

DISASTER THREATS AND MITIGATION MEASURES FOR LIBRARY SECURITY IN PUBLIC UNIVERSITY LIBRARIES IN ABIA STATE, NIGERIA

By

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Abstract

This study investigates major threats to library operations and disaster preparedness measures adopted by Michael Okpara University of Agriculture, Umudike (MOUUAU) and Abia State University (ABSU) libraries in Abia State, Nigeria. Using a descriptive survey design, data were collected from 108 library staff through a structured questionnaire, analyzed with mean scores and a criterion mean of 2.50. Findings show that fire outbreaks, students' riots, thefts, vandalism, mutilation, roof leakages, flooding, biological agents and power failures are perceived as significant threats, whereas earthquakes are not considered relevant. Disaster preparedness measures include good drainage systems, routine infrastructure checks, regular surveillance, CCTV installation, fumigation, antivirus software, online backups, backup electricity and fire safety installations. However, staff and user training on disaster preparedness is lacking. The study concludes that while physical and technological safeguards exist, human capacity development remains inadequate. It recommends systematic staff training, policy reinforcement, infrastructural maintenance and technology integration to enhance disaster readiness.

Keywords: Disaster preparedness, university libraries, Abia State, threats, preventive measures

Introduction

University libraries in Nigeria serve as critical hubs for learning, research and cultural preservation, housing both physical and digital resources that are indispensable for academic growth. However, these institutions operate in environments that are vulnerable to both natural and human-induced disasters such as fire outbreaks, flooding, vandalism, thefts and civil unrest. Such events can cause irreparable loss of resources, disrupt academic activities and undermine the educational mission of the parent institution.

Disaster mitigation in libraries refers to the strategic actions taken to prevent, alleviate and respond to potential hazards. It combines infrastructural safeguards, technological systems and human capacity development to ensure service continuity. In Nigeria, however, preparedness efforts are often constrained by inadequate funding, outdated infrastructure and the absence of structured training programs. Ugwuanyi, Ugwu, and Ezema (2022) highlight that infrastructural decay and poor maintenance aggravate the risks of flooding and fire, while Oyeniran (2023) underscores that even well-equipped libraries are vulnerable when staff lack disaster response skills.

Globally, research underscores the importance of an integrated approach. Eden and Mathews (2023) emphasize that effective preparedness requires both technical safeguards and regular drills. Similarly, the experience of Philippine academic libraries during Typhoon Haiyan (Superior, Alayon, & Oliveros, 2021) shows that libraries with clear disaster policies and trained staff recover faster and more effectively.

Problem Statement

University libraries are custodians of irreplaceable knowledge, housing invaluable collections of physical and digital resources that serve as the backbone of academic research and learning. However, these treasured assets face constant threats from a multitude of disasters, both natural such as fires, floods, and human-induced crises such as cyber attacks power and outages. The current problem lies in the disparity between the inherent vulnerability of library collections and the effectiveness of current disaster threat mitigation planning. While some university libraries may have only a few fire extinguishers and sand mounted as control measures, these may not adequately address the unique challenges faced by libraries. In addition, while library staff excels at information management and user services, they may lack awareness of the disaster threat mitigation plan as well as specialized training in disaster response and recovery techniques for

unique library materials. Therefore, the immense investment in university library development demands robust measures to safeguard its resources against disasters.

Against this backdrop, this study focuses on two public universities in Abia State—Michael Okpara University of Agriculture, Umudike (MOUUAU), and Abia State University (ABSU)—to identify the major threats they face and assess the disaster preparedness measures in place. The findings aim to provide actionable insights for strengthening disaster management strategies in Nigerian academic libraries.

