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Developing Information for Disaster and Risk Management in Public Universities of Kenya: An Emerging Role of Information Professionals.

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ABSTRACT

Disasters entails factors that are coupled with naturally occurring hazards such as droughts floods, fire, war, terrorism, HIV/AIDS, landslides and epidemic outbreak among others which are risks to human life. Disaster management is the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response, and recovery in order to lessen the impact of disasters. It usually refers to the management of natural catastrophes such as fire, flooding, or earthquakes. Related techniques for disasters management include crisis management, contingency management, and risk management. Developing an Information for disaster and risk management in universities of Kenya is framed within an environment where senior managers in the university need to integrate with low level staff as they face the pressure to professionalize; explore the world of risk, trust, and the distribution of power to allow confrontation and flow of information as they gather daily intelligence on acts of disasters. Unfortunately this objective has not been realized in public universities. Deficiency in the study of developing an information for disaster and risk management may exist because of the vicarious involvement of the field study option which is not available to researchers in times of disasters. Determining how information flow among organization, before, during and after disasters leads to new paradigms sound decisions disaster and risk management practices. This paper aims on the need to develop Information for disaster and risk management in public universities of Kenya. The specific objectives are ; assess the status and structures of developing Information for disaster management in public universities ; Identify types of information and services for disaster and risk management in public universities of Kenya; Assess policies and programmes that addresses establishment of information for disaster preparedness and mitigations in Kenya ; Find out personnel responsible to managing an Information for disaster and risk management

in universities and their challenges and lastly recommend on the future development of information for disaster and risk management in public universities of Kenya.

Introduction

Information is fundamental to all aspects of disaster management. It is a point that may appear obvious, but is frequently overlooked. The disaster manager may know that a particular geographic region or community is susceptible to the impacts of sudden or slow-onset hazards. In reality, however, until a decision is made on systematic ways to compile and assess information about disaster vulnerabilities, the manager is and will be working in a void. The declaration of the International Decade of Natural Disaster Reduction (1990-1999), the Yokohama Strategy and Plan of Action for a Safer World (1994), the formulation of the International Strategy for Disaster Reduction(2000), the Millennium Declaration (2000), and the second World Conference on Disaster Reduction (2005) confirmed the international relevance of developing information for disaster and risk management

Disasters strike may lead to a massive loss of people lives. It is therefore important to plan and provide information on how to face any potential disaster that may strike different at different levels. Accurate and timely information available before, during, and after disasters can save lives. In a disaster management situation, information is widely distributed and owned by different organizations, critical data is maintained in disparate systems that often don't interoperate well, and there are no common standards to enable organizations to efficiently organize and share their resources during response operations. As the changes in higher education are moving towards Kenya Vision 2030, information professionals, as collaborators, integrators, instructional designers and information consultants need to engage into developing information that will measure or assess risks.

Statement of the Problem

Despite of the advancement, sophistication and widespread proliferation of information in Kenya, there is scanty information on development of information that apply and provide links to the disaster and risk management in Public Universities. Worldwide the application of information in disaster management has been reviewed by many researchers such as Stephenson and Anderson (1997) and Raio, Eisenberg and Schmit (2007). Case studies of application of such in emergency management (Mulrow, 2010; Banjo, 2012) and in alert and preparedness (Kuula et al., 2013) are also reported.

Such approaches to study on disaster management have been more focused on emergency management rather than its integration to an Information system. Furthermore how best to preserve and utilize information before and in a disaster situation poses a number of problems for which there is lack of necessary and relevant research. The purpose of this study describe the role of information and information professionals responsible to provide community-based disaster information outreach services in Public Universities of Kenya.

