. It is important that libraries ought to be promptly available to meet the required need.

Abareh (2014) posited that most scholarly libraries in Northern Nigeria had fire extinguishers. There must be equipment available for libraries to avoid being taken by surprise.

Nwokedi et al. (2017) enumerated fire apparatus like fire buckets, automatic fire suppression systems, extinguishers, and fire alarm systems. Sawant (2014) on preservation and conservation practices in academic libraries in the Mumbai district of India revealed that out of 35 respondents, 30 (85.7%) responded that their libraries had fire extinguishers. Juryiah et al. (2015) also itemized disaster preparedness equipment such as sprinklers, fire extinguishers, smoke detectors, and audible alarms are readily available.

Measures to Mitigate Disasters in Academic Libraries

All academic library staff must work together quickly to prevent disasters. Disaster mitigation is of the utmost significance. Any natural disaster can deplete vast resources, facilities, and human lives. According to Sutton and Tierney (2016), disaster preparedness is a concept that encompasses all measures designed to increase life safety in the event of a disaster. It also includes things that make it easier to take emergency measures to protect property and get back on your feet quickly after a disaster, as well as restore damaged property. The use of fire-fighting tools like fire extinguishers and staff training on how to identify early warning signs are just a few of the many significant preventative measures that libraries can adopt. Matthews et al. (2009) highlighted that the library ought to have a disaster team that would monitor all of the library's facilities to make sure that all of the fire apparatus are in good condition. Davou (2014) emphasized that regular fumigation of the library, adequate security measures, proper library orientation, regular cleaning, and disaster management and prevention strategies are useful in academic settings.

Water sprinklers, smoke detectors, and regular air conditioner checks were among the disaster mitigation measures outlined by Wong and Green (2006). The authors indicated the rest of the measures as availability of alarm systems, fans, doors, windows, fire extinguishers, emergency exit doors, and routinely checks on roofs for leakages. Sakurai and Murayama (2019) recommended simulations and virtual reality (VR) technology for dealing with disaster cases through staff training as part of the measures to prevent disasters. The disaster can be averted in an institution where there is a free flow of information as well as immediate feedback from parties involved in disaster management. To mitigate disasters in libraries and other institutions, Sahu (2009) suggested technological measures like satellite communication networks, geographic information systems (GIS), remote sensing technology, and fire suppressants. Between December 2005 and February 2006, Ngulube and Magazi (2006) conducted a survey of public libraries in KwaZulu-Natal, South Africa. Their findings confirmed that the libraries are not prepared to prevent disasters from occurring. The authors went on to explain that the libraries lacked a

comprehensive disaster response strategy. An investigation into disaster preparedness at the Kwame Nkrumah University of Science and Technology in Kumasi, Ghana, was conducted by Ahenkorah-Marfo and Borteye (2010). They found that the library was not well equipped to prevent or handle disasters due to inadequate training of library staff. In Nigeria's Cross River and Akwa Ibom States, Ottong and Ottong (2013) investigated disaster management for library materials. Bansal (2015) suggested measures like creation of awareness, prevention, preparedness, response, recovery strategies, training, a workshop, disaster control plan, insured library resources, good drainage system, and flood-proof devices. The remaining strategies included frequent inspections of library buildings for water leakages, checks on equipment, and inspections of expired fire extinguishers. Indeed, the fight against disaster relies heavily on each and every one of the points made by various authors. However, the creation and implementation of disaster policies remains a significant problem in some academic libraries as indicated in various studies. Protection, planning, prevention, recovery, recovery and response are the five components of disaster management that were identified by Fox (2014).

METHODOLOGY

The study adopted a mixed-methods approach. The questionnaire and interview guide were the instruments used for data collection. The selected universities are fully-fledged or chartered institutions in Ghana. Both the questionnaire and the interview guide dwelled on gender, education or professional background, and years spent in the library. Some of the questions were on the Likert five-point scale. The interview guide aided the researchers in collecting qualitative data. The study did not use any sampling technique in selecting the respondents due to the small population. According to Bernard (2012; Gall et al., 2007), the entire population should be studied if the total population size is small and manageable. The population comprised senior members, senior staff, and junior staff from the selected academic libraries. The total population of library staff from the selected academic libraries was fifty-two (52). Out of fifty-two (52) respondents, three (3) professional librarians were interviewed for the study. Forty-nine (49) copies of the questionnaire were administered to respondents. All forty-nine (49) copies of the questionnaire were correctly filled out and returned, giving a response rate of 100%. For purposes of anonymity, the heads of selected libraries were denoted with the letters "Head of Library "A," "Head of Library "B," and "Head of Library "C." Each part of the interview lasted approximately thirty-five minutes (35 minutes). The Statistical Package for the Social Sciences (SPSS, version 22.0) was used for analysing the data, while the qualitative data was analysed using Nvivo software (20.0). The interview data were transcribed, coded, and grouped based on emerging themes, according to Creswell's (2012) assertion. The following table presents the breakdown of each academic library's population, staff ranks, and gender.