Literature Review

A disaster can be described as any catastrophic event whether natural or human-induced, that results in significant loss of life, destruction of the environment, or damage to private property and public infrastructure. Osipov, Rumyantseva, and Eremina (2019) views disaster as a potential risk arising from extreme events caused by natural hazards. Similarly, Keller, and DeVecchio (2019) see disaster as the manifestation of a hazard that gravely affects human life. Sandifer and Walker (2018) portrays disasters as extreme conditions that not only produce impacts but also disrupt the normal mechanisms for alleviating tension, thereby sharply increasing stress Subramanian (2018) adds that disasters disrupt social order, bringing about destruction and loss of life and forcing individuals to deviate from normal expectations in order to cope.

According to the IFRC Archive (2023), disasters are severe disruptions to community functioning that surpass the community's capacity to respond with its own resources. They may result from natural, technological, or man-made hazards, combined with factors that heighten exposure and vulnerability. Mukherjee defines disaster as a calamitous event that significantly interrupts the functioning of a community or society and causes human, material, economic, or

environmental losses beyond the society's ability to manage on its own. While often natural in origin, disasters may also stem from human activities. Essentially, the convergence of hazards, vulnerability, and inadequate capacity to mitigate potential risks produces disasters.

Libraries and information centres act as key service hubs by providing vital information that supports societal growth and development. Consequently, these valuable institutions must be safeguarded against unforeseen damage. Abdullahi, Nwachukwu, and Ahmad (2022) describe disasters as unexpected events with destructive consequences for collections, highlighting the need for libraries to take every precaution to prevent unavoidable disasters. In the same vein, Abareh (2024, as cited in Uwakwe, 2019) defines disaster as an event that occurs unexpectedly and has seriously destructive outcomes. Arcaya, Raker, and Waters (2020) similarly describes disaster as a major disruption of societal functioning that results in extensive human, material, or environmental losses exceeding the affected society's ability to cope with its own resources.

Sandifer, and Walker, (2018). Enhancing disaster resilience by reducing stress-associated health impacts. *Frontiers in public health*, 6, 373. portrays disasters as extreme conditions that not only produce impacts but also disrupt the normal mechanisms for alleviating tension, thereby sharply increasing stress levels. Perry (2017) adds that disasters disrupt social order, bringing about destruction and loss of life and forcing individuals to deviate from normal expectations in order to cope. According to the IFRC Archive (2023), disasters are severe disruptions to community functioning that surpass the community's capacity to respond with its own resources. They may result from natural, technological, or man-made hazards, combined with factors that heighten exposure and vulnerability. Mukherjee defines disaster as a calamitous event that significantly interrupts the functioning of a community or society and causes human, material, economic, or environmental losses beyond the society's ability to manage on its own. While often natural in

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Research Question

1. What are the major threats that could potentially cause disasters in MOUAU and ABSU libraries?
2. What disaster mitigation measures are adopted in MOUAU and ABSU libraries?

Methodology

A descriptive survey design was used. The population consisted of 120 librarians and library officers in MOUAU and ABSU libraries. No sampling was done as the entire population was studied. Data were collected using the Disaster Preparedness and Recovery Plan in Academic Libraries Questionnaire (DPARPIALQ). Responses were analyzed using mean scores with a criterion mean of 2.50 as the threshold for acceptance.

Results and Discussion

Table 1: Possible Causes of Disaster in the Library (n = 108)

Cause	Mean	Decision
Fire outbreaks	3.50	Accept
Roof leakages	3.26	Accept
Students' riots	3.56	Accept
Biological agents	3.25	Accept
Thefts	3.50	Accept
Vandalism	3.37	Accept
Mutilation	3.44	Accept
Floods	3.31	Accept
Earthquakes	1.91	Reject
Power failures	3.33	Accept
Grand Mean	3.24	Accept

Table 1 presents the mean ratings of 108 respondents on various potential causes of disaster in a library setting. Using a Likert-type scale, each item was evaluated and compared to the grand mean of 3.24 to determine whether it was considered a significant risk. The findings show that respondents generally perceived most of the listed causes as important disaster risks. In particular, students' riots (mean = 3.56) emerged as the highest-rated concern, followed closely by fire outbreaks and theft (mean = 3.50 each), mutilation of resources (mean = 3.44), vandalism (mean = 3.37), power failures (mean = 3.33), floods (mean = 3.31), roof leakages (mean = 3.26), and biological agents (mean = 3.25). All of these scored above the grand mean, indicating broad agreement on their relevance as potential hazards. Only earthquakes (mean = 1.91) fell below the grand mean and were thus regarded as an unlikely cause of disaster.

