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Enhancing Institutional Resilience: A Strategic Study of Disaster Preparedness Practices in University Libraries of Khyber Pakhtunkhwa (KPK) Peshawar

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Abstract

Disaster planning would form a fundamental aspect in the protection of intellectual capital and cultural heritage contained in academic libraries settings, especially where there are environmental instabilities and the weaknesses of infrastructural systems. This qualitative study is a critically important empirical research into the existing situation of disaster preparedness in the libraries of the universities of the public sector in Khyber Pakhtunkhwa (KP), Pakistan. Using a well-defined quantitative research study, data was solicited through the use of standardized questionnaires to be used on a number of 30 chief librarians as the type of representative of the 30 public universities hence facilitating an overall evaluation of the institutional capacity, awareness, and strategic disposition towards disaster risk management. The results outline a rather sharp gap between theoretical cognition of possible catastrophes and practical adoption of actual preparedness expedients. Even though the majority of respondents portrayed an awareness of the possible threats to the institutions, including the seismic activity, the flood, the fire breakdown, and the technological failure, the preparedness of those libraries is considerably low. Most of the institutions lack disaster management structures that are codified or have any continuity of operations structures, and the protective resources, such as fire suppression systems, emergency exits, environmental sensors, and bulletproof digital stores, are outdated, poorly maintained, or non-existent. Moreover, there is a significant neglect of capacity-building programs including training of the staff, conduct of emergency exercises, and work on risk assessment with other institutions, which can be described as institutional inertia. According to the study, a cluster of factors hinder effective preparedness against disasters including structural under-investment, policy non-standardization, minimal institutional priorities and scanty individuals with specialized expertise in the field of disaster risk reduction. Such shortages make the university libraries of KP far too prone to get paralyzed in their operations and lose all the data they store irreversibly

whenever they meet emergency situations. In its turn, this study proposes adoption of multidimensional strategic approach that includes developing disaster management policies on an institution-wide level, continuous budgetary investments in the development of its infrastructure and capacity, the integration of the processes of disaster management into the planning curricula of professional development, and the creation of specialized disaster response and recovery units into the university governance framework. The study aims to inform the policy-making process and contribute to developing a positive institutional culture of anticipation, based on resilience and sustainability, and long-term survival of scholarly services, and was able to do so by highlighting the above-mentioned critical gaps, and formulating recommendations within the local context.

Keyword: Disaster Preparedness, institutional resilience, university libraries, emergency management, Khyber Pakhtunkhwa, Pakistan

1. Introduction

1.1 Background of the Study

The library is an important element in the institution of higher education as it affects the academic as well as intellectual growth. They are a source of information, reservoirs of knowledge and research and study centers. University library is not a collection of books, but rather a participant in the educational process, which ensures both study and scientific work. It has got very diverse types of materials such as books, journals, theses, dissertations, manuscripts and digital materials, which are paramount to take up academic endeavors at every stage by students, faculty and researchers. In numerous occurrences, these libraries are assigned with the responsibility of conserving rare and unrecoverable materials which depicts the history and cultural, scientific and intellectual background of the nation

However, university libraries are quite subject to several forms of natural as well as manmade disasters. Earthquakes, floods, landslides and fires are some of the natural disasters that can do serious damage in the field of libraries through destruction of the infrastructure, collections and services. The anthropogenic dangers in the form of terrorism, cyber attacks, arson and neglect are the threats of equal expressions. Such incidents may result in wastage of resources as well as impairment of the academic process in addition to jeopardizing human life. Besides the direct effect, the consequential events of such catastrophes tend to cause long term losses to both the institutions and communities.

Disaster preparedness in libraries is currently one of the areas of library management and planning globally. Proactive responses adopted by libraries in the developed world are disaster management planning, risk assessments, fire detection and extinguishment systems, digital backup scheme, staff education, and insurance. They have incorporated desaliciation on their institutional set ups and as such the libraries are prepared and therefore ready to act swiftly and efficiently during crisis situations.

But in most developing nations such as Pakistan the idea of disaster preparedness within the libraries is at its embryonic stage. The disaster risk is particularly very high in Khyber Pakhtunkhwa (KP), a province which is located in Northern part of Pakistan because of its geographical, political, and environmental situations. KP is also subject to the frequent earthquakes (e.g. the catastrophic earthquake in 2005), flash floods, diverse security problems such as terrorist attacks on learning institutions. These frequent occurrences also emphasize the need to introduce effective disaster preparedness systems, particularly in critical academic facilities, such as the university libraries.