Institution, Population, Professional Levels and Gender

Table 1 depicts the names of the institutions selected, the number of professionals, para-professionals, and gender. As illustrated in Table 1, KTU has the largest population of professionals, Para-professionals including gender, more than GCTU and VVU.

Table 1: Institution, Population, Professional Levels and Gender

Name	Population	Professionals	Para-professionals	Male	Female
Koforidua Technical University (KTU)	19	8	11	12	7
Ghana Communication Technology University (GCTU)	18	10	8	11	7
Valley View University (VVU)	15	5	10	11	4
Total	52	23	29	34	18

Source: Field data, 2021

RESULTS AND DISCUSSION*Gender of the Respondents*

The main objective of this study was to find out about disaster preparedness in some selected academic libraries in Ghana. Table 2 illustrates that a significant proportion of the respondents were males, 29 (59.2%), while 20 (40.8%) were females.

Table 2: Gender of the Respondents

Gender	Frequency	Percentage (%)
Male	29	59.2
Female	20	40.8
Total	49	100

Source: Field data, 2021

Educational Background of the Respondents

Table 3 displays the educational levels of the staff working in the selected academic libraries. As shown in Table 3, of the population of 49, 20 (40.8 %) hold bachelor's qualifications, followed by 17 (34.7 %) who have postgraduate qualifications, whereas 12 (24.5%) are diploma holders. The findings indicate that the selected libraries have many degree holders with only a few diploma qualifications.

Table 3: Educational Background of the Respondents

Educational Background	Frequency	Percentage
Postgraduate	17	34.7
Bachelor	20	40.8
Diploma	12	24.5
Total	49	100

Source: Field data, 2021

Period Worked in the Library

This section of the study sought to determine the years the respondents have been in service in their various libraries. Sixteen (32.7%) indicated that they had worked in the library between 5 to 10 years, followed by 13 (26.5%) who had worked there between 1 to 5 years. On the other hand, 11 (22.4 %) indicated ten years and above, and only 9 (18.4 %) had worked in the library for less than one year.

Table 4: Number of Years Worked in the Academic Library

Statement	Frequency	Percentage	Cumulative Percentage
Less than one year	9	18.4	18.4
1 -5 years	13	26.5	44.9
5 -10	16	32.7	77.6
Ten years and above	11	22.4	100
Total	49	100	

Source: Field data, 2021

Staff Awareness of Disaster in Academic Libraries

Every member of the library staff needs to become aware of the various types of disasters that are likely to strike in their respective libraries. The participants were asked if they were aware of library disasters. Table 5 shows that an overwhelming majority, 47 (95.9 %) of the respondents, were fully aware of disasters in academic libraries, only 2 (4.1%) of the respondents were unaware of disasters in their libraries. Even though the majority of respondents admitted to being aware of disasters, libraries still need to do more to raise awareness.

The Head of Library A indicated that:

"I think everyone in this library is aware of what a disaster is, as far as disaster awareness is concerned; There is no staff member who can claim ignorance of it."

"Frankly, my observation revealed that all the electrical gadgets in the library are switched off before closing for the day."

The Head of Library B commented on the following:

" Yes, they are all aware of the disasters that happen in libraries and the damages they cause to library resources. Before the last person leaves the library, I also make sure that all of the electrical appliances are turned off."

The Head of Library C opined:

"We are fully aware of what disasters are; may be except the newly library assistants who were just employed. Fortunately, we have not experienced any disasters for the past 12 years that I have been working here. I always caution my staff not to bring anything inflammable or any object liable to spark fire into the library. As the head of the library department, I warn them to always be mindful of disasters."

The responses indicate that most library staff in various libraries are aware of the disaster and its effects. The consequence of a disaster is always negative; therefore, library management needs to sensitise staff on the impact and gravity of the disaster.

Table 5: Staff Awareness of Disaster in Academic Library

Staff awareness	Frequency	Percentage	Cumulative Percentage
I am fully aware of disasters	47	95.9	95.9
I am not aware of disasters	2	4.1	100
Total	49	100	

Source: Field data, 2021

Staff Training in the Disaster Management Programme

The researchers sought the respondents' views on whether they had been given training in disaster management programmes by their management before. Table 6 shows that 3 (6.1%) of the respondents have had training in disaster management before, followed by 2 (4.0%) who have had training for two years. Four of the respondents (8.2%) had received training for five years, while the majority, 40 (81.7%), had received training for ten years.

Regarding disaster management and training, the Head of Library A stated that:

"I organised disaster training for my staff. The training was done by staff from the fire service department. Everybody participated in the exercise, regardless of their status."