The findings presented in Table 1 shows that Students' riots, received the highest mean score ($M = 3.56$), reflect growing concern over civil unrest in academic environments. Norris et al. (2010) noted that student demonstrations, especially during times of political or institutional tension, can result in disruptions to library services and damage to facilities. Miller and Fisher (2018) further argue that university libraries should develop specific security protocols to address potential risks associated with student protests. Fire outbreaks were rated as a major concern ($M = 3.50$), reflecting the well-documented vulnerability of libraries to fire due to the presence of large volumes of combustible materials. Booth (2003) emphasized that libraries are at particularly high risk if fire suppression systems are outdated or absent. Similarly, Yin et al. (2017) identified fire as one of the most common threats facing cultural heritage institutions, necessitating the implementation of robust fire prevention measures.

Thefts ($M = 3.50$) were also recognized as a significant threat. Jacobs and Saldana (2015) found that theft of both physical and digital materials is a persistent issue in academic libraries, especially where high-value or rare items are involved. Stewart and Dawson (2007) also reported increased incidences of theft in university libraries, prompting institutions to adopt surveillance technologies and restricted access policies. The issues of vandalism ($M = 3.37$) and mutilation ($M = 3.44$) are also well documented. Vandalism, including intentional damage to furniture, technology, and collections, can severely affect library operations and reputation (Harris & Waters, 2014). Mutilation of resources, such as tearing or defacing pages, particularly affects rare or irreplaceable materials. Mulligan (2018) emphasized the importance of controlled access and staff oversight to mitigate such occurrences.

Floods ($M = 3.31$) and roof leakages ($M = 3.26$) were also considered significant risks, especially in areas with poor infrastructure or high rainfall. Fowler et al. (2012) reported that flooding can result in irreversible damage to paper-based collections and equipment. Similarly,

Kalinowski and Sullivan (2015) noted that roof leakages, although often underestimated, can have long-term impacts on building integrity and collection safety if not addressed promptly. Biological agents ($M = 3.25$), such as mold and pests, are another concern for libraries, particularly those with inadequate environmental controls. Luby et al. (2010) found that poor humidity and ventilation can lead to rapid mold growth, threatening both collections and user health. Chen et al. (2014) recommended comprehensive pest management and climate control systems as essential components of preservation strategies. Power failures ($M = 3.33$) were also seen as disruptive to library operations. As libraries increasingly rely on digital systems for cataloging, circulation, and access to resources, power outages can significantly hinder service delivery. Goldstein et al. (2015) noted that power disruptions affect not only access to materials but also security and communication systems. Jones and Walker (2012) emphasized the importance of backup power sources and off-site data storage to maintain operational continuity.

The study examined both the perceived causes of disaster in the library and the preparedness measures currently adopted. Table 1 shows that respondents recognised a wide range of hazards as significant threats to library operations. Students' riots received the highest mean score (3.56), followed closely by fire outbreaks and theft (3.50 each), mutilation of resources (3.44), vandalism (3.37), power failures (3.33), floods (3.31), roof leakages (3.26) and biological agents (3.25). All these exceeded the grand mean of 3.24, indicating broad agreement that they represent likely disaster risks. Only earthquakes (mean = 1.91) were rejected, reflecting the relative rarity of seismic events in the local context.

