EFFECTIVENESS OF THE NIGERIAN EMERGENCY MANAGEMENT SYSTEM WITH RESPECT TO BUILDING COLLAPSES, HUMAN STAMPEDES AND ELECTRICAL POWER FAILURES

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Declaration

I Justine Uyimleshi Usile confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signed: _____

Date: _____

Abstract

One response to disaster incidents in Nigeria is to improve institutional preparedness and strengthen the capacity of the organisations involved. This requires adequate resources, improved communication and enhanced operations of the national emergency operations centre (EOC) to intensify coordination and better allocate resources. Factors affecting vulnerability to disasters such as building collapses, stampedes and blackouts, and the capacity of Nigeria's emergency management organisations (considering resource availability, communication ability and operations of the EOC), were evaluated for the six main organisations involved in emergency response in Nigeria: National Emergency Management Agency, Federal Ministry of Health, Nigeria Police Force, Nigeria Security and Civil Defence Corps, Federal Road Safety Corps and National Hospital. Qualitative and quantitative approaches involving questionnaires and interviews were used. Poor housing and infrastructure, lack of disaster education, socio-economic challenges and institutional failures are the main factors that affect vulnerability to building collapses in Nigeria. Institutional failures, political issues and lack of disaster education affect blackouts, while socio-economic factors, institutional failures, political issues and lack of disaster education predominantly affect vulnerability to stampedes. Despite the need to have available resources, effective communications and functional EOCs, it appears that effective response and the implementation of emergency response activities in Nigeria are hindered by lack of adequate resources, lack of resource-sharing networks between federal, state and local government, lack of accountability, inadequate availability of equipment such as mobile phones and radios, and absence of communication networks such as LAN and WAN. Location and accessibility of each EOC, communication ability within the centre, and resources available to the EOC significantly influence the success or failure of operations of the EOC, which in return affects coordination, cooperation and integration among different levels of government and other organisations involved. In conclusion, there is a need for an emergency management plan that includes all elements and enhances resource availability and utilisation, effective communication, and coordination and allocation of resources to prevent, mitigate and respond rapidly to disasters.

Key words: emergency preparedness, institutional capacity, emergency response, building collapses, stampedes, power failures and Nigeria.

Impact Statement

Lack of adequate resources, effective communication and availability of equipment and facilities to support emergency response affect preparedness for emergency management and disaster response. Likewise, poor coordination; lack of collaboration, cooperation and integration among the different agencies that contribute towards emergency response; lack of adequately trained personnel; ineffective communication; and inadequate allocation and utilisation of resources are recognised as factors that enormously affect the way disasters are managed and emergencies are responded to in Nigeria. While the extant literature emphasises the importance of improved preparedness in managing and responding to emergencies and reducing their impacts, the present research contends that Nigeria is not adequately prepared to respond to emergencies and manage disasters in a way that sufficiently minimises disaster impacts in society, due to the aforementioned issues.

This research adds to the body of literature on emergency preparedness, emergency response and disaster management. It emphasises the need to improve the level of resource availability, provide adequate emergency response tools (such as communication equipment) and form adequate communications networks in order to increase the sharing of information during an emergency. This will enable adequate allocation of resources to meet the needs of affected people. This research further considers the need to improve training and exercise programmes for existing personnel, who would progressively maintain their skills, build their capacity and keep their knowledge up-to-date about emerging issues in emergency management. Adopting this approach would enhance preparedness and promote effective response in emergencies, thereby reducing disaster impacts. The conclusions of this dissertation further emphasise the importance of establishing adequate networks to share and allocate resources between different actors involved in disaster management and emergency response, while advocating the need to carry out hazard identification analysis and capacity assessment so as to establish a well-coordinated emergency management approach in which resources and efforts can be coordinated and integrated in a way that reduces the problem of shortage of resources among the different organisations involved.

Aside from its contribution to the existing literature, this research also has an impact on policy decision-making. Disaster impacts in Nigeria occur due to poor management and uncoordinated response resulting from lack of collaboration,

cooperation and integration, especially between government agencies. This is exacerbated by the absence of clear and implementable policies and regulations that enhance risk reduction and public safety. The challenge emerges from the lack of a common understanding of contemporary emergency management issues, and poor monitoring and supervision of the implementation of activities by the responsible authorities. Hence, the inference serves as a wake-up call for government, policy makers, disaster managers and emergency responders to face up to their responsibility by developing disaster management policies and ensuring implementation and compliance so as to reduce the numbers of disasters and their impacts when they occur, as disasters cannot be completely avoided.

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List of Abbreviations

CSOs – Civil Society Organisations

EMS – Emergency Management System

EOC – Emergency Operation Centre

FEMA – Federal Emergency Management Agency

FMOH – Federal Ministry of Health

FRSC – Federal Road Safety Corps

LAN – Local Area Network

LGA - Local Government Area

LEMA – Local Emergency Management Agency

MDAs - Ministries, Departments and Agencies

NDMF – National Disaster Management Framework

NEMA – National Emergency Management Agency

NERA - National Emergency Relief Agency

NGOs – Non-Governmental Organisations

NPF – Nigeria Police Force

NSCDC – Nigeria Security and Civil Defence Corps

SEMA – State Emergency Management Agency

WAN – Wide Area Network

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Chapter 1: Introduction, research purpose and objectives

1.1. Introduction

Fundamental to this research are the concepts of emergency preparedness, disaster planning and response, especially to human-induced disasters. The response capacity of the Nigerian emergency management and disaster response institutions is examined through an assessment of the institutional capability of the main organisations that are involved in emergency response in the country, such as the National Emergency Management Agency (NEMA), the Federal Ministry of Health (FMOH), the Nigerian Police Force (NPF), the Federal Road Safety Corps (FRSC), the Nigerian Security and Civil Defence Corps (NSCDC) and the National Hospital (NH). The target is to explore their capability to respond to and manage emergencies, particularly those arising from human-induced disasters such as building collapses, human stampedes and electrical power failures that are central to this thesis. The goal is to define the comprehensive ability of Nigeria's emergency management system (EMS) to manage, respond effectively to, and reduce the impact of disasters. This is accomplished through a qualitative and quantitative examination of the three kinds of disasters indicated above with particular focus on three main cities (Abuja, Lagos and Port Harcourt) where such disasters have frequently occurred with large crowds of people.

Particular attention is focused on assessing the level of resource availability, the communication ability in disseminating and sharing information during disasters and emergencies, and the operation of the national EOC in enhancing coordination and allocation of resources during emergencies. These are considered because an adequate level of resources would promote rapid response and thus reduce disaster impacts. Effective communication would enhance sharing of information that would promote adequate allocation of resources and integration of efforts by different entities, as well as different levels of government and other stakeholders involved, and the operation of EOCs would foster an understanding of the way resources are coordinated, allocated and utilised between different entities in an emergency.

To provide a good understanding of the capacity of the Nigerian emergency management system in responding to and managing disasters is the target of this study. The research has three broad aims. First, it aims to assess the institutional capacity for emergency management in Nigeria. Secondly, the research is

designed to determine the level of preparedness of the Nigerian EMS through an evaluation of public perceptions and opinions about the level of resources that are available for emergency response, communication ability and the operations of the EOC in enhancing coordination during emergencies. Thirdly, it aims to develop a holistic framework of emergency response targeted towards improving preparedness in Nigeria and other developing countries. Aside from the broad aims listed above, the research also seeks to contribute to the literature on emergency response and disaster preparedness in highly populated developing countries where disasters are not uncommon, but resources are scarce or underutilised.