The respondent quickly added:

"Even though there was training on how to handle fire extinguishers and other disaster equipment, it was not enough and inconsistent. I am planning for a similar training again if my financial request to the university management is approved."

On the same variable, the Head of Library B expressed that:

"Honestly, when I took over as Head Librarian, I organised training on disaster management for the staff. I realised that the training was effective and has had a positive impact on most of the staff."

When the researchers asked the participants how they got to know about the effect of the training on staff, the following was gathered;

"Yes, these came to light based on my personal observation; after the exercise, some of the staff started practicing the recommendations made by the fire service staff."

The researchers tried to find out when they would have similar training; the interviewee stressed that:

"I have sent a memo requesting permission and assistance from the university's management for a similar exercise, but I have not received any feedback or the green light. The training was good for the staff, but the fire service officers could not touch on many things because of the time factor."

The Librarian of Library C indicated that:

"Yes, there has been training on disaster management for all the library staff, but we were few that day because of the shift system. Some colleagues were in the afternoon section. Also, the hours were not adequate, so I have to organise another one for my staff so everybody can participate and benefit."

Training library staff on disaster management is crucial in an academic library environment.

Library staff can mitigate disasters if they have adequate training on handling disaster cases should they occur. According to the findings, 40 (81.6%) of the respondents had a ten-year training on disaster management, followed by 4 (8.2%) who had five years training and 3 (6.1%) had one-year training on disaster management.

Table 6: Staff Training in the Disaster Management Programme

Staff training	Frequency	Percentage	Cumulative Percent
I had one year training	3	6.1	6.1
Have some training two years ago	2	4.1	10.2
Have some training five years ago	4	8.2	18.4
Have some training ten years ago	40	81.6	100
Total	49	100	

Source: Field data, 2021

Availability of Disaster Equipment in Academic Libraries

The Relative Importance Index (RII) was used for Tables 7 and 8. It was calculated based on the following equation: Thus, the degree of contribution was categorised on a five-point Likert scale as follows: 1= Very low, 2 = Low, 3= Moderate, 4 = High, and 5= Very high.

RII = Sum of weights (W1 + W2 + W3 + W4+ W5) / A × N

Relative Importance Index:
$$\frac{\sum w}{A \times N} = \frac{W1 + W2 + W3 + W4 + W5}{5N}$$

Where:

W: weighting as assigned by each respondent on a scale of 1 to 5. One means the least and five the highest.

A: the highest weight (in this case, 5 is the highest);

N: Total number of respondents. Therefore, $(1 \times 10) + (2 \times 6) + (3 \times 8) + (4 \times 4) + (5 \times 21) / 5 \times 49 = 167$

$10+12+24+16+105 = 167/245 = 0.682$

Tables 7 and 8 display the Relative Importance Index (RII) analysis for the availability of disaster equipment in academic libraries. According to the results, adequate fire extinguishers ranked 1st with a value of (RII = 0.682), followed by signage (It assists staff in locating equipment) ranked 2nd with a value of (RII= 0.588), while fire buckets ranked 3rd with (RII= 0.579), and sprinklers ranked 4th with (RII = 0.555).

The researchers asked the Head of Library A about the availability of disaster equipment in their library.

The Head said this:

"In fact, concerning the availability of fire extinguishers and other equipment, I will say boldly and without reservation that the library has many fire extinguishers to fight disaster."

"There are many fire extinguishers at every vantage point, but our biggest challenges are the lack of thunder arresters and water sensors. Nonetheless, there is room for improvement."

When asked what they would do should disaster strike;

This respondent laughed and said: *"When we get to the bank of a river, we will know how to cross it. I also think that it is good that we encourage ourselves to do better."*

The Head of Library B was also asked to indicate the disaster equipment available in their library.

The interviewee sighed and said;

"Please, the library's preparation for any disaster is inadequate. We have insufficient fire extinguishers; the library also lacks fire alarms; there are no water sensors or alarms, among others. Truly, we need the required tools in the library since fire cannot be fought with hands or without relevant equipment available. Negotiations are on-going between the library management and university authority for the acquisition of fire devices. I hope we will get them one day, sir."

The researchers further asked the participants how they would approach disaster should it happen unexpectedly. The answer was:

"Honestly speaking, we would be doomed or consumed by any form of disaster that would visit our library. Library management must do more to protect individual lives and library collections."

"No record or material in the library will be spared if a water or fire disaster occurs in the library today; hmm! the library is functioning at the mercy of God."

The Head of Library C stated that:

"The library is not prepared for disasters; the equipment is unavailable; there are no evacuation or exit points, and there are no fireproof or waterproof facilities to salvage documents should a water disaster or fire occur in the library."

The Head Librarian stressed further that:

"My staff has not had enough training on disaster management; this means that we need more training on disaster management and also relevant facilities than what we have now."

