

## **Disaster Preparedness for Records Management: A conceptual Review**

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**Abstract.** In this paper, the disaster preparedness for the effective management of records in the different organizations has been explored. Disaster preparedness is a part of the overall disaster management by the organization and this is done to protect the paper and electronic record from getting damage in man-made or natural disasters. This conceptual paper aims to discuss the importance of disaster preparedness for the records management. This paper also discusses the role of information and technology in enabling the organizations developing and implementing disaster management frameworks and policy which can be utilized by the staff for securing the paper-based as well as electronic records. The literature gap has been explored. A qualitative research methodology has been selected for this topic and literature shall be reviewed systematically for arriving at the answers of the research questions. Hence, this conceptual paper shall be useful for the international organization in taking steps for protecting their vital records from the disasters.

**Keywords:** disaster preparedness, disaster planning, disaster management, records management, vital records

### **1 Introduction**

Management of records is a set of activities which covers the entire lifecycle of the records; however, it also encompasses the protection of records in case of an emergency like a disaster. Information technology (IT) has the potential to prepare the organizations for the disasters and emergency situations (Mukhopadhyay, & Bhattacharjee, 2015). Records management is an important exercise as it ensures the continuity of businesses and efficient recovery after any disaster. The disaster preparedness is covering all the measures which are required for remaining prepared and also to reduce the impact of disasters on the business activities (Rodríguez-Espindola, Albores, & Brewster, 2018). Therefore, disaster preparedness is made part

of the records management so that the records which are vital for the functioning of the business is protected and its easy accessibility is ensured before, during and after the disaster.

The professionals responsible for the records and the information management have to perform risk assessment for the records in the case of an emergency. The disaster preparedness exercise by the professionals for the records management is necessary as it helps in minimizing risks and lowers the liability. It provides an efficient accessibility to the required data in the event of disaster as it maintains the free flow of information across the business unit. Therefore, proper plans have to be made for remaining prepared for the disasters. The events that can result in the sudden removal of the vital documents and records from use and accessibility either temporarily or permanently can be mitigated if the organization has been prepared for the disasters.

In this conceptual paper, the disaster preparedness in records management for the paper-based and electronic records is explored. The role of IT in preparing the organizations for the records management will be discussed and implications for improving the current practices shall be derived. This paper shall be informing the organizations across the globe about the importance of disaster preparedness and the role of IT tools in achieving this objective.

In this conceptual paper, an attempt has been made on the topic of disaster preparedness for records management of both paper based and electronic records. This paper is aimed at exploring the disaster preparedness in electronic and paper records management so as to inform the organizations. Two research questions have been selected for this paper and these are as follows:

1. Why is it necessary to prepare for disasters for the management of the records?
2. How can the information technology help in disaster preparedness for the records management?

In this paper, the existing literature in this area shall be reviewed systematically so that crucial insights can be generated. This paper is significant for the organizations as with the recommendations better strategies and plans can be made which can ensure efficient records management in the event of any disaster. These will contribute to the records management literature and shall be informing the organizations about the importance of disaster preparedness on an international level.

## **2 Literature Review**

In this section of the paper, the existing body of literature is being explored for generating better understanding.

### *Records and management of records*

Record management is the activity of efficient and systematic control of the creation, receipt, use, maintenance and disposition of the records including the

processes which used for capturing and maintaining the evidence or information about the transactions and activities of the business. It also helps in maintaining transparency and preventing corruption (de Mingo, & Cerrillo-i-Martinez, 2018).

The International Council of Archives (ICA), a record is defined as any recorded information which is received or produced in the beginning, conduct or the end of an individual or institutional activity and this has to be sufficient for providing evidence for an activity (Roe, 2017). Records are often considered to be documents but an important characteristic as per this definition, the records either digital or physical have to be evidence for any particular business activity or individual activity which requires them to be stored and preserved over a longer period of time. The digital records have to be protected as these are prone to cyber security risks too (Kim, 2017).