Hence, the present chapter introduces the work described in this thesis and provides a brief explanation of the research, as well as a justification for why the research is important in relation to the kinds of disasters studied. It presents the goals, objectives, and research questions and hypothesis. Chapter 2 describes specific case histories related to the kinds of disasters identified in this research with a focus on the incidents, their causes and the way they are responded to by responsible authorities. Chapter 3 provides detailed information on the organisation of emergency management in Nigeria taking into consideration the history, legal frameworks, government and law-making structure of disaster management, as well as institutional and organisational structure of existing disaster management agencies in the country. It also looks at relationships and communication abilities among various agencies as well as available communication tools and networks for sharing disaster-related information. Again, factors affecting emergency management in Nigeria are considered in this chapter with the aim of identifying areas for improvement. Chapter 4 describes the theoretical context and prior scholarly work on the research topic. It brings together literature on emergency management, vulnerability, emergency planning, effective communication, resource allocation, operation of an EOC and emergency management implications of building collapses, human stampedes and electrical power failures. Chapter 5 gives an account of the research methods used in this research and considers both the theoretical and practical issues that are involved in the scope of the research. It further elaborates the methods of data collection, presentation and analysis. Chapter 6 focuses on analysis and presentation of the research findings. Chapter 7 discusses the implications of the results presented in Chapter 6 in relation to emergency preparedness and disaster response, by considering the operations of EOC, level of resource availability and networks for

sharing of resources between federal, state and local government. It further discusses the findings on the assessment of Nigeria's institutional capacity for disaster management and the communication capability of the nation's disaster management organisations, as well as networks for sharing and disseminating disaster information between response agencies and organisations in order to improve adequate allocation and utilisation of resources. Finally, the last chapter offers conclusions on the research findings by drawing together key observations from the preceding chapters. It establishes the main conclusions of the research, considers the implications of the research outcomes and makes recommendations for future work.

1.2. Concept of the study

According to the United Nations Office for Disaster Risk Reduction (UNDRR), responding to, and managing disasters and emergencies involves a systematic procedure of using administrative decisions, organisation, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of disasters (Twigg, 2004; WHO, 2007; Kapucu et al., 2009; Haigh, and Amaratunga, 2010; Nivolianitou, and Synodinou, 2011; Al-Nammari, and Alzaghal, 2015;). This involves all forms of activities in responding to emergencies, using structural and non-structural measures. However, when responding to an emergency, the EMS in Nigeria seems to lack effective organisation and a common operational procedure between different entities. There is also a lack of adequate resources and facilities and an absence or non-implementation of policies that support a more coordinated response when there is a disaster. Therefore, putting the UNDRR approach into action in the context of the Nigerian EMS would support the development of procedures that would enhance integration and increase cooperation and coordination between different stakeholders responsible for emergency response and disaster management. Emergency response in the country should be centred on the principle of shared responsibility. This will also help to develop and adopt disaster management policies that will promote sufficient sharing of information to improve decision making, and promote combine efforts as well as prudent utilisation of resources. As noted by Quarantelli (1997), Perry and Lindell (2003), Haddow and Bullock (2004), Coppola (2006) and Kusumasari et al. (2010), disaster management and emergency response activities generally involve preparation before the actual response, which makes the concept of emergency response and

disaster management a continuous process by which all individuals, groups and communities manage hazards and respond to disasters in an effort to avoid or reduce their impacts. This is achievable by making prudent use of available resources (Perry and Lindell, 2003, Kapucu et al., 2009; Kusumasari et al., 2010). However, the EMS in Nigeria still lacks a more coordinated response process. Resources are poorly allocated and information is poorly communicated due to the lack or inadequacy of communication tools, networks and facilities. They have failed in responding to emergencies with minimal impacts. Hence, adopting such practices and investigating the capacity of the EMS in Nigeria would serve as a progressive strategy to develop measures and improve response and strengthens the entire EMS. It would again help government and its emergency response organisations gain adequate knowledge and understanding about common events and their impacts, and would develop sufficient measures to respond rapidly to them.

The numbers of human-induced disasters occurring in Nigeria, such as the collapse of buildings, stampedes, facilities failures and explosions, in recent times have become worrisome, and the impact of these events in terms of human casualties, property damage, economic losses is becoming alarming. Urgent action is therefore required in a substantial degree to respond effectively and manage situations so that their impacts can be minimal or reduced next time they occur. Adequate preparedness is the answer to improve effective response, as it will enhance the development of measures for rapid response (Alexander, 2003; Perry and Lindell, 2003; Alexander, 2005). However, are the Nigerian emergency response institutions adequately equipped and sufficiently prepared with satisfactory resources to manage and respond to disasters in a way that reduces their impacts? If the answer is no, it is important that we consider the availability of resources, the ability to communicate, including adequacy of communication tools and networks for disseminating information, and operation of the national EOC in coordinating disaster management and emergency response activities. Such evaluation would give an insight into the Nigerian EMS's capability and provide an understanding of what may be required to strengthen the EMS, as well as promote development of measures that would improve rapid response when an emergency occurs.

As disaster management is mostly a multi-agency and multidisciplinary affair involving different actors, such as government and its agencies, and non-

governmental and private sector organisations, coordination of resources and integration of efforts between the various actors is essential. However, it remains complex to deal with. Considering the complexity of emergency management issues in Nigeria, where different participants are involved, including different levels of government, it requires adequate planning and preparedness to enhance coordination, cooperation and integration among them when responding to an emergency. It is also not clear how resources are allocated, information is shared, and emergency response activities are coordinated between different organisations and the various levels of government when responding to disasters in Nigeria. Hence, it is essential to consider the need to improve the level of preparedness in order to manage disasterous events appropriately and respond well to reduce their impacts. Investigating the capacity of the EMS would identify areas that need improvement to enhance effective response to future disasters.

A large body of work suggests that most developed nations have, to an extent, good emergency response and disaster management plans in place to respond promptly when disaster occur, compared to developing nations that lack adequate resources (Faulkner, 2001; McEntire, 2002; Perry and Lindell, 2003; Ritchie, 2004; Twigg, 2004; Perry, 2007; McMaster and Baber, 2008). It has been shown that adequate preparedness and effective communication during and after disasters help resources to be allocated properly, and responses to be improved (Alexander, 2003; Alexander, 2005; Kapucu et al., 2009; Kusumasari et al., 2010). Unfortunately, in a country like Nigeria, only limited efforts have been made to achieve such a state of play, and little effort is devoted to the control and management of disasters. Generally, the Nigerian authorities do not consider how effective communication during an emergency can enhance resource allocation. They do not provide adequate communication tools and establish networks to aid information-sharing during emergencies. There is little or no attention to how the work of the EOC enhances coordination, cooperation and integration among the various organisations involved. All of these issues needs to be addressed properly to improve preparedness and respond better to disasters in the future.