"Currently, the staff lacks the basic skills to handle a simple fire extinguisher; is that alone not serious? The library's preparedness for disaster mitigation is still in its infancy.

As for signage (which assists staff in locating equipment), we have it; there is no cause for alarm."

Every institution must have disaster equipment in order to deal with unforeseen disasters. An immediate response to any disaster is ensured by the disaster facilities that are available in the library. In the event of a disaster in the academic library, library staff members need to be aware of these resources and know who to contact for assistance. Therefore, university management must pay attention and act as quickly as possible.

The researchers sought to find out the availability of disaster equipment in academic libraries. According to the results adequate fire extinguishers were ranked 1st with a value of (RII = 0.682), followed by signage 2nd with a value of (RII = 0.588), and fire buckets were ranked 3rd with a value of (RII = 0.579).

Table 7: Availability of Disaster Equipment in Academic Libraries

Availability of equipment	1	2	3	4	5	RII	Rank
Adequate fire extinguishers	10	6	8	4	21	0.682	1st
Signage (It assists staff in locating equipment)	16	5	4	14	10	0.588	2nd
Fire buckets	10	17	2	8	12	0.579	3rd
Sprinklers	15	9	5	12	8	0.555	4th
Smoke detectors	13	20	2	3	11	0.514	5th
Fire blankets	21	3	8	13	4	0.502	6th

Source: Field data, 2021

Measures to Mitigate Disasters in Academic Libraries

This section of the study sought to find out the respondents' opinions on measures to mitigate library disasters.

The Relative Importance Index (RII) analysis indicates the top measures to mitigate library disasters. Periodic staff training was ranked 1st among the measures with a value of (RII = 0.678), followed by adequate fire extinguishers, which ranked 2nd with a value of (RII= 0.657), the provision for emergency exits ranked 3rd with a value of (RII = 0.653), and the provision of water sensing alarms ranked 4th with a value of (RII = 0.645).

The researchers were interested in knowing the measures put in place by the libraries to mitigate disasters in academic libraries.

The Head of the Library A posited that:

"The library has fire extinguishers and some equipment that can be used to battle disaster occurrences; even though they are not enough, we are prepared with the limited facilities that we have at our disposal."

The interviewee stressed that:

"There are many fire extinguishers at every vantage point. We also do regular inspection on burst water hoses and pipelines; however, our biggest challenge is having enough thunder arresters, which we lack in the library. I am working assiduously to have some in the days ahead."

The Head of Library B expressed that:

"In fact, we have had training on disaster management before, and it has changed the attitude of my staff positively. The library has signage (which assists staff in locating equipment), fire buckets, and sprinklers. As the head of the library, I am working around the clock to acquire more equipment. We also do regular checks on burst water hoses and pipelines, and we look for leaks in roofing and ceilings, especially during the rainy season."

The Head of Library C stated in a cheerful voice that:

"For the measures to mitigate disasters in academic libraries, I can confidently say without reservation that we have adequate fire extinguishers, provisions for emergency exits, and provisions for water sensing alarms. We constantly examine water hoses and pipelines and have fire alarms and heat detectors in our library."

"Even though some precautions have been taken to prevent disaster, I believe they are insufficient. "All hands must be on deck right now, and our employees should receive constant and adequate training on how to use disaster equipment in an emergency, ideally every two or three months."

Academic libraries must have measures to prevent or halt disasters in all institutions, including libraries. Disaster is destructive since entire library collections could be consumed completely, including human lives.

Table 8: Measures to Mitigate Disasters in Academic Libraries

Statement	1	2	3	4	5	RII	Rank
Periodic staff training	6	7	8	18	10	0.678	1st
Adequate fire extinguishers	9	13	7	4	16	0.657	2nd
Provision for emergency exits	5	11	12	8	13	0.653	3rd
Provision of water sensing alarm	5	13	10	8	13	0.645	4th
Regular checks on water hoses/pipelines	10	6	5	17	11	0.630	5th

Fire alarms system/heat detectors	9	12	5	7	15	0.616	6th
Smoke detectors	9	13	6	10	11	0.604	7th
Regular checks on roofing for leakages	14	11	4	13	7	0.551	8th
Flood extractors	13	20	2	3	11	0.514	9th

Source: Field data, 2021

DISCUSSIONS

Staff Awareness of Disasters in Academic Libraries

From the responses, it is clear that all the respondents unanimously admitted that they are aware of the consequences of disasters in academic libraries. The findings agreed with Juryiah et al. (2015; Abareh, 2014; Zaveri, 2013), whose studies elicited similar results that the library staff were well aware of disaster preparedness in the libraries they investigated. The results also support Ahenkorah-Marfo and Borteye (2010), who reported that many librarians were aware of the disaster in the academic libraries they studied

Staff awareness of disasters is critical in every library; it helps the staff know how to act during a fire or flood and who to contact for assistance. Awareness also aids in the prevention of disasters.