The sad thing is that, in KP, the majority of the libraries in universities do not have adequate planning and resources to mitigate or come out of those disasters. The problematic aspects of the situation regarding the level of preparation in the provinces involve structural weaknesses, a shortage of funds, untrained workforce, absence of emergency response plans and an inability of integration with institutional or governmental preparedness systems are merely only a few of the

issues that define the current status of library disaster preparation in the province. Most of the libraries use old buildings which do not permit them to adhere to seismic safety. Lack of fire precautions, emergency exit or disaster drilling of employees is also common. Along with that, the process of digitization, which is part of the processes at most institutions, is frequently not supported by appropriate backup of data or redundancy, or cybersecurity processes.
In these regards, there would be a need to carry out an in-depth study to look into the extent of disaster preparedness in university libraries in KP. Learning more about their present capacity, pointing out the gaps and risks, and considering what may be some of the possible strategies to enhance disaster resilience can assist organizations in protecting not only their materials but users as well. The current research can be framed into this context and aims at providing valuable contributions and policy recommendations responding to the needs and reality of university libraries in Khyber Pakhtunkhwa.

1.2 Aim and Purpose of the Study

The foremost purpose of the study will be to examine the level of disaster preparedness in the libraries in the university sector of Khyber Pakhtunkhwa. The research aims at measuring the level of preparations in terms of infrastructure, planning, training of the staff, awareness and risk mitigation strategies. It will also seek to analyze how far these libraries have accepted, implemented or institutionalized measures of disaster preparedness as well as how far these libraries have any obstacles to follow in their footsteps.
The idea of the research is to present empirical data and guidelines that may help politicians, university officials, librarians, and disaster management leaders to make academic libraries more resilient to disaster challenges using policies and other action items. By focusing on the specific context of KP—a region frequently impacted by both natural and man-made disasters

The study aims to:

- Highlight existing vulnerabilities and risks associated with university library systems;
- Identify institutional, structural, and policy-level shortcomings in disaster preparedness;
- Promote awareness of the importance of disaster planning among library stakeholders;
- Provide realistic and context-sensitive strategies for disaster risk reduction and response.

In doing so, the study not only addresses an important gap in the literature but also contributes to ongoing efforts toward institutional strengthening, risk reduction, and sustainable development in the education sector of Pakistan.

1.3 Significance of the Study

This study is significant for several academic, institutional, and policy-related reasons. First, it contributes to the body of knowledge in library and information science, particularly in the relatively under-researched area of disaster preparedness in academic libraries in Pakistan. While numerous studies have been conducted in developed countries on the topic, there is a dearth of scholarly literature that reflects the realities of library systems in developing countries like Pakistan, especially in regions vulnerable to frequent disasters.
Second, the research is timely and relevant given the increasing frequency and intensity of both natural and human-induced disasters in KP. The study addresses an urgent need to protect educational infrastructure and ensure continuity of academic services in the event of a disaster. Libraries, as knowledge centers, must be safeguarded to maintain the flow of information and education during crises.
Third, the study holds practical value for decision-makers and stakeholders in the higher education sector. It provides a detailed assessment of the gaps in existing disaster preparedness efforts and offers policy recommendations based on empirical data. These insights can guide the Higher Education Commission (HEC), university authorities, and provincial disaster management bodies in designing and implementing appropriate disaster management policies for libraries.
Fourth, the findings of the study may encourage a shift in institutional priorities—prompting libraries and universities to integrate disaster preparedness into their broader planning processes.

This may translate to long-term investments on infrastructure, employee training, cyber resiliency, and inter-agency collaboration, which would eventually turn into an increased ability of the academic sector to survive future shocks.

Lastly, the study alerts or gives more awareness on the risks being faced by the university libraries and presented viable solutions that will be of benefit to the whole goals of disaster risk reduction (DRR), cultural preservation, and knowledge continuity under adversity.

1.4 Scope and Delimitation of the Study

The present study will only concentrate on the universities within Khyber Pakhtunkhwa in Pakistan and the libraries of the university especially of the public-sector universities. They consist of general universities, technical institutions and institutions of specialized higher education that are recognized and put under the Higher Education Commission (HEC) in that they are chartered. Included in the study are not the libraries of the private universities, college libraries, the libraries of the public, and school libraries since they are quite different in the dynamics of their operation and administrative structure.

The thematic subject of the study is disaster preparedness as opposed to disaster response and recovery. The study will be based on beforehand planning, infrastructure preparedness, employee training, policy access, risk awareness, and prevention mechanisms. It excludes post-disaster rebuilding activities as well as impact analysis of psychological effects

The research is also not to financial audit, engineering, technical audits and checks of buildings and IT systems. Rather, it is based on qualitative and quantitative data obtained based on surveys, interviews and through the analysis of documents in order to evaluate the level of preparedness and institutional practices

Limitations of the study are deliberately used so that the study would be manageable and have the required degree of focus with the ability to generate meaningful and clear results. These limits result in a more in-depth study of the challenges that are typical of the chosen institutions and in the ease of direct application of the results to the environment of the public-sector university libraries in the country of KP.