#### *Reasons for protecting records*

Records are the key resource of organizations which should be managed by them. there are many reasons which highlight the need for the protection of the records and some of these are given below:

- Organizational events and audit trails which explains who did what, when and why are documented in records. Thus, records become assets for the organization.
- Financial undertakings are documented in the records. If they are not recorded, the financial management of the organization cannot achieve significant audit trails. Financial deceit will be untraceable and those who are responsible for it cannot be upheld without records. In the absence of records, those overlooking financial management of the organization cannot be blamed for their dealings.
- Organizations have to keep the records to show their liability to the public. Records are valuable in these situations.
- In the time of a calamity or disaster and retrieval strategies are essential to safeguard the records which are necessary for resuming the operation of the organization.
- Maintenance of records are needed by the ISO-15489 and by the best practices recognized internationally.
- Electronic records are susceptible to various hazards. Therefore, they should be kept in a place to make sure that they can be easily stored and secured to move into a much secure avenue which can be retrieved later.

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#### *Records Management Policy*

Organizations need to have a records management policy for the effective management of the records. This also encompasses the protection of the records from the disaster events. This policy also covers the use of IT tools for rendering protection to the records which are vital to the organization. Important elements of this policy are given below:

- Organizations need to place proper guidelines and methods including the use of IT for the management of records (Ajibade, & Khayundi, 2018).
- Assigning resources according to the norm and instructions placed by the international standards for records management.
- Helps in gaining control over records management tasks by considering the guiding principles that are essential for synchronization, records exchanging, regularization, construction and preservation of all kinds of records if any calamity or disaster happens.
- Aiding in the records management process by leading change, outlining organizational responsibilities and detecting culpability.
- Encouraging a cohesive methodology to records management or practice the use of technological and proficient skills, or inspiring synchronization between the current record units.

The aim of the strategies should be maintaining and establishing genuine, functional and consistent records as mentioned in ISO 15489-1. The records should be able to able to upkeep happenings and aiding in business tasks so long as they are needed.

An important aspect of the organizational records management policy, is the risk assessment for the records management systems and processes. Technology have been developed for the risk assessment and this is assisting the organizations in assessing the risks that are related to the documentary processes and the documentary systems (Mukhopadhyay, & Bhattacharjee, 2015). International standards have been developed for providing the methodology for the risk identification analysis and the risk assessment by the organization. The standards also describe the methods which can be used for the analysis of the potential consequences

of the adverse events. The guide for documenting the identified risks and also assessing the risks for mitigating the negative consequences (Varlamova, 2019).

#### *Disaster and types of disaster*

A disaster has been defined as the natural or human-caused event which led to extensive adverse impacts on the goods, services, environment and the people that is exceeding the capability of a community to respond (Hegazy, et al., 2016). The disaster may be small or huge and this is dependent on their form or effect (Oketsang, 2016). The disaster can be permanent or temporary and therefore making the information contained in the records inaccessible. Therefore, the records which are of historical importance for instance are at greater risk from the disaster. Further, the loss of organizational records can cripple the whole business process (Oketsang, 2016).

The types of disaster which can affect the records and these can be both natural and man-made (Oketsang, 2016). These are as follows:

- Natural hazards or events like bushfires, earthquakes, lightning strikes, floods, windstorms, and vermin.
- Building or structural failure like the malfunctioning of the sprinklers, leaking water from roofs, malfunctioning of the heating or air conditioning systems, sewer/drainage/storm water failure, poor wiring leading to electrical short-circuits and energy failure.
- Technological disaster like computer equipment failure, viruses or cyber attacks
- Industrial accidents like chemical spills, gas leaks, nuclear spills, fire, gas leaks, explosions and falling objects damage.
- Criminal incidents like arson, vandalism, terrorism, bombing, riots, espionage, theft, demonstrations, war and theft.
- Accidental loss of records because of human error.
- Poor storage conditions which are not suitable for the storage of media and the natural decay of materials leading to records destruction.

The disaster is an unexpected event which has destructive consequences for the large- and small-scale events and this is dependent on the value of the lost information (Oketsang, 2016). The disaster as an unexpected event have serious damaging consequences for the facilities, records and the buildings. There can be sudden removal of records and documents making the inaccessible for use (Oketsang, 2016).