Documented Studies on Information for Disaster Management

There are a number of handbooks that provide information on disaster planning to information Center administrators on topics such as working with insurance companies, identifying priority collections for conservation, creating telephone trees for communicating with staff, etc. (Alire, 2000; England, Evans, & Canadian Library Association, 1988; Fortson, 1992; Halsted, Jasper, & Little, 2005; Kahn, 2003; Matthews & Feather, 2003; Morris, 1986;Special Libraries Association, 1989; Wellheiser, Scott, & Canadian Archives Foundation, 2002). Case studies shared lessons learned from libraries

recovering from or preparing for disasters (Fu, 1987; Miller, 1988; Munde, 2008;Page, 1999; Parker, Jaeger, & Kern, 2003; Smith, Oehlerts, Jaeger, & Belskis,2006; Wong & Green, 2008; Yeh, McMullen, & Kane, 2010); and an international conference brought library leaders together to exchange best practices for protecting cultural heritage from disasters (Wellheiser & Gwinn, 2005). Such established precedents equate library disaster research with continuity of operations and collection preservation, but for the many information professionals in public institutions involved in disaster management, their services go far beyond books and buildings where they have to rely on information to make decisions.

Types of Disasters

Experts distinguish between events, emergencies, disasters and catastrophes in terms of severity of the impact or the amount of necessary assistance required (Coppola, 2011; Centre for Research on the Epidemiology of Disasters, 2009). McEntire (2004) defines disasters as the disruptive and/or deadly and destructive outcome or result of physical or human-induced triggering agents when they interact with and are exacerbated by vulnerabilities from diverse but overlapping environments. Disaster is also defined as a situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering. Though often caused by nature, disasters can have human origins. Wars and civil disturbances that destroy homelands and displace people are included among the causes of disasters. Other causes can be: building collapse, blizzard, drought, epidemic, earthquake, explosion, fire, flood, hazardous material or transportation incident (such as a chemical spill), hurricane, nuclear incident, tornado, or volcano. (CRED, 2009)

Disasters must meet at least one of the following criteria to be recorded in EM-DAT:

a) Ten (10) or more people are reported killed.

b) b) One hundred (100) or more people are reported affected (affected people require immediate assistance, and may be displaced or evacuated).

c) c) A state of emergency is declared. d) International assistance is requested (CRED, 2009)

Generally, it has been found that disasters can be classified into three types: (a) Natural; (b) Man-made; and (c) Hybrid. Natural disasters are catastrophic events resulting from natural causes such as volcanic eruptions, tornadoes, earthquakes, etc., over which man has no control. Natural disasters are often termed Acts of God. Man-made disasters, on the other hand, are those catastrophic events that result from human decisions. The International Federation of Red Cross and Red Crescent Societies (2003) highlighted that a man-made disaster refers to non-natural disastrous occurrences that can be sudden or more long-term. Sudden man-made disasters include structural, building which collapses when this occurs independently without any outside force. In addition air, land, and sea disasters are all man-made disasters. Long-term man-made disasters tend to refer to national and international conflicts.

There are disasters that result from both human error and natural forces hence referred to as hybrid disasters. An example of a hybrid disaster is the extensive clearing of jungles causing soil erosion, and subsequently heavy rain causing landslides. Rising numbers of disasters have been associated with climate change, population growth, and globalization (Huppert & Sparks, 2006; Intergovernmental Panel on Climate Change, 2012).Regardless of the causes, disasters are a part of our lives and they will have an increasing influence on our future.

Disaster Management and Risk Management

Disaster management is a dynamic process that requires good cooperation and coordination among different types of professionals (Aziagba and Edet, 2008, McIlwaine, 2006), According to the IFlA, Disaster Preparedness and Planning: A Brief Manual, risks should be managed properly, either by reducing their occurrence, or by reducing their consequences

when they occur. Moreover, risks have to be determined and categorized according to the frequency and severity of their occurrence. Generally, risks that may be encountered in Public Universities entail and are not limited to the following:

a) Risks from outside building (e.g. location, prevailing climatic and geologic conditions, potentially damaging human activities such as commercial or industrial premises, pollution, potential risks of civil disturbance or terrorist attacks etc.).

b) Risks from building's structure and institutional services (building's structure such as roofs, windows, skylights or areas below ground level, fire risks from internal issues such as electrical circuits, equipment or flammable substances, flooding risks from water transfer installations such as rain gutters, water pipes, air conditioning systems and fire suppression systems; and risks from human errors and carelessness).

c) Risks from human interference (arsons, vandalisms, civil disturbance, terrorist attacks and other security issues etc.)