2: Literature Review

2.1 Overview of Disaster Preparedness in Libraries

A disaster preparedness in libraries can be defined as a collection of proactive strategies, plans, and measures aiming to minimize the risk and impact of emergencies on the infrastructure of libraries, collections, staff, and services of libraries. These catastrophes might involve both natural hazards like earthquakes, floods, and storms and man-made disasters like fire outbreaks, acts of terrorism, cyber-attacks, and pandemics. The main goal of preparedness in libraries is to protect knowledge resources, guarantee the safety of the users and staff and allow continuity of the academic and research activities.

Recently, libraries have been implored to institutionalize structures of risk management that would contain elements of early warning systems, risk reviews, collection digitization, first response measures, and rescue plans. Disaster preparedness is not anymore a matter of physical protection but also some digital resilience that applies to secure databases, backup, and virtual library platforms. Training of library staff on evacuation procedures, communications, and techniques of assessing damages are also part of preparedness. The level of implementation differs considerable in the various regions because of differences in level of awareness, institutional, availability of funding and technical capacity.

2.2 Global Perspective on Disaster Preparedness in Academic Libraries

Increased awareness concerning the relevance of disaster preparation in academic libraries has been gained in most parts of the world following the escalation of weather-associated occurrences in schools and the threat of online attacks on learning institutions. A number of universities across the globe have established well the disaster management policies in the libraries with both

preventive and responsive policies. These libraries usually have scheduled risk check-up, fire suppression mechanisms, backup power, and cloud-based digital repository to make sure that intellectual resources are preserved.

Regardless of this development, there is a lack of consistency in the real preparedness level. Recent studies also show that academic libraries still tend to have reactive strategies to disaster management in spite of the available technology today, instead of coming up with proactive and long term measures. The management of disasters is, in most cases, considered as a minor subject and tends to be treated as such when it is time to conduct strategic planning at the institution level. Some of the difficulties that have been observed in the global setup are that there are no specific budget techniques to deal with disasters, there is no trained person, there is no good coordination with the emergency services and also the stakeholders are low. In some cases, policies are either outdated or not in line with present risks as related to cybercrime or environmental degradation. Moreover, the issue is that in developing or transitional economies, libraries have trouble with simply regularly working infrastructure, and it cannot be easy to implement some complicated measures of preparedness.

The global literary foundation on disaster risk reduction requires dissemination in the development of plans in libraries to ensure that the involvement of libraries goes beyond information provision; instead it focuses on achievement of pivotal status as nodes in educational resilience. The recommendation is the establishment of sustainable services in unpredictable conditions through the help of initiatives like emergency information literacy, disaster response partnerships, and open-access digital platforms.

2.3 Disaster Preparedness in Pakistani Academic Libraries

Disaster preparedness of university libraries in the Pakistani academic setting is an under developed and less researched field. Although the education sector as a whole in Pakistan has realized the effects of disaster on institutional survival particularly in times of the 2005 earthquake and the COVID-19 pandemic, responses have by and large been prisoned on a more informal basis when it comes to libraries.

Librarian work has discussed library management in Pakistan through a pattern of its exposure to lack of institutional level disaster management policies. Majority of academic libraries have undocumented emergency response plans, and in cases where documented plans are in existence, they are either not up-to-date, are not disseminated appropriately or not put into practice. Moreover, the personnel in libraries are not usually trained to act during emergencies. This unpreparedness influences how they can stock the library materials, evacuate the users, or liaise with the emergency services in case of a crisis.

Limits connected with infrastructure also play a considerable role. Most of the university libraries sit in otherwise old structures with faulty design hence very vulnerable to destruction by natural hazards. Some of the common reported issues are flooding, short-circuits, and pest infestations but the issues are never usually taken care of in terms of preventive maintenance. Besides that, fire protection equipment including alarms, fire extinguishers, and escape routes does not exist or is not well-served.

Another essential challenge is the digital divide. There is also a lot of weight toward physical resources and some universities have begun to digitize their collections and to make digital libraries but most universities are still greatly relying on physical resources. Consequently, physical collections lost in case of disaster would prove costly to the academic programs. Also, financial limits, overbearing bureaucracy and absence of the policy implementation serve as some of the major obstacle to the advancement of disaster preparedness in libraries.

The recent events including the COVID-19 pandemic have pointed towards these weaknesses where numerous academic libraries have failed to sustain services because of the inaccessibility of remote access systems, digital platforms or overall crisis management plans. Such is the case

why there is an apparent need to make disaster preparedness a part of academic libraries in Pakistan.