Considering the level of exposure of Nigerians to hazards such as the collapse of buildings, crowd crushes in mass gathering events and prolonged interruptions of electricity supply central to this study, there is a need to strengthen strategies to improve the readiness of emergency response organisations in preparing to respond to emergencies resulting from such hazards. It is essential to investigate

how government and its emergency response institutions react to these events as they attempt to reduce the impacts upon affected communities. This is accomplished through examination of existing networks for sharing of information and resources across all levels of government to ensure that response is rapid and effective. Considering how the society is exposed to hazards, and given the increasing frequency of disaster events recently, it has become very necessary for disaster managers and emergency planners to take into consideration the kind of hazards that commonly affect society, along with their causes and impacts (Faulkner, 2001; White et al., 2001; Wisner et al., 2004; Field et al., 2012; Bullock et al., 2017). This can be accomplished through an understanding of factors that causes disasters, and by developing measures to respond rapidly to these disasters when they occur (Chang and Shinozuka, 2004; Ritchie, 2004; Maguire and Hagan, 2007; Cutter et al., 2008). Hence, by providing an insight into factors that affect vulnerability to disasters in Nigeria, with their causes and impacts using building collapses, human stampedes and electrical power failures as main case analysis, a detailed account of the EMS in Nigeria and the kind of disasters affecting them will emerge. Thus, identifying factors which influence these hazards and assessing the level of preparedness of the emergency response institutions will help bring to the fore the development of suitable strategies to ensure effective response when the hazards eventually occur, as disasters are largely unavoidable events. For instance, knowing the causes of building collapses, human stampedes and electrical power failures and their impacts would help disaster managers and emergency planners to develop techniques that will mitigate or prevent such events from occurring and, when they do occur, response will be rapid and their impacts will be reduced. This will also enable government to develop policies for disaster management and strengthen efforts to implement building codes, crowd control measures and properly monitor and control electrical power grid systems.

Failure to provide adequate measures in managing and responding to disasters is detrimental to the development of society and the economy (Perry et al., 2001; Dwyer et al., 2004; Boin and McConnell, 2007; George et al., 2016) and such events identified in this research all form basic needs of life (namely, shelter, energy consumption and human social gathering). Hence, considering these events when investigating the Nigerian disaster management capability will help in the development of a robust EMS that will improve response. By analysing these events in terms of their causes and consequences and the approach to response

adopted by the Nigerian EMS and its institutions, it will be possible to identify specific areas that need improvement in order to strengthen the capacity of the EMS. Not only is there a need to strengthen the EMS capacity, but a framework needs to be created that includes coordination and integration among all related disaster management entities for adequate resource allocation, helping to overcome the difficulties of resource shortage in emergencies. Also, an understanding of various hazards that affect society and their causes and impacts, while assessing the communication capacity of response agencies, would foster the establishment of communication networks for effective dissemination and adequate sharing of disaster information among different actors and the public, again to make the allocation of resources adequate.

1.3. Rational for the study

Nigeria has been affected by various forms of technological and social disasters, such as the collapse of buildings, stampedes, interruptions of electrical power supply systems, conflicts, bomb blasts, explosions and terrorism (Fabunmi, 2011; Bamgbose, 2017; Obasi, 2019), and other kinds of event that lead to property damage, human displacement and loss of lives and economic value. However, the way the emergency response institutions in Nigeria respond to, and manage these disasters does not provide a satisfactory outcome and their impacts are continually profound. Urgent attention is needed in order to manage situations better. This requires sufficient planning and an adequate level of preparedness (Alexander, 2003; Perry and Lindell, 2003, Alexander, 2005). To improve preparedness and response when disasters occur, it is important to have an adequate level of resources and utilise them efficiently in order to meet the needs created by the event (Sutton, and Tierney, 2006; Kapucu, and Van Wart, 2006; Kapucu, Arslan, and Demiroz, 2010). It is also essential to have adequate communication tools and facilities that enable the sharing of information between different individuals, groups that are affected by the disasters and organisations that are involve in providing response services (Comfort, and Zagorecki, 2004; Kapucu, 2006; Comfort, 2007; Kapucu, Arslan, and Demiroz, 2010). Again, there is a need to have a functional and well-equipped EOC which will help coordinate resources and response activities between different actors (McEntire, 2002; Wachtendorf, 2004; Kapucu, and Van Wart, 2006; McEntire, 2015). However, there is an absence of measures to improve response and reduce the impact of adverse events in Nigeria. Also, the capacity of emergency service providers and

civil protection agencies is not yet well developed. The pattern of how information is shared between government, various emergency response organisations and the public during emergencies determines the success or failure of response and the degree of impact a disaster may cause. Thus, a critical analysis of recent disaster cases and assessment of Nigeria's institutional capacity to respond to and manage them will hep create a resilience framework that should serve policy makers, practitioners and researchers. They should evaluate infrastructure, housing and the economy. This would further suggest a timely upgrade of any operational systems to stop them from failing and of economic measures to ensure Nigerian self-sufficiency and reliability in responding to emergencies.

As noted by William (2006) and Wilson, et al. (2008), unusual challenges and difficulties are part of emergency response. Hence, recent disaster cases and their impacts in Nigeria suggest the need for adequate preparedness and the development of suitable response plans that include coordination and cooperation among various organisations and different levels of government in order to promote the way they utilise resources, so as to enhance rapid response in an emergency. It is important to develop an effective and robust response plan and put in place effective measures to respond to and manage disasters efficiently. This is because the number of disasters occurrence in recent times is becoming a matter of grave concern.

Nevertheless, emergency preparedness cannot be improved without identifying hazards that cause disasters (Cannon, 1994; White et al., 2001; Lindell, and Prater, 2003; Perry, and Lindell, 2003; Ritchie, 2004; Cutter, et al., 2008). Therefore, to improve the performance of emergency management organisations, such as governmental, non-governmental and private sector organisations, it requires adequate knowledge of hazards and an understanding of both the capacity of individuals, groups and organisations responsible for emergency management activities and the coping ability of communities affected by disaster (Alexander, 2003; Pelling, 2003; Twigg, 2004; Sutton, and Tierney, 2006; Choi, 2008). But this seem to be lacking within the Nigerian EMS context. Hence, this research responds to the need to investigate response to disasters in Nigeria by considering their causes and the response capacity and capability of the Nigerian EMS. It endeavours to develop a framework and suggest strategies for strengthening the EMS to improve response to future events. Such a framework should improve preparedness and enhance rapid response to disasters.

Some studies have revealed that most disasters occur due to human actions such as negligence, error, carelessness and the inability to manage mechanical processes (Zhao, and Olivera, 2006; Woods, 2010; Reason, 2017; Kelman, 2020). Various oil spills, aircraft and maritime mishaps, military equipment explosions, terrorist attacks and other occupational and industrial accidents that have been recorded across the globe, including some major globally recognised technological disasters, such as the 1986 Chernobyl nuclear meltdown in Ukraine (Baum, 1987; Richardson, 1994; Evan, and Manion, 2002). Social disasters have also had a strong presence and include criminal acts, stampedes, riots, demonstrations and many forms of war (Alexander, 2002), which need to be responded to. In Nigeria, the frequency at which disasters such as technological failures and sudden impacts events occur increases the need to improve emergency management around them in order to prepare, respond rapidly and reduce their impacts. For instance, between July 2013 and March 2016, Lagos State alone recorded four major cases of building collapses with about 122 dead and many more injured (Omenihu, Onundi, and Alkali, 2016; Oloke, et al*.,* 2017). Likewise, between September 2013 and March 2014, three major stampedes were recorded in Nigeria with 96 dead and large numbers of people injured (Okoli and Nnorom, 2014). The frequency of power failures has escalated to the level that business owners have to rely on an alternative power supply, such as generators, to provide the power requirements in their daily operations. Health and education amenities also rely on alternative power supplies for their operations. Even the presidency has mandated a 24-hour use of generators to provide energy for the State House, Aso Villa.