Phases of a Disaster and Recovery Process

Disaster management is a cyclical process; the end of one phase is the beginning of another although one phase of the cycle does not necessarily have to be completed in order for the next to take place. Often several phases are taking place concurrently. Timely decision-making during each phase results in greater preparedness, better warnings, reduced vulnerability or the prevention of future disasters. The complete disaster management cycle includes the shaping of public policies and plans that either addresses the causes of disasters or mitigates their effects on people, property and infrastructure (Carrilo, 2010).

Mitigation and Preparedness Phase

The mitigation and preparedness phases occur as improvements are made in anticipation of an event. By embracing development, a community's ability to mitigate against and prepare for a disaster is improved. As the event unfolds, disaster managers become involved in the immediate response and long-term recovery phases.

Emergency Phase

Disaster strikes is major disruption of the local community. Mitigating measures must immediately be taken against the disaster. Emergency response activities are those carried out during the actual emergency or immediately prior to it. This may involve emergency assistance during the disaster, and actions taken in the immediate aftermath during the time when the community is rather disorganized and basic services and infrastructure are not fully functioning. The impact phase of a disaster can vary from the slow, low-threat build-up associated with some types of floods to the violent, dangerous and destructive outcomes associated with tornadoes and explosions. The greater the scope, community destruction and personal losses associated with the disaster, the greater the psychosocial effects (Garatwa & Bollin, 2002). Ending on the characteristics of the incident, people's reactions range from constricted, stunned, shock-like responses to the less common overt expressions of panic or hysteria. Most typically, people initially respond in confusion and disbelief, and focus on the survival and physical well-being of themselves and their loved ones. When families are in different geographic locations during the impact of a disaster (e.g. children at school, adults at work), survivors will experience considerable anxiety until they are reunited.

Response Phase

The response or relief phase refers to the time period for humanitarian assistance, when steps are taken to save lives and to provide essential supplies to those most affected. It includes such activities as search, rescue, evacuation, provision of shelters, first aid, emergency medical care and protection, temporary restoration of transportation and communication routes, preliminary repairs to essential public utility services and early actions to register victims and record damage to public and private property. This stage may vary in its duration but, in general, it is relatively brief, depending on the magnitude of the disaster (Garatwa & Bollin, 2002).

Rehabilitation Phase

The rehabilitation or transition stage includes activities required to return normality to the affected areas and communities. It includes non-definitive repairs to housing and buildings, and to transport and public utility service infrastructure. Problems related to the emotional and psychological recovery of the inhabitants of the regions affected by the disaster are to be addressed here. Return to work, creation of new jobs, availability of loans and financial resources, and immediate start-up projects related to the consequences of the disaster are among recovery measures that most help the victims and affected communities. Finally, the reconstruction stage includes activities designed to rearrange the affected physical space and environment, and enable the allocation of resources in accordance with the new social priorities arising from the effects of the disaster (Garatwa & Bollin, 2002).**Situation of Disaster Management in Kenya**

Disaster management in Kenya has not developed to the extent where systems are fine-tuned to effectively and efficiently prevent, control and manage disasters. Mawanda (2003) puts it that locally; resources are geared towards recovery and reconstruction, rather than prevention or appropriate response. Even when a disaster strikes, there exist irrational plans that lead to misuse of money at the expense of control but in the real sense this money gets into the pockets of privileged few leaving behind those who are supposed to benefit.

In addition, it would seem that disasters in Public universities have been left out in research, particularly in Kenya, almost previous studies have focused on health and agriculture. Kiema-Ngunnzi (2002) looked at recovery strategies for the 1998 Nairobi bomb blast victims within the Teachers' Service Commission. This would have extended to the burning of Kenyatta university premises by arsonist.