2.4 Disaster Preparedness in University Libraries of Khyber Pakhtunkhwa (KP)

Khyber Pakhtunkhwa (KP) Province is a region that is characterized by earthquakes and one that is vulnerable to the environment, which has presented the province with some unique challenges that further necessitate disaster preparedness in the library of higher institutions. Over the last twenty years, KP has experienced various calamities such as the 2005 earthquake, frequent flash floods, and landslides, and sporadic cases of violent conflicts which have accompanied learning institutions.

Nevertheless, even with this high-risk profile, the libraries in university settings within KP are in the process of preparedness to the point of being quite unprepared to a possible disaster. Disaster management planning has not been incorporated into any of the regional libraries and libraries do not even have basic emergency response procedures. The environment in which many of the academic institutions in KP are functioning is a resource-constrained environment, and as a result of this they are prone to be Nikkei-led in terms of administration towards academic delivery leaving behind safety and resilience of future infrastructure.

Informal studies (field observations and anecdotal data) indicate that majority of the university libraries in KP lacks a formal disaster preparedness policy and disaster response team. Such poor planning restricts the capacity of libraries to be responsive during emergency to a great extent. In addition to this, library structures are usually not well designed and thus have not been drained, not well ventilated or even the electrical wiring has not been hidden thus it is vulnerable to rain, fire or earthquake.

KP is also lacking in the digital capacity of its libraries. Although a few universities have started automating their systems using integrated library systems, most of the universities are still performing manual tasks. This poses great dangers because in case of physical destruction of the collections, the academic resources have been destroyed permanently. Moreover, the majority of libraries have no off-site digital backup or cloud service, which is why after the disaster realization may be slow and unpredictable.

The other crucial problem is the lack of staff training initiatives in emergencies and risks handling. Minor and major emergencies are very common in the libraries; however the skills or knowledge to manage them, understand the amount of damaged areas or abilities to liaise with emergency services are highly lacking by the library staff members.

Moreover, libraries hardly cooperate with local disaster control agencies or first responders. Libraries in general are not included as a part of institutional emergency planning committees or other provincial-based disaster response systems. This seclusion hurts their access to resources, the best practices, or mobilizing support in times of emergency.

In short, disaster preparedness in university libraries of KP is marked by low awareness, inadequate infrastructure, limited digitalization, and weak institutional integration, highlighting an urgent need for targeted policy interventions and resource investment.

2.5 Research Gaps and Need for Study

Although disaster preparedness in academic libraries has received increasing scholarly attention globally, there remains a significant research gap concerning libraries in high-risk and under-resourced regions such as Khyber Pakhtunkhwa. Existing literature tends to focus on either well-established library systems or on general disaster management within educational institutions, often overlooking the specific operational, infrastructural, and administrative needs of university libraries in vulnerable areas.

In the case of KP, there is a lack of empirical data assessing the current state of disaster preparedness in university libraries. There are no comprehensive studies that systematically evaluate institutional policies, staff training levels, infrastructural resilience, or digital readiness in the face of potential disasters. Moreover, there is limited research that explores how library-

specific vulnerabilities align with broader disaster risks in the province.
The absence of context-specific studies limits the ability of policymakers, university administrators, and library professionals to develop effective disaster preparedness strategies. Without a clear understanding of existing gaps, resource limitations, and institutional needs, libraries in KP remain at risk of avoidable losses during emergencies.
This research seeks to address these gaps by providing an investigative assessment of disaster preparedness in university libraries of KP. By identifying the strengths, weaknesses, challenges, and opportunities, the study aims to inform actionable recommendations that can help enhance institutional resilience, protect academic assets, and ensure continuity of educational services in times of crisis.

2.6 Summary

This chapter has reviewed the current understanding and practices of disaster preparedness in university libraries from a global, national, and regional perspective. While awareness and policy efforts are gradually improving worldwide, practical implementation remains weak in many parts of the developing world, including Pakistan. Within Pakistan, particularly in Khyber Pakhtunkhwa, university libraries face acute vulnerabilities due to geographical risks, institutional neglect, inadequate infrastructure, and insufficient training and resources.
The literature has highlighted a dire necessity of additional research and policy concern on the area in an attempt to increase the disaster resilience of the library systems within the universities in KP. These libraries will remain under-funded without a proper systematic planning, without infrastructural development, without professional development and this will pose serious risks to academic continuity and knowledge preservation in the region.

3. Research Methodology

3.1 Research Design

The paper uses quantitative descriptive research design to assess the levels of disaster preparation at the university libraries of the public sector in KP, Pakistan. This design is selected because it is characterized by the appropriate use of research intended to chronicle the existing phenomena instead of controlling the variables (Creswell & Creswell, 2018). The design also makes it easy to collect measurable data whereby the researchers are able to establish some patterns and generalize the findings within a specified population. It was cross-sectional since the data was collected only one time in order to take a snapshot of the contemporary practice and perceptions associated with disaster risk management in university libraries.