Even though several kinds of disasters occur in Nigeria, the present research focuses on three particular forms of disasters that recurrently have befallen the nation and that threaten impacts to society and economic development, namely building collapses, human stampedes and electrical power failures. Accordingly, this research anticipates that adequate preparedness plans, good response strategies, effective communication, the involvement of well-trained disaster management personnel and effective coordination, as well as integration of efforts between different actors will improve response and reduce disaster impacts in Nigeria. According to Perry and Lindell, 2001; Ritchie, 2008; Tierney, 2012, to accomplish this, urgent attention is required both by researchers and economic planners to review environmental policies, health policies and legislation; to

understand the causes of disasters, their impacts and the way government and its agencies respond; and to discern the capacity of the organisations involved to deal with emerging disaster issues.

By identifying the communications ability and the level of resources available for disaster management, it will help create an understanding of the kind of support that may be needed from partnership agencies and affected communities, and of the means of improving the allocation and utilisation of resources. Nevertheless, the impacts of these events in Nigeria show that much effort is required through coordination, cooperation and integration to improve response, and this can be achieved via regular joint exercises and training programmes between government bodies and other related organisations responsible for disaster management. Such activities will help to improve the knowledge and skill of personnel and also build their capacity to manage emergencies. Thus, the research aims to assess the level of preparedness of the Nigerian EMS through examination of current approaches in coordinating resources and response activities, and the associated institutional capacity is also being examined. Finally, a framework for disaster management and emergency response will be developed in order to promote more efficient emergency management activities in Nigeria. This may be applicable to other developing countries as well.

1.3.1. Why building collapses, human stampedes and electrical power failures?

From a vulnerability perspective, research has shown that there are long-term health and social impacts, as well as loss of life and property damage from building collapses, human stampedes and electrical power failures (Quarantelli et al., 2007; McEntire, 2015; Quarantelli et al., 2018). Social networks are often disrupted during these times, and individuals and families are displaced (Stough et al., 2017). This thesis focuses on the three forms of disasters as they cut across technological calamities, and all of which are generally considered to be sudden-impact events. They are considered jointly in this thesis because they all are anthropogenic hazards that require emergency response and management efforts. Hence, they all create emergency response needs and form part of the basic requirements for the well-being and comfort of people. Additionally, the increasing frequency of these events in Nigeria has raised public concern, as not enough attention has been given to them compared to other forms of disasters such as oil spills and

floods among other events, even though they all test the nation's emergency management capacity.

Considerable scholarly attention has been dedicated to other forms of disasters such as flood, communal conflicts and oil pipeline explosions in Nigeria (Obi, 1997; Onuoha, 2008; Saheed, and Egwaikhide, 2012; Okoli, 2014; Okoli, and Atelhe, 2014; Nriagu, et al., 2016; Chijioke et al., 2018), while electrical power failures, stampedes and building collapses have been neglected, notwithstanding their impacts upon society. Generally, shelter and electricity are fundamental human needs and they have made a huge contribution to the well-being of people and society (Clark, 2005; Costanza, et al., 2007; Summers, et al., 2012). With the increasing urban population, the rise of social events such as sport activities, political rallies and religious events is leading to mass gatherings that occur in various cities, with high potential for crowd disasters. All these factors combined together raise concerns about how to improve response to these forms of disasters and emergencies.

Again, the three forms of disasters are considered jointly in this research because they are all widespread, anthropogenic hazards and sudden-impact events occurring in Nigeria. They are neglected in both research and planning. Therefore, attention could contribute to improvements in response to such events and minimisation of their impacts. Also, building collapses, human stampedes and electrical power failures can all be used as a test of emergency management to help strengthen the capacity of emergency response and disaster management institutions. However, little attention has been given to the causes and impacts of these events in Nigeria and measures put in place to respond to them when they occur are inadequate.

Also, the three considered forms of disasters offer a wide variety of scenarios and the emergency response system needs to be adaptable to widely different exigencies. They are too common, and they have not been studied as much as other natural disasters in the Nigerian context, and they have also been neglected by students of civil protection. Additionally, these forms of disasters offer some similarities in the emergency response and disaster preparedness context. For example, they all cause abrupt impacts. However, there are some contrasting differences in impacts that may be helpful in promoting diverse levels of preparedness and response to different kinds of disasters. Hence, the Nigerian civil protection authorities need to learn how to deal with the consequences of

these events, as they are all potential disasters resulting from human needs and negligence. As such, they have been selected as a test of “normal emergencies” to which the Nigerian civil protection system must respond. Hence, by studying different kinds of anthropogenic events and sudden-impacts disasters, a broad view of response can be gained, and the flexibility of the system can be assessed. Therefore, substantial research around these events will increase knowledge and understanding, and enhance the development of measures to respond well to them when they occur as disasters. Hence, this study intends to compensate for the lack of knowledge about these forms of disasters in Nigeria that causes human lost, property damage, human displacement, economic loss, and disruption of social events but government and other entities tend to neglect them in terms of preparedness, response and management.

1.4. Justification

Nigeria is not completely exempt from disastrous phenomena even though natural disasters are not as common in the country as they are in certain other nations of the world. Disasters have, in recent times, caused some impacts that have led to human displacement, property damage, and loss of lives and economic assets. However, while considerable work has been carried out around other kinds of disasters such as floods, oil pipeline explosions, terrorism and conflicts, (Obi, 1997; Olorunfemi, 2008; Olorunfemi, and Adebimpe, 2008; Onuoha, 2008; Saheed, and Egwaikhide, 2012; Okoli, 2014; Okoli, and Atelhe, 2014; Nriagu, et al., 2016; Chijioke et al., 2018; Okunola, 2019) and more research is going on in Nigeria on such topics, only limited evidence is available about the collapse of buildings, stampedes and electrical power failures, compare to their regularity of occurrence and the impacts they caused in the country. These events have created emergency management needs that require improved levels of preparedness. Building collapses, stampedes and blackouts can be used as a test for the development of a multi-hazard EMS that would improve emergency management activities generally. As such, they are all considered in this research to develop a multi-hazard emergency management framework. Also, due to their effect upon the well-being of people in society, it is wrong to neglect such incidents and very important to strengthen the capacity of individuals, groups, and organisations to prepare for disasters that may result from their occurrence.

The impacts of building collapses, blackouts and stampedes upon industrialisation, economic growth and social development cannot be disregarded globally (Kelman, 1998; Tertzakian, and Hollihan, 2009; Peterson, 2016; Eisenbruch, 2017). They can deter business investment, which may result in lack of employment opportunities and thus stimulate social violence (Bates et al., 2002). As such, they all constitute threats to human security and create emergency conditions that needs to be addressed. They all pose problems of safety management, but they could become catalysts in creating a more active safety management culture. Considering all of them collectively in a single piece of research as examples of technological and sudden impacts disasters should contribute to an understanding of the pattern and impacts of these events and help government and other organisations involved in planning for response to such events by developing a more active and robust operational emergency management framework that would promote rapid implementation of response activities to reduce impacts of disasters in society. Also, the way emergency response is being organised around these events has not been investigated adequately in Nigeria compared to other forms of disasters. This calls for more investigation to understand their pattern and improve the capacity of individuals, groups, communities and organisations to respond effectively when they occur.