While there have been impressive humanitarian relief efforts in times of crisis, particularly related to natural disasters in Africa, Holloway (2003) says that disaster vulnerability and risk have not been taken as an important area of sustainable development planning. In Kenya, more resources have actually been allocated to relief and rehabilitation efforts than prevention. This is a major shortcoming on the part of the government and other stakeholders in the disaster mitigation sector.

For example, according to the Kenya Red Cross Society- KRCS (2009), a fire outbreak in Nakumatt downtown supermarket (Nairobi) in January 2009, saw many relief efforts. In actual fact, the city planners should have foreseen the possibility of such a disaster and advised on house plans. The same case also applies to the terrorist attacks in the Garissa University College that claimed hundreds of life where Non-Government Organization donated food with the university spending over fifteen million to cover funeral expenses. The government of Kenya also approved a supplementary budget worth four hundred million to support services offered to the students who were rescued and transferred to Moi University. These funds would have been otherwise used to build strong foundation to prevent the disaster in the University College. It sad still that even after the disaster, no system is put in place to prevent future recurrence.

Practices on Disaster Management and Risk Management

Ritchie (2004) noted that further research and empirical work, as well as the development of conceptual frameworks related to risk, disaster and crisis management are needed, and such research is required to be undertaken at a strategic level (i.e. in the context of strategic planning). Ritchie (2004) also noted that there is a need to develop an understanding of the practice of risk, disaster and crisis management using new disciplines and subfields, taking into consideration the cross-disciplinary nature of organizational crisis that calls for an integrative-strategic approach to risk, disaster and crisis management (Sheaffer and Mano-Negrin, 2003).

Pollard and Hotho (2006), Preble (1997), and Mitroff et al. (1992) have highlighted that crisis management and strategic management have been evolving separately over the last few decades and few scholars have attempted to investigate the common ground between the two.

Hyogo Framework for Action (HFA) 2005-2015 has a devoted priority action to use knowledge, innovation and education to build a culture of safety and resilience at all levels .It is envisaged that through this action disasters can be substantially reduced if people are well informed and motivated towards a culture of disaster prevention and resilience, which in turn requires the collection, compilation and dissemination of relevant knowledge and information on hazards, vulnerabilities and capacities.

Information Needs in Disaster Management

Information is the most valuable commodity during emergencies or disasters. It is what everyone needs to make decisions. It is an essential aspect in an organization's ability to gain (or lose) visibility and credibility. Above all, it is necessary for rapid and effective assistance for those affected by a disaster. Information is the main element in the damage and needs assessment process and is the basis for coordination and decision making in emergency situations. It has a powerful impact on how national and international resources are mobilized. It is essential for after-action analysis, evaluation, and lessons learned. Moreover, public and social communication and media relations have become key elements in efficient emergency management. Technical operations in highly charged political and social situations must be a companied by good public communication and information strategies that take all stakeholders into account (PAHO, 2009).

Shibin, & Janardhanan (2014) categorizes information needs of disaster managers into three distinct, but closely related, categories of activities which is accompanied by data namely:

a. Pre-disaster activities: risk assessment, prevention, mitigation and preparedness; analysis and research (to improve the existing knowledge base).

b. During disaster : emergency response activities, and

c. Post-disaster activities: rehabilitation, response and reconstruction.

The ability of leaders and administrators to make sound disaster management decisions is to analyze risks and decide upon appropriate counter-measures. This can be greatly enhanced by the cross- sect oral integration of information. For example, to understand the full short and long-term implications of floods and to plan accordingly requires the analysis of combined data on topography, hydrology, meteorology, soil characteristics, vegetation, settlements, infrastructure, population, and transportation, socio-economic and material resources. This information comes from many different sources and at present it is difficult in most countries to bring it all together.

Following the dictum prevention is better than cure; people should be empowered with information at the pre-disaster level for disaster preparedness. This can only be achieved through identification of zones which are prone to earthquakes, floods etc., within which safer location for hospitals; Awareness regarding use of non- eco-friendly materials and the need for preservation of ecological environment. The following information services are expected in an Information development for disaster and risk management:

i. During a disaster
• Messaging
• Warning / alerting systems
• Help lines to contact
• Alert regarding health hazards
ii. Post Disaster
• Information on various rehabilitation activities
• Documentation of the details of the incident and the mitigation undertaken

• Drawing future plans for prevention of disaster.