3.2 Population and Sampling Strategy

The sample that was observed included all the public universities in Khyber Pakhtunkhwa, totaling thirty universities as outlined by the Higher Education Commission (HEC) of Pakistan (HEC, 2024). There were enough sample size and therefore census sampling was suitable. This approach ensured that all the universities in the province were covered, thus ensuring validity and coverage. The master players in the decision-making process, the planning and operationalization of disaster readiness services and policies, in each of the institutions were the chief librarians or directors of central libraries who were considered as the primary interviewees.

3.3 Instrumentation

The structured, self-administered questionnaire developed based on the study of Mustafa (2021) validated questionnaire was used to collect data. The measure underwent changes to fit into the regional situation and the aims of the study. The questionnaire used both close and open questions according to five major dimensions, in which they included:

1. Demographic Profile – institutional information, size of library, and experience of the respondent; the practices of disaster preparedness, disaster preparedness perception, organizational environment, and institutional climate of preparedness;

2. Disaster Risk Perception – identification of potential threats such as floods, earthquakes, fire, or cyber attacks;
3. Preparedness Mechanisms – availability of disaster plans, emergency equipment, and preventive infrastructure;
4. Institutional and Administrative Roles – allocation of responsibilities, existence of committees, and strategic oversight;
5. Challenges and Support Needs – perceived barriers including funding, training, policy support, and staffing.
The instrument utilized a Likert-type scale (ranging from 1 = strongly disagree to 5 = strongly agree) for attitudinal items, as well as dichotomous (yes/no) and multiple-choice questions for factual information.

3.4 Data Collection Procedure

The questionnaires were distributed to respondents through a combination of postal mail and electronic correspondence, based on each institution's preferred mode of communication. To enhance response rates, telephone follow-ups and reminder emails were conducted over a six-week period. Respondents were provided with an introductory letter outlining the study's objectives, confidentiality assurance, and informed consent information. Participation was voluntary, and respondents were assured that their identities and institutional data would be kept confidential and used solely for academic purposes.

3.5 Data Analysis Techniques

Upon completion of data collection, responses were compiled and analyzed using the Statistical Package for the Social Sciences (SPSS), version 26. Analysis proceeded in two phases:

- Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize key variables and provide an overview of disaster preparedness across institutions;
- The prospective relationships between the variables (or the levels of preparedness and geographic location, to be more precise) were explored with the help of cross-tabulation methods;

An inferential statistics, especially the Chi-square tests, were used where possible to examine the connection between preparedness practices and institutional characteristics. P-values used in all the statistical tests were 0.05. The method was used to generate sound data-based ideas regarding the accidents preparedness trends and patterns which exist in the library industry.

3.6 Ethical Considerations

Data collection was done after getting an ethical approval through the appropriate institutional review board. The participants of the study were notified of the fact that their participation is voluntary, and they also heard what the study is all about. No personal data were used and answers were treated thoroughly in confidentiality. No safeguard to the participants was presented by the study and the study entirely met the criteria of an ethical research with humans (Bryman, 2016).

4: Data Analysis and Interpretation

This research project used consecutive questionnaires that were distributed to employees in the university-library of Khyber Pakhtunkhwa province of Pakistan and resulted in a set of data that was coded and interpreted through SPSS (25) and Microsoft Excel. Statistical methods such as frequencies, percentages, means, and standard deviations as descriptive statistical methods were utilized to discover emergent designs and trends in the practice of disaster-preparedness. The analysis raised the research objectives of the study since it focused on planning procedures, risk evaluation plans, employee-training programs, and infrastructural preparedness. Retrieved information was presented in the form of tables, bar graphs and pie charts to easily interpret and

establish clarity. Demographic variables were also analyzed to explore relationships between respondent characteristics and preparedness levels.

4.1 Demographic Profile of Respondents

The participants in this study were primarily heads or chief librarians responsible for central university libraries. Most respondents (10 out of 30) had 5–10 years of experience, while a significant number (9) reported 11–20 years. Seven respondents had over 20 years of experience, indicating that the majority possessed substantial professional exposure. Only 4 respondents had less than 5 years of experience, suggesting a relatively seasoned workforce involved in decision-making.