Due to urbanisation and industrialisation, the population in urban areas of Nigeria is increasing rapidly, as is the demand for shelter, electricity and social activities (Aluko, 2010; Bloch, et al., 2015; Mbanaso, and Ozden, 2017; Oni-Jimoh, et al., 2018; Ayinde et al., 2019). These are inevitable human needs that are required for the well-being of the public, yet they may result in disaster if not adequately managed. For example, in March 2016, a five-storey building under construction in the Lekki area of Lagos state collapsed due to poor construction work and used of substandard building materials, with about 34 people killed, also resulting in heavy economic losses (Kolawole, 2016). This raised concern for emergency response and for improvement in this area to avoid such events and or reduce their impacts. But these are not sufficiently considered in Nigeria. Such disasters have repeatedly occurred and their impacts in the country cannot be overlooked. Also, the increased urban population results in large crowds around the city and at social activities such as religious gatherings, sporting events and festivals, among other forms of mass gathering. All these events put together increase the likelihood of technological and sudden impacts disasters occurring in

Nigeria even though attention is not adequately given to them in terms of research and economic planning. For example, in October 2013, approximately 47 people were crushed to death in a stampede that was triggered by crowd desperate to gain competitive advantage as they lined up to share Salah gifts in Ilorin, Kwara state. Similarly, on Saturday, 2 November 2013, in Anambra state, more than 30 people were reported dead with many injured in a crusade organised by the Holy Ghost Adoration Ministry Uke that occasioned in a stampede triggered by a false alarm – an event considered to be controversial and political. The implication is that such events threaten national security and call for better preparation and response. Moreover, housing, electricity power supply and social events are all fundamental to daily life. Good housing and adequate supply of electricity support industrialisation and business investments, as well as helping to improve the quality of life of people through provision of better education, good health services, viable transportation systems and other social benefits (Carayannis, and Von Zedtwitz, 2005; Howes, and Robinson, 2005; Omer, 2008; Samadi, et al., 2017). Likewise, provision of adequate facilities with enough space for events involving mass gathering remain central to reduce the risk of stampedes (Hall, et al*.,* 2011; Rouleau et al., 2013; Al-Otaibi, 2018). We cannot completely avoid disasters resulting from these events. And so, they must not be neglected in terms of research and emergency preparedness. For instance, on 19 March 2016, a two-storey building that collapsed behind Mile 12 Garage, in Lagos due to structural defects, killed one person, leaving another injured. Improving the quality of these basic amenities will not only help to mitigate disasters but also foster economic growth as noted by (Pelling, 2003; Levy and Hall 2005; Christopher et al*.,* 2007; Sharma et al., 2016; Veloza and Santamaria, 2016;). Therefore, considering the three forms of disasters in this research would help to offer a better understanding of the occurrence and management of such events, for these events all are common dynamics of mismanagement and infrastructure ageing influencing vulnerability levels and requires response.

1.5. Goals and objectives

1.5.1. Goals

The general goal of this research is to determine the capacity and capability of Nigeria's EMS in responding to technological disasters and sudden impact events, such as building collapses, human stampedes and electrical power failures. The aim is to evaluate the way the Nigerian government respond to these

forms of disasters and identify their causes, as well as factors that affect the response to emergencies in Nigeria, so that measures can be developed to reduce future disasters impacts.

1.5.2. Objectives

To achieve the goals of this research, the study has the following specific objectives: -

1. To examine the relevant theories and models related to emergency preparedness and disaster planning in order to identify and develop models that are appropriate to Nigeria's disaster management and emergency response system.
2. To examine the people's perceptions and opinions concerning the institutional capacity of Nigeria's EMS, taking into account resource availability. This includes staffing, funding, training, communications (including tools and networks for sharing information) and the functioning of the national emergency operations centre (EOC).
3. To examine resource-sharing patterns between different levels of government and related disaster management actors and identify the support that may be required in order to improve emergency preparedness in Nigeria.
4. To investigate the causes and impacts of human-induced disasters and identify factors that limit emergency management activities and the coping ability of affected communities in Nigeria.
5. To develop a framework of emergency preparedness and disaster management to improve rapid response during emergencies in Nigeria.

1.6. Research questions and hypothesis

1.6.1. Research questions

To examine the wider issues around the concept of this study as it involves emergency management and disaster response in Nigeria - as well as to determine the ability of the Nigerian government and its emergency response institutions to understand their capability towards rapid response to emergencies. The research focuses on addressing the following five specific questions:

a. Are existing resources shared and allocated between different levels of government and civil protection agencies in a way that will overcome the problem of resource shortage in emergencies in Nigeria?

b. Are there adequate communication tools and efficient networks to enhance communication and sharing of information between government, emergency services providers and vulnerable people in emergencies, to promote adequate allocation of resources?
c. Is the national emergency operations centre (EOC) easily physically accessible during emergencies? Does it have adequate capacity in terms of resources and communication ability to enable coordination, cooperation and integration of efforts between different levels of government and other disaster management entities?
d. What are the main causes of building collapses, stampedes and blackouts in Nigeria, and how do government respond to emergencies resulting from these incidents?
e. How do people perceive disaster management and emergency response, and what are the factors affecting vulnerability to building collapses, human stampedes and electrical power failures in Nigeria?

1.6.2. Research hypothesis

The pattern of human-induced disasters and their impacts in Nigeria is not yet well known. Likewise, the value of emergency response through provision of sufficient resources, effective communication, and the coordination and allocation of such resources – as well as emergency response activities during and after disasters that enhance effective response – is not well understood and remains a barrier to effective disaster management. The contributions of an operational EOC in coordinating response include gathering and sharing information, and coordinating and allocating resources between different actors (particularly within government agencies at all levels, in order to ensure effective utilisation of resources during emergencies) is also not well recognised, yet it remains essential. Investigating the organisation of emergency management in Nigeria, will enable an understanding and provide sufficient knowledge of the capacity of Nigeria's EMS, and define its ability in responding to, and minimising disasters impacts. Such knowledge would eventually trigger the establishment of an EMS that enhances coordination, cooperation and integration and fosters effective implementation of response activities. However, stakeholders in the field of emergency management in Nigeria have little or no awareness of the importance of these elements in improving and enhancing emergency response and overall disaster management, which has raised concerns about how difficult it may be to improve preparedness in a complex situation.

Effective communication enhances adequate dissemination and sharing of information to enable coordination and allocation of resources between different actors (Comfort, et al., 2004; Maiers et al., 2005; Sutton, and Tierney, 2006; Kusumasari et al., 2010). As such, availability of adequate communication tools and communication networks remains central in sharing information. As William (2006) noted, research and development are very important means of formulating specific mitigation and adaptation policies, and for putting in place preparedness measures. People in developing countries are becoming more vulnerable in their daily activities as a result of exposure to more hazards and of poor management and response stemming from inadequate resources, poor coordination and lack of adequate equipment and facilities to support robust actions in emergency. Notwithstanding these effects, it is essential to maintain a stable economic level and standard of living over time so that the negative consequences of disasters can be understood in order to plan for, respond to and reduce their impacts (Morduch 1995). The frequency of human-induced disasters and the severity of their impacts in Nigeria over time hinders development and as a result raises concerns about improving response. This indicates that Nigeria requires safety and stability to develop. To achieve this, better control of risk and improved response to sudden-impact events is necessary. This can be obtained by improving preparedness and putting in place all-hazards mitigation and prevention measures to curtail disaster impacts. Considering the importance of providing adequate resources, effective communication and a functioning EOC in emergency management, it is believed that lack of or inadequate availability of these elements would significantly impact on the success or failure of emergency response and disaster management in Nigeria. Hence, the research intends to test the following hypotheses.