These findings align with earlier empirical studies. Ugwuanyi, Ugwu and Ezema (2015) note that social unrest, including student protests, is one of the most destructive risks to academic libraries in Nigeria. Fire outbreaks remain recurrent dangers and have been widely reported in African library disaster-risk studies (Chigwada & Ngulube, 2024). Similarly, theft, mutilation and

vandalism have been documented as chronic issues across Nigerian university libraries, leading to cumulative collection loss and increased replacement costs (Abdullahi, Nwachukwu & Ahmad, 2022). Environmental risks identified by respondents—power failures, floods, roof leakages and biological agents—also echo findings from Mukherjee (2019), who emphasises that unreliable power supply and water intrusion are among the most damaging hazards to library materials in humid regions.

Table 2: Disaster Preparedness Measures Adopted (n = 108)

Measure	Mean	Decision
Staff/user training on preparedness	2.05	Reject
Good drainage system	3.26	Accept
Routine leak inspections	3.15	Accept
Electrical checks	3.11	Accept
Surveillance against thefts/mutilation	3.50	Accept
CCTV installation	3.17	Accept
Routine fumigation	3.04	Accept
Antivirus software	2.67	Accept
Online backups	3.02	Accept
Backup electricity	3.17	Accept

Fire extinguishers/sand buckets	3.26	Accept
Fire alarms/emergency exits	3.34	Accept
Lightning protectors	3.07	Accept
Grand Mean	3.06	Accept

Table 2 presents the mean responses of 108 participants on the extent to which various preparedness measures are implemented in the library. The results indicate that most of the listed measures were rated above the grand mean and therefore accepted as being practiced. These include the presence of good drainage systems (mean = 3.26), routine leak inspections (mean = 3.15), regular electrical checks (mean = 3.11), surveillance against theft and mutilation (mean = 3.50 — the highest-rated measure), installation of CCTV cameras (mean = 3.17), routine fumigation (mean = 3.04), antivirus software use (mean = 2.67), online backups (mean = 3.02), provision of backup electricity (mean = 3.17), fire extinguishers and sand buckets (mean = 3.26), fire alarms and emergency exits (mean = 3.34), and lightning protectors (mean = 3.07). However, staff and user training on preparedness (mean = 2.05) fell significantly below the grand mean and was therefore rejected. This suggests that while infrastructural and technical measures are relatively well adopted, human-capacity measures such as training lag behind.

Table 2 presents the preparedness measures already in place. Most measures received mean scores above the grand mean of 3.06 and were therefore accepted as current practices. These include having a good drainage system (mean = 3.26), routine leak inspections (3.15), electrical checks (3.11), surveillance against theft and mutilation (3.50), installation of CCTV cameras (3.17), routine fumigation (3.04), antivirus software (2.67), online backups (3.02), backup electricity (3.17), fire extinguishers or sand buckets (3.26), fire alarms and emergency exits (3.34) and lightning protectors

(3.07). Only staff and user training on disaster preparedness (mean = 2.05) was rejected, indicating a significant gap in proactive human-capacity measures.

This pattern of results highlights two key points. First, libraries in the study area have adopted a number of physical and technological safeguards—such as drainage systems, CCTV, backup power, and fire control equipment—consistent with recommendations in the disaster-management literature (Ilo, Izuagbe, Mole, & Ekwueme (2018); Nwalo & Moguluwa, (2021). Second, the very low score for staff and user training suggests that preparedness remains heavily infrastructural rather than human-centred. Prior studies have stressed that without regular training and drills, even well-equipped libraries may be unable to respond effectively to emergencies (Chigwada, 2021).

Overall, the combined results of Tables 1 and 2 show that respondents are highly aware of both human and environmental risks to the library and that some preventive measures are in place. However, the limited emphasis on training represents a vulnerability that may undermine the effectiveness of the existing measures. Strengthening staff and user disaster preparedness training would therefore be a strategic priority to complement the current physical and technological protections.