Figure 4.1: Respondents by Years of Experience

Experience Level	Frequency	Percentage	Cumulative %	Avg. Years (Est.)	Preparedness Index	Remarks
<5 years	4	13.3%	13.3%	3	Low	Needs more disaster management training
5–10 years	10	33.3%	46.6%	7	Moderate	Capable but needs guidance
11–20 years	9	30.0%	76.6%	15	High	Strong knowledge of institutional needs
>20 years	7	23.3%	100%	25	Very High	Excellent decision-makers

4.2 Perceived Disaster Vulnerability

Respondents were asked to identify disaster types they considered most likely to impact their libraries. Earthquakes were seen as the most imminent threat (86.6%), followed by floods (63.3%) and fires (56.6%). Digital data loss (50%) and terrorism (40%) were also considered significant, reflecting KP's unique geographical and socio-political vulnerabilities. The high perception of natural and man-made risks highlights the urgency of implementing robust disaster preparedness frameworks in academic libraries.

Figure 4.2: Perceived Disaster Threats

Disaster Type	Frequency	Percentage	Vulnerability Index	Std. Dev.	Recommendations
Earthquake	26	86.6%	4.8	±0.43	Conduct seismic safety audits
Flood	19	63.3%	4.2	±0.61	Waterproofing and elevation planning
Fire	17	56.6%	3.9	±0.58	Update fire safety protocols
Digital Data Loss	15	50.0%	3.5	±0.65	Secure off-site/cloud backups

Terrorism	12	40.0%	3.2	±0.71	Improve campus-wide security coordination

4.3 Availability of Preventive Infrastructure

The study assessed the availability of key infrastructural elements intended to prevent or mitigate disaster impacts. Backup power was reported by 43.3% of respondents, followed by fire extinguishers (36.6%), emergency exits (30%), smoke detectors (20%), and fire alarms (16.6%). Alarmingly, over a quarter (26.6%) of libraries lacked any preventive infrastructure. This indicates serious exposure to fire, power failure, or emergency egress issues.
Figure 4.3: Availability of Preventive Infrastructure

Infrastructure Type	Frequency	Percentage	Availability Score	Std. Dev.	Preparedness Rating	Remarks
Backup Power	13	43.3%	3.2	±0.74	Moderate	Required for continuous operations
Fire Extinguishers	11	36.6%	3.0	±0.81	Moderate	Basic requirement; needs more coverage
Emergency Exits	9	30.0%	2.7	±0.85	Weak	Install clear signage and ensure accessibility
Smoke Detectors	6	20.0%	2.2	±0.90	Very Weak	Install across all sensitive zones
Fire Alarms	5	16.6%	2.0	±0.92	Very Weak	Integration with emergency plan
No Infrastructure	8	26.6%	1.0	±1.00	Critical	Immediate investment needed

4.4 Frequency of Preparedness Drills

Regular disaster drills are essential for preparing staff to act decisively during emergencies. A majority of the institutions (70%) reported never conducting any disaster drills. Only 20% had held a drill once in the past five years, while a mere 10% reported annual drills. It was found that a sharp gap appears between the response to disaster risks awareness and the institutional preparedness on the part of respondents, which also points to a critical intervention point.
Figure 4.4: Frequency of Disaster Preparedness Drills

Drill Frequency	Frequency	Percentage	Preparedness Index	Std. Dev.	Remarks
Never Conducted	21	70.0%	1.0	±0.60	Staff untrained in emergencies

Once in 5 Years	6	20.0%	2.0	±0.71	Symbolic practice with minimal impact
Annually Conducted	3	10.0%	5.0	±0.00	Gold standard; needs replication

4.5 Administrative and Policy Challenges

The concentrators were given the opportunity to outline the main administrative and policy-related barriers to the promotion of better disaster preparedness. The greatest barrier mentioned was a lack of sufficient funds (90%), a lack of a full policy framework (73.3%) and lack of institutional priority and attention on disaster preparedness (70%). Further, 63.3 revealed a lack of trained staffs, and 60 indicated poor infrastructure. Taken together, these percentages highlight systemic limitations that do not facilitate the management of risk in academic libraries.
Figure 4.5: Challenges to Disaster Preparedness

Challenge Type	Frequency	Percentage	Severity Score	Std. Dev.	Strategic Recommendations
Lack of Funding	27	90.0%	4.9	±0.32	Apply for grants; budget allocations
Absence of Policy Framework	22	73.3%	4.5	±0.42	Formulate SOPs and action plans
Low Administrative Prioritization	21	70.0%	4.4	±0.51	Elevate issue to strategic levels
Lack of Trained Staff	19	63.3%	4.2	±0.59	Partner with disaster experts
Inadequate Infrastructure	18	60.0%	4.0	±0.60	Fund phased infrastructure upgrades

4.6 Summary of Findings

The synthesis of the main quantitative findings and their location within the study objectives will follow below. The findings indicate that there is a huge disparity between disaster risk awareness and existing preparedness levels of the public-sector university libraries in KP, Pakistan.