#### *Disasters that have affected the public archives*

There are different categories of calamities which are dangerous to records and archives. There can be two types of calamities either natural or manmade. Some calamities were experienced by two archival institutions as against five institutions. The damage happened as a result of leaking roofs in both the cases. Many of the calamities happen due to the water linked hazards according to the as coherent with the common belief. Plumbing breakdowns, impairment in cold storage facilities,

floods and leaking roofs are some of the instances which causes water linked calamities (Oketsang, 2016).

#### *Existence of disaster plans*

In many old heritage institutions, the written disaster plans are visibly not found. But the nonexistence of disaster plans is not restricted to one country. Previous studies have shown that the organizations are not prepared for effectively protecting their records from the disasters (Oketsang, 2016). Further, there are many organizations which have not developed their disaster plans or do not have the resources to implement these plans during the event of disaster. This places the records at risk of being damaged during the event and hence, there is a need for proper disaster planning. The role of IT is immense in granting protection to the vital records of the organizations (Meechang, et al., 2020).

#### *Disaster Preparedness Planning for Records*

The most important rule while making a disaster plan is that the plans should be straightforward so that they are easily recognized and employed to carry out standard procedures during various disasters. Thus, time and energy should be spent by the organizations in upgrading and preparing disaster management plans.

The disaster management plan is being used by the organizations for saving and protecting the records before and after the disaster. A disaster preparedness plan must have an adequate cover for the storage of the public records. This plan is a document which describes the procedures for the protection of the electronic and paper-based records. It also describes the processes for the prevention and the preparation of the disasters and the individuals who are responsible for the process. This plan also proposes the procedures for responding and recovery from the disaster when these occur. A comprehensive framework is being used for the disaster preparedness plan which serve as the foundation for protecting the records during disasters (Oketsang, 2016).

There are three phases in the disaster preparedness plans and these are as follows:

- Prevention- it covers the procedures for the prevention of the disasters
- Preparedness- it includes the processes for the identification of the disasters and then developing measures to be taken in the event of disaster. This phase seeks to identify the important documents and the staff-training for enabling them to respond to the different disaster.
- After phase or the recovery phase- this focuses on the actions which can be used for coping from the disasters and therefore, ensures business continuity by salvaging the vital records and information of the business.

There is important role of IT in all the three phases of the disaster preparedness planning. Further, these plans have to include the disaster risk assessment, disaster prevention, organizational capacity, preparedness and mitigation, disaster recovery, disaster response, coordination, disaster risk reduction, facilitators and the enablers for an efficient and effective management of the records during and after the disastrous events (Oketsang, 2016).

There are many organizations particularly in the public archival institutions which do not have any plans for disaster preparedness or for any emergency (Chaterera, 2016). The plans for emergency are articulating and supporting the activities which are aimed at the minimization of the occurrence and the adverse impacts of a disaster which can be from the incidence records damage or from paper leaks to unauthorized persons (Chabin, 2017).

#### *Disaster management and security control for the protection of records*

Disaster management and the security control are important for the protection and preservation of the archives and records. The preparedness for the disaster and recovery plans provide help in ensuring that the vital records of the organization are protected during the disasters which can be either caused by the natural forces or by human errors. In a research study, it was found that in the public sector organization there was little awareness about the existence of a written disaster preparedness plans and majority were not even aware of the written recovery plan (Oketsang, 2016).

Further, there was little awareness about the different aspects which are included in the disaster contingency plans and this suggested that there was lacking awareness and knowledge about the disaster preparedness plans. Despite the established benefits and regulations for the protection of vital records many of the organizations do not have an emergency plan for response and recovery (Marutha, 2019). The security control and disaster preparedness plan allow the organizations to plan and to make decisions about the emergency recovery and response and therefore, these have to be implemented by the organizations particularly in the archival institutions.

The dismal state of the public organizations in the disaster preparedness for the records management points out the adverse effect which could potentially destroy the public records. There is a lacking disaster management and security controls for the records and archives repositories and this may cause loss of valuable records which are assets to the government ministries. This has implications for the promotion of accountability in the ongoing reforms in the public sector particularly in this country (de Mingo, & Cerrillo-i-Martínez, 2018). Therefore, it is imperative for the systems and management of records address the security and disaster management measures for ensuring that the possible risks are identified and steps are taken for its mitigation. According to the ISO, 154489-1, integrity is another important characteristic which has to be demonstrated by the professionals working in this area during the disaster recovery as well as after the recovery from the disaster.