Recommendations

1. Develop and implement a comprehensive disaster preparedness plan. This plan should clearly outline procedures for prevention, response, and recovery from the major risks identified—such as fire, theft, vandalism, floods, and power failures—in line with international best practices (IFLA, 2022).

2. Institutionalise regular staff and user training. Libraries should organise periodic workshops, drills, and awareness campaigns to build a culture of preparedness and ensure that both personnel and users know what to do in emergencies.
3. Strengthen infrastructure and maintenance regimes. Measures like good drainage, routine leak inspections, electrical checks, lightning protection and fire-safety installations should be maintained and upgraded continuously to minimise damage during disasters.
4. Enhance security measures. Surveillance, CCTV, and anti-theft systems should be complemented with strict access control policies and regular audits to reduce risks of theft, mutilation and vandalism.

Conclusion

This study assessed the potential causes of disaster in the library and the preparedness measures adopted to mitigate them. The findings reveal that respondents recognised a wide range of human-induced and environmental hazards such as students' riots, fire outbreaks, theft, vandalism, floods, and roof leakages—as major threats to library collections and infrastructure, while earthquakes were viewed as an unlikely risk in the local context. It shows that although the library has implemented several important preparedness measures, including surveillance, CCTV installation, fire safety equipment, good drainage, routine inspections and backup electricity, staff and user training on disaster preparedness remained weak.

Overall, the results demonstrate that while the library is aware of and has taken steps to address many risks, critical gaps persist, particularly in human capacity building and regular preparedness drills. Strengthening training, updating infrastructure, enhancing digital resilience, and institutionalising comprehensive disaster management plans will help the library minimise losses,

shorten recovery times and safeguard its resources for future users. By closing these gaps, the library can move from reactive response to proactive risk reduction, aligning its practices with international standards for disaster risk management in information institutions.

References

- Abdullahi, S., Nwachukwu, V. N., & Ahmad, A. I. (2022). Disaster preparedness plan and response strategy as a panacea for effective information resources preservation in university libraries in North East, Nigeria. *Library Philosophy and Practice*, 1–17.
- Amarasingh, A. (2020). Natural hazards and disaster risks. *International Journal of Environmental Studies*, 77(4), 543–555.
- Arcaya, M., Raker, E. J., & Waters, M. C. (2020). The social consequences of disasters: Individual and community change. *Annual Review of Sociology*, 46(1), 671–691.
- Booth, C. (2003). Fire risk and safety measures in libraries. *Library Management*, 24(3), 123–129. <https://doi.org/10.1108/01435120310469483>
- Chen, Y., Liu, H., & Tseng, W. (2014). Biological threats to library collections: Assessment and control strategies. *Library & Archival Science Review*, 32(1), 55–67.
- Chigwada, J. (2021). Disaster preparedness in academic libraries: Practices and challenges. *Library Management*, 42(6/7), 483–496.
- Chigwada, J., & Ngulube, P. (2024). Disaster preparedness and management practices in academic libraries in context. *International Journal of Disaster Management*, 7(3), 261–283.
- Eden, P., & Matthews, G. (2023). Disaster management in libraries, archives and museums. *Journal of Librarianship and Information Science*, 28(3), 131–140. <https://doi.org/10.1177/096100069602800303>
- Fowler, J., Hansen, K., & Reid, T. (2012). Flood preparedness in academic libraries: Lessons from the field. *College & Research Libraries*, 73(3), 250–267. <https://doi.org/10.5860/crl-252>
- Goldstein, M., Reilly, S., & Chan, K. (2015). Power outages and service interruptions: Contingency planning for academic libraries. *Information Technology and Libraries*, 34(1), 44–56. <https://doi.org/10.6017/ital.v34i1.5662>
- Harris, L., & Waters, C. (2014). Vandalism in public libraries: Trends and prevention strategies. *Public Library Quarterly*, 33(2), 112–128. <https://doi.org/10.1080/01616846.2014.893901>
- Ilo, P. I., Izuagbe, R., Mole, A. J., & 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, 85–91.