1. Lack of equipment and facilities is the single most important factor inhibiting the improvement of emergency response to anthropogenic hazards in Nigeria.
2. Improved communications and operations of EOC are the key to rapid response in emergency. Nevertheless, lack of communication tools and information-sharing networks hinders effective communication in Nigeria thereby affecting coordination, allocation, and utilisation of resources. Likewise, location, accessibility and resources of EOC affect its operations.

3. There is a clear gap between the safety expectations of ordinary people and the capabilities of organisations that respond to emergencies in Nigeria. Hence, adequate resource-sharing networks and enhanced community participation would bring a definitive change to the response to emergencies in Nigeria.
4. The relationship between the response efforts of different levels of government does not adequately support and boost each other's efforts to improve responses during emergencies.

1.7. Conclusion

Considering the frequency of human-induced disasters and bearing in mind that the complexity of disaster management and emergency response in Nigeria requires a combination of effort across different levels of government and multiple organisations, investigating the capacity of the Nigerian EMS and identifying factors that affect the coordination and implementation of emergency management and disaster response activities would help one to understand the ability of the Nigerian EMS in reducing disasters impacts. It would also contribute to the establishment of a disaster management structure that would promote coordination and utilisation of resources in a way that meets the needs created by a disaster of any given magnitude in the society.

It is expected that this research will lead to the identification of factors that affect emergency management in Nigeria and will help develop measures to improve response and emergency management as a whole. The results will further enhance an understanding of relationships between federal, state and local governments in resource utilisation during emergencies and will identify the kind of support that may be needed at each level to improve their capacity and degree of preparedness for effective emergency management in the country. It is further expected that the outcome of the research will foster identification of available networks for sharing disaster-related information and resources, especially between government agencies, as well as between non-governmental and private sector organisations, with the target of developing a framework that would support coordination and implementation of activities for minimising disaster impacts. By answering the research questions set at the beginning of the thesis, the findings will open doors for the understanding and identification of specific areas that need improvement and require more attention in order to strengthen the capacity of emergency response institutions in Nigeria and to promote efforts to improve response to disasters.

Chapter 2: Case study analyses

2.1. Introduction

In Chapter 1 we concentrated on defining the subject of this thesis and its content by describing the goals and objectives, and the research questions and hypotheses, accompanied by observations about the way in which EMSs are organised. In order to create a detailed understanding of how emergencies, especially those fundamental to this study, are responded to in actual experience in Nigeria, Chapter 2 will consider some specific emergency scenarios related to the three forms of disasters that are the focus of this study. As to deal with any disaster situation, it very important to know the kind of disaster, its causes, impacts and the way they react towards it. By reviewing real disaster cases in Nigeria, it would provide an insight to the way they approach emergencies and enable an evaluation of government, emergency service providers and people's capacity, as well as their level of preparedness. Considering current response practices through examination of previous disaster events would aid in identifying the strength and weaknesses of government, emergency response organisations and the general public in managing disasters as well as areas that need improvement in order to develop measures that would strengthen the EMS and promote development of a robust emergency response plan that enhances a better response against future disasters. In line with the above, this chapter focuses on three particular previous emergency incidents in Nigeria that required a response, their causes, impacts and how they were responded to by government – each one is related to a different kind of hazard identified in this research. First, we look at an incident of building collapse: the Synagogue Church of All Nations (SCOAN) guesthouse that collapsed in Lagos state in 2014. Secondly, we considered a stampede: the Nigerian Immigration Service recruitment drive of 2014. And, thirdly, the research takes into account the Lagos blackout that cut off electricity during the Africa Cup nations tournament finals between Cameron and Nigeria at the Lagos national stadium in 2000 and required emergency response services following disruption that emanated from the blackout. The penultimate section gives an account of the significance of the three case histories and, finally, the last section concludes the chapter by drawing together the previous sections and considering their implications.

2.2. The collapse of the Synagogue Church of All Nations (SCOAN) guesthouse

On 12 September 2014, a guest house located within the Synagogue Church of All Nations (SCOAN) premises in the Ikotun-Egbe area of Lagos state completely collapsed to the ground leaving about 116 people dead including foreigners, the majority of whom were South Africans (BBC News, 2016; Ramantswana, 2019). More than 40 other people were injured. Poor response to, and mismanagement of the incident contributes to the increased impacts instigated by the disaster, as church members initially denied response groups access to the disaster site to carry out operations such as search and rescue. Aside from the collapse of this building, building collapses are now rampant in Nigeria and they result in displacement of families, and loss of lives and economic value (Adedeji, 2013). Huge amounts of resources are spent in paying the price for such incidents, which will continue to increase if adequate strategies are not adopted to sufficiently address, and adequately manage the situation (Kunreuther and Michel-Kerjan, 2007; Abulnour, 2014; Kolawole, 2018). As this is an essential task for any EMS to deal with, it is important for those involved to develop adequate knowledge about the causes and impacts of such disasters in order to enable an understanding of how they occur, and there is a need to critically analyse the way emergency response is being organised around them by relevant stakeholders in real live (Mulgan, 2009) so as to identify their strength and weaknesses. Such knowledge would help to strengthen measures in building the capacity of the EMS in the management of similar disasters and improving response when they occur again.

Despite the fact that building collapses are becoming rampant in Nigeria, government and other relevant authorities particularly within the building industry who have the power to regulate compliance and ensure building standard yet, have failed to monitor and supervise construction works which has made it difficult to uphold the quality of buildings in Nigeria - therefore leading to incessant collapse of buildings (Kolo, 2015; Arku, et al. 2016). It was gathered that even before the SCOAN guest house was erected, government and its regulatory bodies did not grant any formal approval for the construction of the building (BBC News, 2016; Fowode, 2016; Oyedele, 2016) and the building was constructed solely at the church's will, without defining any standard from the beginning. Construction work was not given adequate attention during the process, thereby endangering peoples' lives as a result of the church's non-compliance action that was

orchestrated by government negligence who failed to properly monitor and supervise activities of the church throughout the building process. Regulatory bodies in Nigeria have failed to pay attention to building projects and they do not properly monitor or supervised construction activities to ensure they comply with the building code (Kolawole, 2018). In addition to negligence and non-compliance issues, emergency response organisations also lacked the ability to respond swiftly to the collapse of buildings and this has contributed greatly to increasing numbers and impacts of such events around the country. The Church did not equally conduct a proper assessment of the site of the building and did not seek formal approval from responsible authorities before putting up additional floor to the building that triggered the collapse (Kolo, 2015; BBC News, 2016; Kolawole, 2018). The designated authority also failed to monitor the action of the church beginning from when the building was started until it resulted in the unfortunate disaster that led to the deaths of many innocent people. There is urgent need for government to perform its function by checking the activity of all organisations especially those within the building sector by making sure that they observe standards when constructing new buildings and develop adequate measures to deal with unpredicted circumstances that may threaten life and destruction of property which may arise afterwards. However, the way the Nigerian government reacts to such situations, and how its agencies respond to these kinds of disasters, is not yet well-defined (Okoli, 2014; Mashi et al., 2019). The collapse of the SCOAN guest house has raised demand for emergency response to save the lives of those involved in such crises or reduce their impacts while demonstrating a need to establish satisfactory relationship between the construction industry, building owners, emergency responders and government for proper monitoring and supervision of construction activities. It is not clear whether regulatory authorities are fully involved in planning and granting of approvals for erecting new buildings in Nigeria and whether risk and vulnerability assessment is normally being prioritised during these times to ensure safety and reliability of any building. Although the collapse of buildings is no longer news in Nigeria. People have lost their lives to building collapses, many families have been displaced and resources have been wasted over time (Adedeji, 2013; Kolawole, 2018). All these are as a result of lack of, or inadequate monitoring and supervision of building projects by regulatory bodies and or poor response implementations by response organisations during such emergencies. For example, they did not monitor and supervise construction work

at the SCOAN to make sure that the building was completed up to standard. Due to lack of standards, negligence and non-compliance, the badly constructed building eventually collapsed and lives were lost. Apparently, it is believed that the collapse of the building was due to structural failure (BBC News, 2016). Additional floors were added to the building without reinforcing its initial foundation, which was not suitable for any additional floors or load (BBC News, 2014).