Library Staff Training on Disaster Management

The findings indicated that most of the staff agreed that their training in disaster management programmes was inadequate to handle disaster cases. This finding supports Ahenkorah-Marfo and Borteye (2010) study that staff training in disaster management is a vital issue in most academic libraries in Ghana. Their study concluded that most academic libraries are not well equipped to avert or manage disasters due to inadequate training. However, Deen (2015) and Jeff (2014) attributed it to a lack of financial obligations from the management of the libraries. All libraries should prioritise disaster management training. It must be done regularly. Constant training in disaster management or preparedness equips staff and prepares them to handle disaster cases in the libraries; therefore, it must be given the attention it deserves.

Availability of Disaster Equipment in Academic Libraries

Surprisingly, the majority of respondents acknowledged that their libraries had only fire extinguishers and no other emergency equipment to mitigate disaster strikes.

This finding disagreed with Juryiah et al. (2015); the authors argued that fire extinguishers are not the only equipment the academic library can install to combat disasters. They indicated that others, such as smoke detectors, audible alarms, and sprinklers, are critical for disaster preparedness. The availability of disaster equipment is critical to the library's operations. The lack of facilities and equipment to combat disasters in libraries will make the staff helpless, and the level of damage

will also increase. Academic libraries must strive to acquire the necessary devices and prepare adequately for disasters since their visit is unknown.

Measures to Mitigate Disasters in Academic Libraries

Disaster measures include various strategies that can be adopted to prevent disaster occurrences in any institutions or academic libraries. The findings revealed some measures, such as periodic training for library staff and the availability of disaster equipment such as fire extinguishers. They also include smoke detectors, checks on water leakages, emergency exits, and water-sensing alarms, among others. These results support Bansal (2015) study, which identified effective disaster control plans, frequent checks on water leakages, inspections of buildings for cracks and maintenance, checks on fire extinguishers for expiration dates, and staff training. The results again corroborate with Ottong and Ottong (2013) and Coppola (2011), who established the issues of fire suppression, extinguishers, water hoses, imaging devices, ladders, cranes, and spreading tools. The authors stressed further that the absence of the devices can affect the academic library in times of disaster. All libraries must have brilliant measures to mitigate disasters in their institutions. These measures will help library staff act appropriately. The measures must include staff training, the availability of appropriate equipment, and regular inspections of areas perceived as disaster-prone.

Implications for Research and Practice

The study's outcome contributes to the existing knowledge and literature on disasters in academic libraries in Ghana and beyond. This study's consequence is a groundbreaking avenue for addressing issues of concern regarding disasters in academic libraries and information science centres in Ghana and those around the globe, especially public and private university libraries in Ghana. Though there have been several studies on disasters in academic libraries in Ghana, adopting a mixed-method approach is evident in providing quality data and information on the survey. The mixed-method approach offsets the deficiencies of using only a qualitative or quantitative method in a study. The study's novelty is the originality of the data and information collected from the participants. The quantitative data informed and gave a quantifiable finding, while the qualitative data brought respondents' perceptions, opinions, ideas, myths, and philosophies based on the topic.

The study serves as a standard for rekindling issues of disasters in academic libraries. The formation of a disaster committee, having a disaster policy, training of library staff, and management providing adequate budgetary allocations for academic libraries to personalise their needs in reaction to disasters of all kinds.

CONCLUSION

The disaster preparedness level in Ghana's academic libraries leaves much to be desired. It is true that disasters in academic libraries cannot be eliminated, but they can be managed if the recommendations are given due consideration. Every disaster ends with bitter results for every human institution. Therefore, it is important for libraries to prepare for their consequences to avert the events. The study revealed that disaster is a potential visitor that can happen in any institution at any time in a human's life. The academic library is not immune from this catastrophe.

An academic library, whether large or small, is expected to prepare for disaster through adequate mitigation measures to prevent the event of such a calamity. The study revealed inadequate preparation for disasters in the libraries. Even though the understudied libraries have made some efforts. The study established that all the staff are aware of disasters. However, little has been done about staff training on disaster management. The research also confirmed the absence and nonexistence of disaster committees and the lack of disaster facilities. These findings have led to a deeper understanding of the occurrence of disasters in academic libraries in Ghana and beyond.

RECOMMENDATION

The following recommendations are made for the management of the studied libraries:

There should be regular awareness of disaster management for both old and newly employed staff in academic libraries. There should be regular training on disaster management for all library staff to create more awareness regarding disaster cases. The study recommends that funds should be available for staff training and purchasing of appropriate equipment. Refresher programmes should be organised frequently to update staff on current developments; this can be factored into the library budget annually. The university's management should liaise with the development department for a regular library building inspection for damages and repairs. The library should have a proper drainage system to avert flooding; all taps should be closed properly to avoid flooding.