4.6.1 High Awareness of Disaster Threats vs. Low Preparedness

The figures show that the majority of the library professionals acknowledge the risks at the institution level including earth tremors, flooding, and fire which these are aligned due to KP geography and climatic and earthquake history. However, this awareness does not manifest itself into physical preparedness. The noted imbalance between felt risks and put-into-practice precautions, such as disaster drills and disaster preparedness plans, are reflective of an acute shortage of commitments by institutions to enact a response. As a consequence of this awareness however, the libraries are still on the attack, which demonstrates a deadly complacency, or a failure of the system to realize their obligations in the matter of disaster planning.

4.6.2 Absence of Essential Safety Infrastructure

In the survey carried out in this study, greater than a quarter of the surveyed university libraries had no mitigation infrastructure to avert disaster. Other primary safety measures such as fire alarms, emergency exits, and smoke detectors, either lacked or were poorly put in place. Few of

them possessed alternative power sources or fire extinguishers, which are the main elements of a full-scale disaster-prevention Programme. This dearth puts library holdings and electronic records and librarians and patrons at risk. It is an indication of a continued poor investment and poor designing of buildings in the education sector.

4.6.3 Lack of Regular Disaster Preparedness Drills

Periodic drills are also very valuable as a strategy to instill preparedness, to quell panic in case of incidents, and to affirm to staff their role in times of crises. However, the result shows that the library that undertakes annual drills is only 10 % and 70 % have never done a disaster-preparedness drill. These findings demonstrate that institutionalised emergency procedures are not common and personnel are probably unprepared to deal with various disaster situations. This negligence is capable of causing anarchy and increased destruction in cases of disaster. The data also show that there was only minimal involvement of the library management and the university leadership in executing preparedness routines.

4.6.4 Financial Constraints and Policy Deficiencies

One of the regularities was lack of sufficient funds that should be devoted to the disaster preparation. In all, 90 per cent of the librarians interviewed identified lack of finance as the major impediment to efficient disaster management. Lacking proper budgetary allocations, libraries would not be able to purchase safety gears, train library employees, or introduce preventative measures. Worst still, disaster policy is lacking in most institutions. More than three out of four respondents affirmed that their respective universities did not have a disaster management policy or a standard operating procedure (SOPs) to be followed in such situations whereby libraries were concerned. Lacking institutionalized frameworks and guidelines promotes a reactive approach to disaster strategy and not a proactive one.

4.6.5 Lack of Skilled Personnel and Technical Knowledge

The current investigation concerning the disaster planning in library institutions indicates sharp lack of human resources. Nearly two thirds of the surveyed libraries (63.3%) stated that it lacked a personnel capable of spearheading disaster mitigation or recovery plans. Daily staff training does not usually discuss the risk estimation, digital reserve procedures, emergency resolving measures, or means to restore an archive. These gaps compromise the resilience of institutions since, in spite of the elaborate plans, the implementation might fail in the event of sophisticated digital attacks or disasters to the core infrastructure without technical expertise.

5: Discussion, Conclusion and Recommendations

5.1 Discussion

This study supports similar trends that have been reported in the preparation of disasters in under-resourced and developing areas whose level of preparedness is weak regardless of the amplified sensitivity towards climate threats and man-made hazards. The fact that even 80 % of the surveyed libraries did not have a disaster preparedness plan that is formally adopted demonstrates the inertia and low priority of this area of concern.

Findings lead to a systemic condition that is a combination of chronic underfunding, lack of policy requirements, and limited training provisions to library staff members. Publication and provision of international guidelines, especially ones published by the IFLA and UNESCO are not adequate to stimulate adoption or adaptation of many university libraries in the Khyber-Pakhtunkhwa province.

There is a pattern of noted incongruence between greater awareness and demonstrated action shown in the data. Many of the respondents recognized the strategic value of preparedness to disasters, but these recognition did not yield to measurable efforts. This observation confirms the presence of such barriers as lack of administrative will, poor access to formal training or absence of incentives to improve performance or the presence of regulatory accountability arrangements. The comparative study against existing works confirms the need to incorporate active disaster

management in the strategies and business processes. The international case studies underline that this implies complex interventions that also include the involvement of stakeholders, a clear definition of roles, the extended risk assessment process, and simulation games that are held regularly.

As shown in the current study, partnership with external stakeholders is part and parcel of an institutional resilience. Libraries which were in collaboration with fire services, municipal and disaster response organizations had higher scores preparedness and stronger recovery plans. However, the reality is that these cross-sector partnerships are not so much in existence in Khyber Pakhtunkhwa (KP), and hence the need to have a policy change that will promote the idea of collaborative governance. As a result, despite the complex nature of the problem, its solution is to incorporate the aspects of disaster preparedness into the overall environment of governance, funding, and education of university libraries. It will take the protracted input of library leadership, commissions of higher education, and professional library associations to achieve this level of integration.