#### *The extent of computer application in the management of electronic records*

The technological tools have entered every sphere of organizations. The rapid growth in the information technology has also made the task for the management and the preservation of the electronic records costlier and complex. In addition to the changing technology there is another challenge for the electronic records management and this is due to the fact the records are produced by different information systems which can be spread over the internet, mainframe and the personal computer. Therefore, the organizations have to manage as well as preserve the vast volume of

electronic records generating from a range of technologies, formats and systems (LoSardo, 2018).

The international records management Trust is an organization which develops strategies for the management of the records (Issa, & Wamukoya, 2018). According to this organization, there is a lack of competencies and skills in the records management personnel particularly in the domain of electronic records. This suggested of an inability to actively manage the records and design or implement the management systems for the electronic records in an organization.

#### *Current practices of records management and disaster preparedness*

Mtui, (2017), discussed the effective management of the records and noted that it is a functional need for the business. In the public sector of Tanzania, the record keeping systems were found to be weak. These have actually collapsed to the point where they barely function due to disasters. This cause misplacing of documents, high volumes of paper and with this the financial audit was not carried out properly in the government projects and the other developmental programs. It encouraged poor decision-making and corruption. Huge costs, space and time have to be incurred by the government in storing the redundant data. It was noted by him that there were challenges for the records management for the disaster preparedness as there was less equipment for storage and had little storage space. There were inadequate funds, lacking security protocols, lacking trained staff and there was not plan for the disaster management. He pointed out that there was a need to automate the paper records to enhance their live and properly manage them. He also recommended to have trained staff, more storage space, proper retrievals system and more funds for implementing a disaster preparedness strategy and thereby develop a disaster management plan.

Wani, and Ganaie, (2017), revealed that there are serious considerations in the event of disaster on the records of an organization particularly the libraries. He highlighted that the libraries in Kashmir suffered from loss of important records owing to poor standards for disaster management and absence of any security protocols. They maintained the focus on the prioritizing the efforts for the recovery so as to mitigate the impact of the loss. The libraries must have an awareness of the risks and plans should be made for avoiding and mitigating the impacts of these risks (Kaur, 2016). These risks can be the location of the library, climatic and the geographic conditions, pollution, civil disturbances, terrorist's attacks etc. In their study, they found that the libraries were highly vulnerable to the disasters and they have not response or recovery plan. This indicate there was a poor level of awareness regarding the disaster preparedness in these educational institutions. However, one of the libraries, which was having the disaster management plan failed to implement it as the staff were not aware and trained for the suggested procedures.

Further, in these libraries there were no disaster alarm systems, emergency contact lists, procedures for backups and response team. Additionally, no communication was maintained between the staff members for the records safety for weeks. This is due to the lack of coordination amongst the staff members for protecting the records of the libraries. Therefore, the libraries have been found to suffer from insufficient awareness about the disaster preparedness and reduction of the risks (Choji, 2017).



Asamoah, Akussah, and Musah, (2018), noted in their study that the planning for the disaster and its preparedness is crucial for any organization. The disaster management planning for the records encompasses the protection of the records against the risks throughout their lifecycle. They emphasized on the identification of the vital records and having backup systems for securing these records. They also highlighted the importance of the security control measures for the records safety. It was found in their study, in public sector organizations there was awareness for the vital records amongst the staff. They were placed in the inner rooms and were protected against the unauthorized staff access. There were also backup systems which help the organizations to protect their records during the event of the disasters. However, the method used for maintaining backup were different in different organizations in the public sector. Copies of the records were made for duplication and dispersal and most of the data was digitized. Storage systems were developed for the protection of the data from the disasters.

Ayoung, Boatbil, and Baada, (2016), assessed the disaster preparedness in the libraries and it was found that none of the libraries in Ghana has disaster plan in a written form. Further, there were no security policy or insurance policy for the collections and the building. This made the libraries extremely vulnerable for the disasters. Moreover, the staff were not aware of the disaster management and disaster preparedness.