Before leaving the office at the end of the day, all electrical appliances must be turned off. Emergency phone lines should be available to all library staff, and there should be more exit points in the libraries. Fire extinguishers should be positioned at various vantage points in the libraries. All fire extinguishers should be checked to ensure that they are operational. As part of the safety measures, there should be alarms for flooding and fire sensors to provide early signs or warnings in the academic library environment. Academic libraries are encouraged to use fireproof cabinets. The study recommends that academic libraries must use prevention detectors and devices such as fire alarms, smoke detectors, fire-fighting devices, and sensors to detect early warnings. The library should service fire devices frequently for effective and efficient use. The study recommends that all academic libraries have insurance policies, especially those not under any insurance policy or coverage.

REFERENCES

- Abareh, H. M. (2014). Disaster preparedness by heads of academic libraries in North-Eastern Nigeria. *Global Journal of Academic Librarianship*, 3(1), 45-57.
- Addai, E. K., Tulashie, S. K., Annan, J. S., & Yeboah, I. (2016). The trend of Fire Outbreaks in Ghana and Ways to Prevent These Incidents. *Safety and Health at Work*, 7(4), 284-292. <https://doi.org/10.1016/j.shaw.2016.02.004>
- Adinku, S. (2005). Towards disaster preparedness and recovery planning procedures for libraries: A survey of staff and users of the Balme Library, University of Ghana. *African Journal of Libraries, Archives and Information Science*, 15(1). 75-79.
- Ahenkorah-Marfo, M. & Borteye, E. M. (2010). Disaster preparedness in academic libraries: The case of the Kwame Nkrumah University of Science and Technology Library, Kumasi, Ghana. *Library and Archival Security*, 23 (2). 117-136. Retrieved July 4, 2020, from [http://file:///C:/Users/HP/Desktop/dis as/233050962](http://file:///C:/Users/HP/Desktop/dis%20as/233050962).
- Akussah, H. & Fosu, V. (2001). Disaster management in academic libraries in Ghana. *African Journal of Library, Archives and Information Science* 11(1), 1-16
- Alire, A. (2008). The silver lining: recovering from the shambles of a disaster. *The Library of Congress publication*. 101-107. pp. Retrieved from: www.tandfonline.com/.
- Aminu, A. A. & Abareh, H.M. (2014). Disaster Management in Public Libraries in North-Eastern Nigeria. *The Journal of Library & Information Science*, Proton, pp. 585-590.
- Asamoah, C., Akussah, H., & Musah, A. (2018). Recordkeeping and disaster management in public sector institutions in Ghana. *Records Management Journal*, 28(3), 218-233.
- Bansal, J. (2015). *Disaster management in libraries: An overview*. Retrieved from <https://www.researchgate.net/publication/313327897> Disaster management in libraries An overview
- Bernard, J. (2012). *Perfecting Your Research Work*. London: Unique Press.
- Chittaro, L., & Ranon, R. (2009). Serious games for training occupants of a building in personal fire safety skills. *Games and Virtual Worlds for Serious Applications, 2009 Conference*, 76-83.
- Choji, G. D. (2017). *Disaster Management in Academic Libraries in Plateau State (Doctoral Dissertation)*. [http://dspace.unn.edu.ng/bitstream/handle/123456789/4364/Choji %20Garos%20Davou.pdf?sequence=1&isAllowed=y](http://dspace.unn.edu.ng/bitstream/handle/123456789/4364/Choji%20Garos%20Davou.pdf?sequence=1&isAllowed=y)
- Coppola, D.P. (2011). *Introduction to International Disaster Management*, Elsevier, Amsterdam.
- Corrall, S., & Brewerton, A. (1999). *The New Professional's Handbook: Your Guide to Information Services Management* (London: Library Association Publishing. 225-227
- Creswell, J.W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed). Boston: Pearson.