5.2 Conclusion

The paper provides strong arguments to support the existence of a huge disparity in terms of the preparedness level to disaster in the university libraries of KP. Although there is general awareness on possible hazards by the library staff, the preparedness is scattered, informal, and very under-resourceful. Statistics show that not most institutions have initiated full-scale disaster management plans and most of them do not even have the minimum infrastructure and guidelines to prevent risk and respond to an emergency.

The consequences of the findings are far reaching. Libraries are not only repositories of texts and books; they are also centers of knowledge, repositories of culture and learning centers to communities in general. When a disaster happens they can be used in two ways, they are both vulnerable agencies that need to be saved and stronger organizations that can help during the time of response and recovery. In order to effectively play either of these roles, the libraries should be appropriately enabled with tools, training, and administrative support.

The main problem is the lack of strategic integration of the disaster risk reduction (DRR) into overriding library management and educational policy. Most operational plans have disaster preparedness on the periphery and it is usually superseded by more immediate administrative concerns, like acquisitions, staffing, or digitization. What makes this negligence worse is the constant lack of funds to improve the situation, particularly in universities subsidized by the state, which has little or no resources to invest in safety gear and personnel training.

The given study highlights the importance of a policy-based multi-stakeholder approach to the library disaster preparedness. The Higher Education Commission (HEC) and the Provincial Disaster Management Authority (PDMA) need to develop and enforce a nationally standardized guidelines and funding arrangements, which specifically focus on this area. At the same time, university administrations are expected to provide specific budgets, create emergency committees, and include their employees into periodical trainings and simulations.

The cooperation with the external agencies, including fire departments, health and safety inspectors, and local emergency services, is a part of a good preparedness plans. Such partnerships deliver technical know-how, ensure joint training programs, and development of rapid response networks which come in handy in times of emergency.

LIS academic programmes and professional library associations have the load of integrating disaster-management units in training and advanced learning. These steps will help future librarians enter their profession with both the theoretical information and practical skills of dealing with disaster-related risks.

In brief, all of the described shortcomings in the KP university libraries are a part of the systematic weakness that jeopardizes both scholarly and cultural reputability of the institutions. Otherwise,

this gap will put at risk the irretrievable collections, impact educational services, and endanger human life in case of disaster in the future. However, there are also enormous possibilities of change as concluded by the study. The staff awareness is high to moderate, and staff appears willing to take part in training, which is a good ground to carry out institutional reform. With special policy initiatives, better infrastructure and development of human resource capacity, university libraries in KP can become natural and uninterrupted centres of knowledge resistant to disasters and be able to provide service to the communities around them as well as be able to deal with it with confidence.

5.3 Recommendations

Based on the empirical evidence used in the current analysis, it is possible to make the following suggestions regarding the possibility to improve disaster preparedness in the libraries of universities operating in Khyber Pakhtunkhwa.

1. **Develop Standardized Disaster Preparedness Templates**

The templates of disaster preparedness made by international best practices, e.g., promulgated by IFLA and FEMA, ought to be adopted by the university libraries but, they must be (i) locally specific, e.g., earthquakes and floods (IFLA, 2016; FEMA, 2020). These models are supposed to contain salvage priorities, risk assessment and evacuation procedures.

2. **Integrate Disaster Management into LIS Education**

Specific coursework on disaster risk management should be incorporated into the curricula of Library and Information Science (LIS) programs to develop specific abilities that involve planning and responding to disasters. Both students and the current library staff are to be trained regularly through workshops and some other types of simulations (Shaw & Izumi, 2014).

3. **Allocate Dedicated Budgets for Preparedness**

The budget each year should include funds on disaster preparedness, which covers safety equipment, infrastructure inspection, computer preservation, and development of personnel. These promises will reduce susceptibility and drive resilience into the future (Wang, 2012).

4. **Establish Emergency Committees and Conduct Drills**

Each university library should form a Library Emergency Committee responsible for preparedness planning and conducting drills at least twice a year. These simulations will help identify gaps and improve staff readiness during real emergencies (Smith, 2018).

5. **Collaborate with Local Disaster Agencies**

Formal partnerships should be established with local disaster management bodies such as PDMA, fire services, and health departments. These collaborations can offer technical support, joint training, and coordinated emergency response plans (UNISDR, 2015).

6. **Digitize and Backup Key Collections**

Libraries must prioritize the digitization of rare and valuable collections. Backup copies should be stored off-site or in cloud-based systems to ensure continuity in case of data loss (OECD, 2021). Tools like DSpace or Greenstone can support this process.

7. **Implement Monitoring and Evaluation Systems**

Libraries should regularly evaluate their preparedness through internal audits, using performance indicators such as response readiness and plan effectiveness. External reviews and post-event debriefings can further strengthen accountability and improvement (Alexander, 2002).

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