Disaster Information Sources

Information resources should be harnessed and packaged to suit the needs of professionals working in various areas of disaster mitigation. The information is generated in various formats and it is necessary to mobilize them systematically to fulfil the information requirements.The various categories of information resources for a resource center for disasters and risk management include Textbooks / Monographs, Journal articles, Educational aids/training materials, Public interest promotional literature, Audio-visual resources and Research / Survey reports.

The term database is a collection of data and information describing items of interest to an organization. Some of the databases in a resource information center for disaster management include: Bibliographic database of books/monograph; Digitized full text databases of published documents wherever possible with due copyright compliance; Articles from scholarly journals; Newspaper clippings; Promotional /Awareness material Research / Survey reports; Government reports ;Case studies; Training materials and Grey literature (unpublished research literature to be obtained through coordination with research organizations, NGOs.

An Information for disaster management needs also to incorporate audio visual materials in the effort to disseminate information. This include Cartographic resources (showing locations of different types of hazard zones, safe zones); Video tapes (visuals of the incidents, rescue operations; videos for training); CD ROM and Database of emergency services (fire stations, ambulance services).

Use of social networking sites has increased and even surpassed the use of more conventional methods of communication such as fixed phones in dissemination of information. Apart from the use of major public social networking services, many companies actively use their own secured corporate social

networking services after disasters to confirm the safety of employees (Merchant, 2011).

During a natural disaster, social media can play a vital role connecting citizens to emergency response agencies; in fact through people's widespread use of Facebook and Twitter, people are beginning to expect it. In a 2010 study by the Red Cross, three-fourths of respondents indicated they would expect an emergency response agency to respond within an hour of posting a call for help on a social media platform. That same study showed Facebook and Twitter as the platforms of choice when it came to receiving and posting information relating to citizens' safety during an emergency.

Emergency support organizations such as the Red Cross also maintain Twitter accounts and use them to propagate information to the public, such as how the volunteers can help and where to get shelter and aid following a disaster. The results of a latest study released by the Red Cross showed that the public is now seeing social media as an important medium to communicate with their families, friends and colleagues as well as to search for help before or after an emergency situation. Through the proliferation of Facebook and Twitter, emergency response agencies make use of the social media in managing and responding to natural disasters.

Information Professionals in Disasters and Risk Management

Fitzgerald & Dennis (2002) point out that it is not enough to just establish a series of controls, someone or some department must be accountable for the control and security of the network. This includes being responsible for the developing controls, ensuring they are operating effectively, and determining when they need to be updated or replaced. Chow and Ha (2009), therefore, identified top management commitment as one of the major factors for establishing and managing information for disaster management. Ginn (1989) as quoted by Chow & Ha (2009), state three reasons why top management commitment is considered the most vital

construct to the success of such which include finalizing an annual budget to support the information implementation, deciding when and how the such information should be implemented, and dictating the level of cooperation and support that should be provided by the various departments.

When establishing an information resource for disaster and risk management. According to Chow (2000), top management is considered as critically important as an information resource involves ongoing capital investment and requires long-term planning. Loch et al., (1992), the growth of connectivity and diversion of technology with or between organizations will continue Chow & Ha (2009) and Wong et.al (1994), claim that information system function personnel must participate and monitor the development processes in an organization. They should contribute their technical knowledge at all different stages. They should review the plans regularly from a technical standpoint so that minimum service disruption is sustained (Rutherford & Myer, 2000).

Eden and Matthews (1997) point out the importance of liaison between library IT personnel, internal computing department and service providers in establishing security and recovery requirements, temporary service and access arrangements for an information system as a way of preparing for disaster. IT managers and system librarians should be in a position to carry out risk assessment, which entails knowledge relating to their buildings, computing systems and equipment or electrical systems, the consequent risks to people, collections among others, in order to be able to prevent disasters (Eden &29Matthews, 1997). This will enable the personnel to adequately handle disaster related issues for information systems. A gap exists on the education and skills of persons involved establishing and management of an Information Resource for disaster and risk management in Public Universities of Kenya.