- Curzon, S.C., & Quinonez-Skinner, J. (2010). *Academic libraries*. In *Encyclopedia of Library and Information Science* 3rd ed, 1. London: Taylor and Francis, 854.
- Davou, C. G. (2014). *Disaster management in academic libraries in Plateau State*.
<http://repository.unn.edu.ng/bitstream/handle/123456789/4364/Choji%2C%20Garos%20Davou.pdf?sequence=1&isAllowed=y>
- Deen, S. (2015). Pakistan 2010 floods: Policy gaps in disaster preparedness and response", *International Journal of Disaster Risk Reduction*, 12, pp. 341–349, available at: www.sciencedirect.com/science/article/pii/S2212420915000308.
- Dimersar Academy. (2010). *Disaster management cycle*, available at [https:// sites.google .com/site/dimersarred/disaster-management-cycle](https://sites.google.com/site/dimersarred/disaster-management-cycle).
- Elogie, T. A. (2007). Factor influencing library use by the academic staff of the University of Benin and Ambrose Ali University Ekpoma. *Nigeria library link*. 5(2), 12-22.
- Fortson, J. (1992). *Disaster planning and recovery: a how-to-do-it manual for librarians and archivists*. New York: Neal-Schuman.
- Fox, L. L. (2014). Management strategies for disaster preparedness", *ALA Yearbook of Library and Information Science*. 14, 1-6.
- Gall, M. D. Gall, J. P. & Borg, W. R. (2007). *Educational research: An introduction* 8th ed. Pearson: Boston.
- Gibson, C.A. & Pupulidy, I. (2015). The margin of manoeuvre: a safe space for emergency and disaster responders, 2 (3), 201-208.
- Hlabaangani, K., & Mnjama, N. (2008). Disaster preparedness in information centres in Gaborone, Botswana. *African Journal of Library, Archives and Information Science*, 18(1) 77.
- Halsted, D.D, Clifton, S.C & Wilson, D.T. (2014). *Library as a safe haven: Disaster Planning, Response and Recovery; A how-To-Do-It Manual for Librarians*. Chicago. American Library Association
- Hasenay, D., & Kritalic, M., (2010). Disaster and after What have Croatian libraries learned about preservation and disaster management after the war experience?" Proceedings of the World Library and Information Congress, 76th IFLA General Conference and Assembly, Gothenburg, Sweden, p.9.
- Harvey, R. (1993). *Preservation in libraries: principles, strategies and practices for librarians*. London: Bowker.
- Idiegbeyan-Ose, J., Ifijeh, G., Ilogho, J. E., Iwu-James, J., & Izuagbe, R. (2019). Disaster in libraries in developing countries: the need for digital preservation of information resources. In C. Inglese, & A. Ippolito (E.ds), *Analysis, conservation, and restoration of tangible and intangible cultural heritage*, 431-449. Hershey, PA: IGI Global. doi. 10.4018/978-1-5225-6936-7.ch017.
- Ilo, P.I., Ngwuchukwu, M., Michael-Onuoha, H.C., & Segun-Adeniran, C.D. (2019).

- Challenges of disaster training: implication for federal and state university libraries in Nigeria. *Disaster Prevention and Management*, 28 (3), 332-342.
- International Federation of Red Cross and Red Crescent Societies. (2019). *Disaster preparedness: Working with communities to prepare for disasters and reduce their impact*.
<https://media.ifrc.org/ifrc/what-we-do/disaster-and-crisis-anagement/disasterpreparedness/>
- International Federation of Library Associations. (2006). Disaster preparedness and planning: a brief manual", *IFLA-PAC*, preservation, 6.
- Issa, R. S. (2012). *Disaster preparedness and recovery in selected academic libraries in the North Central Zone of Nigeria*. (Unpublished masters' thesis). Ahmadu Bello University, Zaria.
- Jeff, C. (2014). The economic impact of fire-fighting. *Fire Rescue*.
- Jimoh, Y. (2004). *Polytechnic Students set classes ablaze*. Nigerian Tribune, p.3
- Juryiah, S., Khalid, M.& Dol, N. (2015). Disaster Preparedness for academic libraries in Malaysia: an exploratory study. *International Journal of Social, Behavioural, Educational, Economic, Business, and Industrial Engineering*, 9 (10). <http://waset.org/publications/10002555/disaster-preparedness-for-academic-libraries-in-Malaysia-an-exploratory-study>.
- Kaur, T. (2009). Disaster planning in University Libraries in India: a neglected area. *New Library World*, 110, (3/4), p. 175-187.
- Kolawole, O.I., Udoaku, O.S., Daniel, O.C., & Chima, O.D. (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
- Kostagiolas, P., Araka, I., Theodorou, R., & Bokos, G. (2011). Disaster management approaches for academic libraries: An issue not to be neglected in Greece. *Library Management*, 32(8/9), 516 – 530.
- KwaZulu-Natal. (2000–2004). Provincial Public Library Service, *Annual reports*. Pietermaritzburg: KZNPhs.
- Lyall, J. (2009). *Disaster planning for libraries and archives: understanding the essential issues*. National Library of Australia Staff Papers.
- Matthews, G, Smith, Y. & Knowles, G. (2009). *Disaster management in archives, libraries, and museums*, Ashgate: Henry Ling Ltd. 430p.
- McMichael, R. (2007). *Case analysis: Response to the U.S. Embassy Bombing in Nairobi*.
<http://www.scribd.com/doc/3279687/Response-to-U-S-Embassy-Bombing-in-Nairobi-Kenya>.
- Nieto-Morote, A. & Ruz-Vila, F. (2011). A Fuzzy Approach to Construction Project Risk Assessment. *International Journal of Project Management*, 29, 220-231. <http://dx.doi.org/10.1016/j.ijproman.2010.02.002>