#### *Risks assessment in the disaster management planning*

Asamoah, Akussah, and Musah, (2018), suggested that there should be proper risks assessment and analysis by the institutions. It should be made the foundation of an organization's disaster plan. This is helpful for the organizations to identify, analyze and also evaluate the risks that are likely to affect them. The organizations can also ascertain the control measures for dealing with the probable disasters which can affect them. In order to prevent the disasters, impact the first step is the risk assessment in the disaster management plan. They further pointed out the need of disaster detection and suppression systems which could warn and protect the records from any disaster. It is also recommended to have security controls so as to guard against the sudden disappearance of valuable records and other electronic equipment. The training of the staff and creating awareness on the disaster management for the records management of both paper-based and digital records is crucial for the organizations (Bansal, 2015).

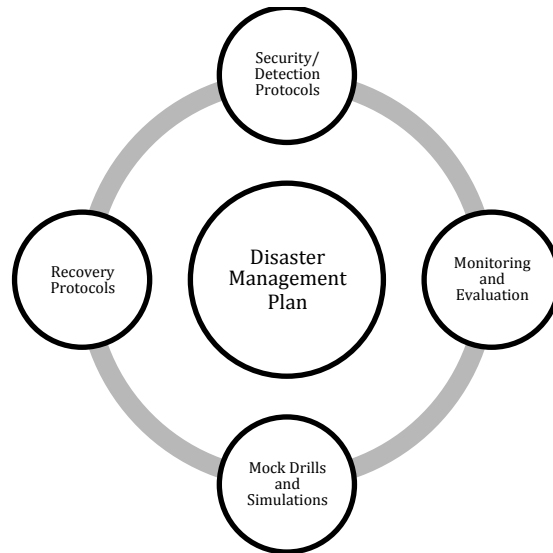


Fig. 1. disaster prevention and control plan  
Source- Asamoah, Akussah, & Musah, (2018).

The above figure has been given by the Asamoah, Akussah, and Musah, (2018). According to them, there should be a plan of action which can avert the risks to security and the likelihood of the disaster. It has five components, which together prevent the occurrence of the disaster and hence, protect the records that are vital for the organization.

The central component is highlighting the need for a disaster management plan which needs of carefully designed and documented. This is a part of the larger security policy of the institutions like library. These have to be precursor to the disaster plan and technology can be used in this aspect as it can reduce the risk by detecting the likelihood of disasters (Sakurai, & Murayama, 2019). This plan has to be functional and therefore, the detection and security protocols have to be developed. These have to implemented to ensure that the likely security risks are identified and then dealt with before they are able to escalate to overwhelming limits. Further, there is a need for continuous monitoring and evaluation of the hazards that may be important in preventing the disasters (Khalid, & Dol, 2015).

The risks should be assessed on a regular basis so that the management remains informed about the risks and likely measures can be taken to avert them. The management has to develop proper plans for the recovery and these can be made in the form of recovery protocols which highlight the tasks to be done and the person responsible for it. The simulations and virtual reality (VR) technology can be used for dealing with the disaster situation. For instance, the staff can be trained for dealing with disaster using VR technology (Sakurai, & Murayama, 2019). For dealing with disasters and responding to it, there is a need for effective and quick communication between the staff members. Therefore, there needs to be a communication plan which can be used for informing all the staff (Rossmann, 2019). Internet-of-things (IoT) can

be used for quickly communicating the staff about the disaster and hence, generate a quick response to the disaster situation (Sinha, et al., 2019).

From the above discussion it is highlighted that the majority of the organizations either academic or non-academic were not having a disaster plan and plans for recovery and responding to the disasters. When the organizations had a disaster plan, they were unable to implement it owing to the lack of trained personnel. Further, there were ineffective management by the top executives for records management at the institutions. The importance of records management was not recognized by the staff as such there were no security or insurance policy for protecting the records. There was no provision for backups in some of the institutions as paper-based records were not digitized. These problems made the institutions highly vulnerable to the disasters.