Three government agencies, the Nigerian Building and Road Research Institute (NBRRI), the Council for the Regulation of Engineering in Nigeria (COREN) and the Building Collapse Prevention Guild (BCPG), examined the site of the SCOAN building after the collapse. Their reports reveal that the following problems are factors that contributed to the collapse:

- Inadequate beams of 750mm by 225mm were used in the construction of the building instead of 900mm by 300mm.
- Inadequate reinforced columns of 10 x Y20 bars were used instead of 12 x Y25 bars or 20 x Y20mm bars.
- They used 2m x 2m x 0.9m foundations for the building which led to inadequate bearing pressure for the central column
- The designers failed to introduce rigid zones for bracing the structure and did not design the frames as an unbraced structure.
- They also failed to provide movement joints that could have absorbed any movement due to creep, contraction, expansion and differential settlement, among other factors.
- The 12 main beams of the structure were undersized and under-reinforced (both in tension and shear) and thus eight out of the 12 failed. The tension bars were poorly anchored to the column supports and 8 x Y20 was used instead of 14 x Y20.
- The ground floor columns were slender and readily gave in to buckling (BBC News 2014).

Based on the report from these agencies, poor buildings and substandard materials are the major factors that contribute to collapse of buildings in Nigeria. And this has continued to raise concern for building regulators always to check and monitor construction works in the country with the aim to improve building quality and standards. Government and its emergency service providers are urged to swing into action and improve planning and preparedness in order to ensure effective response during building collapses. By analysing the case of the SCOAN

as a major building collapse disaster in Nigeria, it aims to bring to the fore an understanding of the readiness of the EMS in Nigeria to respond to such disasters and generally address issues relating to building collapses in the country. It will also help to harmonise knowledge, improve actions and develop measures to strengthen capacity of those involved.

At first, members and representatives of the church prevented emergency workers who came from the National Emergency Management Agency (NEMA) from gaining access to the site and taking part in rescue operations (BBC News, 2014). There is non-existent or lack of coordination, cooperation and integration between government, emergency service providers and the general public, as exhibited by church members. This has continued to serve as a setback to effective disaster management in the country, an issue that needs to be addressed holistically in order to improve response to future disasters with minimal impacts. When staff of the Lagos State Emergency Management Agency arrived, church people were hostile and did not allow them to gain access to the site within the first three days of the incident to carry out their rescue mission (BBC News 2014; BNO News 2014). Their action adds to increasing the impacts of the disaster and numbers of lives that were eventually lost due to slow response. Trust, cooperation, coordination and integration between church members and NEMA staff should have helped to hastened up response instead.

The people do not trust and have confidence in government actions due to government's inability to take responsibility and provide reliable and effective services to citizens, especially in terms of disaster and emergency management. They tend to believe that government deeds are always politicised and perceive every action as political propaganda designed to gain political recognition. For government to recover its reputation, so that emergency management and rescue teams can be allowed and accepted to perform their duties freely, government needs to strengthen efforts and rebuild trust and confidence in the eyes of the citizenry. Nevertheless, even NEMA officials and members of other agencies who took part in the operation likewise failed to make information available in good time and were not open minded, which led to poor management of the whole situation. Withholding vital information, especially about the unfortunate foreigners that were involved in the tragedy, showed a high level of inefficiency and almost pointed to conspiracy in carrying out emergency management functions. Such information would have helped in identifying necessary support that was needed for rapid

response. This indicates that the way information is shared during disasters is relevant to the way response is coordinated and implemented. The singular act by NEMA officials of withholding information to themselves reiterates the lack of cooperation and integration and threatens effective response to, and management of disasters in Nigeria. Therefore, action is required by government and its emergency service providers to develop measures that would allow easy sharing of relevant information by all responsible stakeholders during disasters in order to ensure that response is rapidly and efficiently organised.

Also, an audio recording that allegedly showed the general overseer of the church, T. B. Joshua offering bribes to journalists to influence their reports was release by journalist Nicholas Ibekwe (Ibekwe 2014). Such evidence highlighted how bribery and corruption have had significant effects in emergencies, especially in developing countries like Nigeria, and generates concerns that needs to be addressed. Despite the gravity of the event and the number of people affected, the Lagos state governor engaged in a private meeting with T. B. Joshua, and after the meeting, they refused to speak to reporters and left through the back door, which also affected the quality of information that was gathered about the incident as well as the way the response was implemented. Nevertheless, rescuers employed sniffer dogs in their search for survivors and dead bodies, indicating that they made efforts to create a successful response, and search and rescue operations (Gabriel et al. 2014). However, some journalists who were covering the event were further molested, while, as noted, lack of initial cooperation by church representatives slowed down rescue efforts, thus increasing impacts from this event. In spite of all these happenings, it is not clearly indicated whether government and its agencies are prepared and ready to change the narrative in ensuring that disasters are responded to in a way that meets the need created by any given events. Also, the question of whether the responsible authorities are willing to improve building standard by means of ensuring the use of quality building materials and making sure that construction activities are duly monitored and supervised is yet to be answered. And most importantly, it is not well defined whether they are open to accepting new recommendations to improve building standards and reduce conditional collapse of buildings in the country as well as to improve emergency preparedness towards rapid response?

2.3. Nigeria's Immigration Service (NIS) recruitment 2014

On 15 March 2014, a serious stampede took place during a Nigeria Immigration Service (NIS) recruitment drive, in which no fewer than 18 people died and many more were injured (Gbagolo and Eze, 2014; Ogidi, 2014). The test mobilised a large number of applicants who were all gathered in different restricted venues mainly stadia and school premises. The applicants had paid the sum of N1000 ($2.60) each as an application fee for the test (Gbagolo and Eze, 2014), yet the recruitment process was poorly organised without sufficient space compared to the number of candidates who turned out for the recruitment exercise, which was far greater than expected. The conduct of the test was not properly accomplished, and it resulted in a tragedy of stampede, an unlucky incident that triggered activation of emergency response and disaster management services. Actions were needed from relevant authorities, emergency service providers and general public to reduce its impacts. The capacity of the venue used for the test was not considered in relation to the numbers of people who were qualified to sit for the test, and measures were not put in place to mitigate or respond rapidly to any form of disaster that might have arisen afterwards. Therefore, the impact of the stampede was extraordinary (Nnenna, 2014; Ogidi, 2014).