- Ngulube, P. & Magazi, L. (2006). Protecting documents against disasters and theft: the challenges before the public libraries in Kwazulu- Natal, South Africa. *South African Journal of Library and Information Science*. 72 (3), 185-197.
- Njoroge, R. W. (2014). *An investigation on disaster preparedness and mitigation for computer-based information systems in selected University libraries in Kenya* (Doctoral dissertation, Nairobi. Kenyatta University).
- Nwokedi, G. I., Panle, P. P. & Samuel, N. (2017). Disaster management and preparedness: a case study of the University of Jos Library. *Library Philosophy and Practice* (e-journal) .1590.<http://digitalcommons.unl.edu/libphilprac/1590>.
- Owolabi, K., Lawal, W.; Olukepde, J.; Palemo, G. & Odenigbo. (2014). Disaster awareness and preparedness in Nigeria polytechnic libraries: *A survey*.51 (6). Retrieved from: www.srels.org/index.php/sjim/articles/view/56912
- Oluwatola, I. K, Oriogu, C.D., Ogbuiyi, D.C, & Ogbuiyi, U. S. (2015). Disaster management practices in five public libraries in South-West Nigeria. *IOSR Journal of Humanities and Social Science (IOSR- JHSS)*, 78- 83. www.oisrjournals.org.
- Ottong, E. J. & Ottong, U. J. (2013). Disaster management of library materials in Cross River and the Akwa Ibom States. *International Journal of Educational Research and Development*. 2(4).98-104.
- Promise, I., Mole, A., Izuagbe, R., & Ekwueme, L. (2018). Measuring Disaster Preparedness and Response Practices in University Libraries in Nigeria: The Role of Disaster Equipment. *International Journal of Disaster Risk Reduction*, 31. doi: 10.1016/j.ijdr.2018.04.007.
- Rodríguez-Espíndola, O., Albores, P., & Brewster, C. (2018). Disaster preparedness in humanitarian logistics: A collaborative approach for resource management in floods. *European Journal of Operational Research*, 264 (3), 978-993.
- Sahu, S. (2009). *Guidebook on technologies for disaster preparedness and mitigation*. [http://www.technologies for disaster preparedness & mitigation.pdf](http://www.technologiesfor-disaster-preparedness-mitigation.pdf).
- Sakurai, M., & Murayama, Y. (2019). Information technologies and disaster management— Benefits and issues. *Progress in Disaster Science*, 2, 100012
- Sawant, S. (2014). A study on preservation and conservation practices in academic libraries in Mumbai. *Annals of Library and Information Studies* .61. 153-159. <http://www.nopr.niscarin/bitotream/123478pdf>.
- Sharma, N., Deka, B., & Das, J. (2018). *Disaster management in university libraries of Assam: An important aspect*. 11th Convention Planner, Tripura University, Agartala, Tripura.
- Superio, D.L., & Alayon, S.B. (2015). *Typhoon Yolanda: Its impacts on the libraries in northern Panay, Western Visayas, Philippines*. In: Forty Years of Sailing: Connecting Islands in a Digital World: 40th IAMS LIC Conference, Secretariat of the Pacific Community, Noumea, New

- Caledonia. <https://darchive.mblwhoilibrary.org/bitstream/handle/1912/7410/Superio&Alayon.pdf>.
- Sutton, J. & Tierney, K. (2016). *Disaster preparedness: concepts, guidance, and research*. www.Colorado.edu/hazards.
- Topper, Elisa. F. (2016). After Hurricane Katrina: The Tulane Recovery Project". *New Library World*, 112, (1/2), 45 -51.
- Trishanjit., K. (2009). Disaster planning in university libraries in India: A neglected area. *New Library World* 110(3/4), 175–187.
- UN-ISDR. (2009). *Terminology on Disaster Risk Reduction*. <https://www.un.org/isdr/we/inform/terminology>.
- Wambiri, D. (2008). *Disaster planning and Preparedness in University Libraries in Kenya*. PhD. Thesis. School of Information Science. Moi University, Eldoret, Kenya.
- Wani, Z. A., & Ganaie, A. H. (2017). Impact of Kashmir floods on the libraries. *Collection Building*, 36(2), pp. 69-76.
- Wong, Y.L. & Green, R. (2007). Disaster planning in libraries. *Journal of Access Services*, 4(3-4), 71-82.
- Yamson, G.C, & Mac-Anthony, C. (2016). Assessments of Collection Security Management in Academic Libraries: *European Scientific Journal /SPECIAL/* edition.
- Zaveri, P. (2013). *Disaster management in Libraries in India* (Doctoral Dissertation). <http://hdl.handle.net/10603/9356>.