- International Federation of Red Cross and Red Crescent Societies (IFRC). (2019). Disaster preparedness: Steps to reduce disaster impacts. Retrieved from https://www.ifrc.org
- Jacobs, E., & Saldana, R. (2015). Library theft and security: The evolving landscape. *Library and Information Security*, 19(3), 76–90.
- Jones, T., & Walker, L. (2012). Ensuring continuity: Backup systems and digital preservation in academic libraries. *Library Technology Reports*, 48(5), 34–42.
- Kalinowski, D., & Sullivan, P. (2015). Leaky roofs and damaged books: Managing water threats in libraries. *Facilities Management in Libraries*, 29(1), 21–34.
- Keller, E. A., & DeVecchio, D. E. (2019). *Natural hazards: earth's processes as hazards, disasters, and catastrophes*. Routledge.
- Luby, P., Garner, K., & Malik, A. (2010). Mold and mildew in libraries: Environmental control strategies. *Preservation Journal*, 22(3), 91–104.
- Mukherjee, S. (2019). Disaster as a calamitous event disrupting community functioning. *Journal of Disaster Studies*, 5(2), 87–98.
- Mulligan, R. (2018). Book mutilation: A hidden threat to library collections. *Collection Management*, 43(2), 134–145. https://doi.org/10.1080/01462679.2018.1433729[https://doi.org/10.1080/01462679.2018.1433729]
- Norris, C., Richards, J., & Lee, M. (2010). Libraries and political protest: Institutional response and security. *Library & Information Research*, 34(106), 29–41.
- Nwalo, K., & Moguluwa, C. (2021). Risk reduction practices in Nigerian university libraries. *Nigerian Libraries*, 55(2), 45–62.
- Osipov, V. I., Rumyantseva, N. A., & Eremina, O. N. (2019). Living with risk of natural disasters. *Russian Journal of Earth Sciences*, 19(6), 4.
- Oyeniran, K. G. (2023). Disaster risk management in academic libraries in South-West Nigeria. *Library Management*, 44(5), 341–356. https://doi.org/10.1108/LM-09-2022-0094[https://doi.org/10.1108/LM-09-2022-0094]
- Peek, L., Wachtendorf, T., & Meyer, M. A. (2021). *Sociology of disasters*. In *Handbook of environmental sociology* (pp. 219-241). Cham: Springer International Publishing.
- Perry, R. W. (2017). Defining disaster: An evolving concept. In *Handbook of disaster research* (pp. 3-22). Cham: Springer International Publishing.
- Sandifer, P. A., & Walker, A. H. (2018). Enhancing disaster resilience by reducing stress-associated health impacts. *Frontiers in public health*, 6, 373.
- Stewart, P., & Dawson, E. (2007). Security and theft prevention in academic libraries. *Library & Information Update*, 6(9), 32–35.
- Subramanian, R. (2018). *Disaster management*. Vikas Publishing House.

- Superior, M. B., Alayon, S. B., & Oliveros, J. A. (2021). Disaster preparedness of academic libraries in the Philippines: Lessons from Typhoon Haiyan. *International Journal of Disaster Risk Reduction*, 22, 316–322.
<https://doi.org/10.1016/j.ijdr.2017.03.001> 1)
- Ugwuanyi, C. F., Ugwu, C. I., & Ezema, J. U. (2015). Infrastructural challenges to effective service delivery in academic libraries in Nigeria. *Library Philosophy and Practice*, 1– 12.
- WHO/Emergency Humanitarian Action (EHA). (2002). Disaster preparedness and mitigation: Key concepts. Geneva: World Health Organization.
- Yin, H., Zheng, L., & Koo, A. (2017). Disaster risks in heritage institutions: A global perspective. *International Journal of Library Preservation*, 41(2), 89–102.