The review of the literature shows that many countries do not have special focus for the records management in the event of any disaster and this is particularly prevalent in the public sector. In this review it was also noticed that there is a paucity of literature on this topic. There are fewer studies which have explored the need for disaster preparedness in the domain of records management. Only few of the studies have been done and these are mostly from the Africa. Therefore, there is a need to conduct more research in this area as this is important for ensuring the continuity of the business. Further, the role of IT in the effective management of records in the event of disaster or for the prevention of adverse impacts on the records due to disaster has been researched in a limited manner. Therefore, future needs to be conducted for filling this literature gaps in this topic. This must be focused on the assessing the prevailing practices of disaster preparedness in records management across different countries. There is also a need to explore the role of IT in effective management of both the types of records (electronic and paper-based). Further, new practices which are founded on the technological applications have to be developed and implemented so that records can be secured from the adverse impacts of disasters.

### **3 Research Methodology**

In this section of the conceptual paper the methodology adopted for this topic is explained. A qualitative study shall be done for deriving data for answering the research questions. In this type of methodology there is use of non-numerical data for arriving at the answers of the research questions. The methodology selected is the systematic review of literature and this method is of high quality as it establishes the answers on the work done by the previous scholars. This implies that the literature works of the previous researcher have been selected for developing answers for the research questions (Ham-Baloyi, & Jordan, 2016). However, an important element in the systematic review is that the selection of the literature work has to be extensive and the selected literature work must be of good quality (Booth, 2016).

The literature is reviewed systematically and a thematic analysis approach shall be taken and this is an integral procedure in this conceptual paper. The analysis of the data shall be done using the thematic analysis. In this type of analysis, the selected literature is analyzed by codifying the major themes which are emerging from their findings (Kim, Sefcik, & Bradway, 2017). The major themes which are answering the research questions are developed by studying the papers selected for the review

many times and noting the relevant points (Vaismoradi, et al., 2016). These themes are then used for answering the questions of a research in a qualitative manner. This is highly useful in the health and social researches as these are cost and time effective.

#### **4 Systematic Review of Literature**

This method has been chosen as this is suitable for the research aim of this conceptual paper. Further, it saves cost and time and generate high quality results. Following steps are taken for this review:

- The questions and aims of this paper will be reviewed and analyzed and preliminary research will be done (Tawfik, et al., 2019). This also helps in establishing the criteria for the inclusion and the exclusion of the research paper.
- A search strategy will be developed in which the studies were identified using the key terms. Duplicate papers will be removed and different databases are to be used for search the relevant papers.
- The searched papers will be then screened for finding their relevance to this paper. For this purpose, the abstract and the title will be taken into consideration.
- The data will be extracted and the results will be synthesized.

The search strategy mentioned of the key terms and therefore, the following key terms which shall be used for search the paper:

“Disaster preparedness and records management”; “Disaster preparedness for records management”; “Disaster and “records management” and “records management during disasters”.

Different databases shall be searched like the Emerald insight, Google scholar and semantic scholar. These three databases provide many research papers however, only the relevant shall be selected for this review. This will be decided by the exclusion and the inclusion criteria. The papers that are older than 2016 and paid shall not be included. The papers that are not written in English shall also be excluded. The inclusion criteria are mainly the presence of the key terms useful for this paper and the currency of the paper. Further, the papers will be selected from any country as this study seeks to inform on the international level for this topic. The thematic analysis shall be done on the selected papers. This shall be done by generating themes from the selected papers which could potentially answer the questions of this conceptual paper. In this process of the research methodology, appropriate steps shall be taken to remain ethical. The chosen papers shall be referenced properly so that work of the previous researchers is acknowledged in this paper.

#### **5 Conclusion**

It is thereby concluded that the organizations have to be prepared for the disaster as the records are vital for the business continuity. However, currently there are many challenges reported in the literature which is concerning the lack of disaster management plan, poor record management, lacking security and insurance policy, inadequately trained staff and lack of storage and backup facilities. The role of technology is immense in the disaster preparedness for the records management of the paper-based and electronic records. However, the existing literature on this topic is limited and has been mostly done in the African countries. Therefore, it is needed to conduct more studies so as to inform this area and create a knowledge base for the disaster preparedness in the records management. This shall be relevant for the organizations operating at the national or the international level.

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