Policies in Establishment of information for Disaster Management

Public Universities in Kenya need more institutionalized disaster risk reduction systems in place at the policy level with the legislation framework, and disaster risk reduction capacity. There is also a need to ensure available plans and policies are translated into actual practices, and moreover, should be sustainably implemented in the long term.

Challenges Faced in Establishment of Information for Disaster Management

Nyandiere (2007) points out various challenges faced by institutions in a bid to implement information systems which include lack of awareness and mindset among staff, lack of top level management commitment, lack of appreciation of ICT, poor strategy in making ICT responsive to organizational vision and mission, lack of a systematic method of system implementation.

Chacha (2005), as cited by Nyandiere (2007), notes that insufficient training and re-skilling of end users as well as technical staff who support the systems is a major challenge. There is also the problem of recruitment and retention of qualified information systems staff.

In the current networked-centric business model, it is becoming increasingly difficult to validate a person's identity, control access, and maintain integrity and privacy of data (Tran, 2006). Tran (2006) notes that security is a multi-faceted problem that requires close analysis of all the vulnerable factors in a business infrastructure.

Key Recommendations

This paper recommends the following steps to ensure an effective development of information for disaster and risk management in Public Universities of Kenya

- **Accessibility**. Humanitarian information and data should be made accessible to all humanitarian actors by applying easy-to-use formats and by translating information into common or local languages when necessary. Information used for humanitarian purposes should be widely available through a variety of online and offline

distribution channels, including the media.

- **Inclusiveness**. Information management and exchange should be based on a system of collaboration, partnership, and sharing. There should be a high degree of participation and ownership by multiple stakeholders, especially representatives of the affected population.

- **Inter-operability**. All sharable data and information should be made available in formats that can be easily retrieved, shared, and used by humanitarian organizations.

- **Accountability**. Users must be able to evaluate the reliability and credibility of data and information by knowing its source. Information specialists will always work with experts in other disciplines and will have technical support from personnel in areas of administration, information technology, graphic design, multimedia, photography, and audio-visual production. They will have access to other resources that can be hired at the disaster site, when conditions allow. Information providers should be responsible to their partners and stakeholders for the content they publish and disseminate.

- **Verifiability.** Information should be accurate, consistent, and based on sound methodologies, validated by external sources, and analyzed within the proper contextual framework.

- **Relevance**. Information should be practical, flexible, responsive, and driven by operational and decision-making needs throughout all phases of a crisis.

- **Objectivity.** Information managers should consult a variety of sources when collecting and analyzing information so as to provide varied and balanced perspectives for addressing problems and recommending solutions.

- **Humanity**. Information should never be used to distort, to mislead, or to cause harm, affect or at-risk populations and should respect the dignity of victims.

- **Timeliness.** Humanitarian information should be collected, analyzed, and distributed efficiently, and must be kept up to date.

- **Sustainability.** Humanitarian information and data should be preserved, catalogued, and archived so that it can be recovered for future use in areas such as preparedness, analysis, lessons learned, and evaluation.

Conclusion

Any disaster or major emergency disrupts normal life, causes breakdowns in (or makes excessive demands upon) the national administration and infrastructure, affects production, and generally means that resources have to be diverted from normal and development purposes to relief, rehabilitation and reconstruction leading to poverty in the long run . The people who suffer the most are usually those with the least resilience and with few, if any, resources of their own. The final objective of pre disaster planning, using that term in its widest meaning, should be the attainment of post disaster conditions which will be superior, at least in terms of disaster resistance, to those which existed before. To attain this aim, it will be necessary to seek and obtain the participation and cooperation of the people in the execution of the plans, to encourage self-reliance, and to avoid the creation of a state of dependency or apathy. Technical resources have their place an important place in pre disaster planning, but the wise planner will recognize that people and information as the most important resource at disposal which is a critical aspect in the area of information dissemination.

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