In Abuja International Stadium alone, seven people died and more than a dozen were injured as the candidates struggled to gain access to the venue of the test (Nnenna, 2014). Only one entrance was opened to the 60,000-capacity stadium and as the applicants struggled through it pushing each other to gain access. This ended up in a rush that resulted in a stampede which led to loss of life and injuries. As a result of inept preparation by relevant authorities, they failed to consider available space before going into the test and resources were not coordinated and utilised appropriately to ensure safety and security of applicants. According to Helbing and Mukerji, (2012), lack of space during mass gathering events is a major problem especially when large crowds are involved. The need to properly consider the capacity of any venue involving mass gathering activities should never be neglected when planning for crowd events, as people tend to struggle for limited space during these times, thereby increasing the tendency for a stampede to occur. The way people respond to instructions or actions perpetrated by others or even false alarms during mass gathering events triggers uncertain reactions despite the level of awareness. This implies that the likelihood of a stampede can become increasingly high when mass gathering events are not

properly organised and well managed in relation to the size of the venue. For example, three people died out of the 11,000 applicants who converged at the Women's Day Secondary School, Minna, the headquarters of Niger State for the NIS enlistment test due to lacking venue capacity in accommodating the numbers of applicants who turn out to be far more than expected. A situation that would have been controlled if all necessary factors were adequately considered before organising the test and mitigation measures well adopted. Immigration officers failed to anticipate the large crowd that lined up for two kilometres from the venue of the examination and were not fully prepared for any potential confrontations.

Unemployment seemed to be a major problem at the time of the recruitment drive (Innocent, 2014; Gbagolo and Eze, 2014) which added to the increasing number of applicants who applied for a job. Although Nigeria is identified as the top oil-producing nation in Africa, and is previously predicted to soon replace South Africa as the continent's biggest economy, the country has failed to provide adequate employment opportunities for its citizens. The perceived growth in the Nigerian economy is largely symbolic as the country does little to address major problems regarding employment and the welfare of citizens. The future of Nigeria only appears bright on paper. The International Monetary Fund predicted a 7.4% growth in Nigeria's Gross Domestic Product (GDP) in 2014, up from an estimated 6.2 percent in the previous year. But the vigorous growth figure only mirrors the country's unhealthy dependence on the oil sector, which provides insignificant levels of employment in a country with the largest population in Africa. Due to high levels of unemployment in Nigeria, people tend to react massively and extensively to job advertisements (Gbagolo and Eze, 2014), whether these involve government or private engagements. That is why thousands of panicking job-seekers gathered in their large numbers for the NIS recruitment test that ended up in the tragedy of stampede that was experienced across the country. The idea behind having only one entrance opened for applicants to go through was intended to provide security and a better control of the test situation as well as ensure effective conduct of the entire recruitment process, but it ended in a mishap that required emergency action even though arrangements were not made and measures were not in place to respond promptly.

The relevant authorities failed to plan accordingly for safety and security of applicants by providing adequate space as clear information about how many people that were to take part in the test was not confirmed. Such information would

have helped NIS personnel to plan well, and alert all relevant emergency response institutions beforehand to prepare for any unforeseen circumstances. Sadly, in spite of the disaster that was initiated as a result of negligence due to poor planning, the Minister for the Interior, Patrick Abba Moro, was reported in an interview to have impugned applicants' impatience and failure to follow instructions as the primary cause of the tragedy in an attempt to shift blame from negligence by NIS personnel who failed to take necessary measures to prevent a stampede of applicants (Abdulrahman, 2014). Adopting sufficient measures to reduce, control and manage crowd before conducting the test would have helped to avert such problems. In some locations of the test such as Women's Day Secondary School, Minna, in Niger state, security agencies fired tear-gas at anxious applicants and this caused a stampede as applicants tried to run away for their own safety (Gbagolo and Eze, 2014). This shows the inability of the Nigerian agencies to deal with emergency situations and their failure to organise and manage events safely as well as prioritising human safety and security during these times. The applicants expressed their concern over the poor conduct of the test across the nation as the entire recruitment process was been badly managed. Roughly 35,000 applicants in the Port Harcourt Stadium venue of the examination arrived at about 7 a.m., but due to inadequate preparation and logistic issues, the examination could not be held as at the expected time (Gbagolo and Eze, 2014; Keith, 2016). The high numbers of applicants who turned up for the test resulted in a fight for space, in an event that lacked security and safety measures. Many applicants collapsed due to overtiredness as they waited for a long time for the examination to begin due to problems of logistics and accreditation, yet, measures were not fully avilable to control the situation.

Victims of the stampede were being treated at public hospitals across the country even though hospital management was not given any prior notification about the event. Due to lack of space in hospitals to deal with the emerging disaster, as the number of victims increased they were forced to turn away some of the victims. Sadly, the hospital management did not receive any early warning about the scale of the event and they were not fully prepared for response. For example, victims at Women's Day Secondary School, Minna, were moved to Minna General Hospital for medical attention in spite of the limited space that was available to accommodate them.

Applicants were prevented by police officers from entering the premises of NIS in Enugu state as part of response to the unrest created by the recruitment process (Keith, 2016; Varin and Onuoha, 2020). The applicants had gathered at the Nnamdi Azikiwe Stadium, Enugu, by 7 a.m. for the test but became worried when the exams had not commenced by 2 p.m. and embarked on a protest march to the immigration office when police officers prevented them from gaining access to the premises. In Calabar, the Cross-River State capital, aggressive security operatives barred non-applicants from gaining entrance into the examination place in order to prevent overcrowding while officials of the Oyo State Ambulance Service took almost 20 minutes to arrive at the scene of stampede in Ibadan to rescue a woman who collapsed during the process. Slow response by emergency response personnel during times like this contribute to increasing the impacts from such events. While applicants who fainted in Ibadan were revived by emergency medical teams provided for the conduct of the recruitment, impacts would have been minimal if they had responded swiftly. In most locations, emergency rescue teams were not readily available and, even where they were available, their efficiency remain questionable as response times seemed to be slow.

The Coalition Against Corrupt Leaders (CACOL) called for Abba Moro, the then Minister of the Interior, to be prosecuted and he was summoned before the Senate Committee on Interior for a public hearing on the ground of negligence (Abdulrahman, 2014; Nnenna, 2014). He finally accepted responsibility for the incident and expressed his grief over the tragedy. President Goodluck Jonathan ordered that all the victims that were affected by the mishap should automatically be given the job and directed that the application fee paid by all applicants should be refunded (Innocent, 2014). He again ordered that the entire recruitment should be cancelled and a new date scheduled for the examination to be conducted. But it is argued that employing sufficient strategies from the beginning would have saved the lives of those citizens who had died, avoided waste of resources, provided a smooth environment for conducting the examination and generally increased the NIS's reputation as well as preventing the need for emergency action.

2.4. Lagos National Stadium blackout in 2000

On 13 February 2000, a blackout delayed play for more than 15 minutes during the African Cup of Nations finals game between Cameron and Nigeria at Lagos National Stadium, Lagos state. People became worried and disappointed

as the incident brought shame to the entire nation as people who gathered to watch the match, local indigenes, foreigners and those streaming live from their homes, experienced complete darkness and a halt to the exciting game (Ayodeji, 2004). Urgent action was required to restore light in order to continue the tournament as supporters became concerned and outraged. The incident was considered as very serious by Lagosians and fans who came from far and near to watch the match, not to mention the embarrassment it caused for the entire nation. Aside from the darkness that covered the stadium, fans jumped into the pitch during match time to protest at the scandalous nature of the blackout and called for immediate action to address the issue of power failures in the country especially during key events. The experience drew attention to the urgent need to be able to respond swiftly and restore electricity by relevant institutions and to deal with emerging issues from power failures. The importance of electricity supply cannot be underrated in any society as it is a key source for industrial, commercial and domestic activities in the modern world (Ayodeji, 2004). In addition to bad reputation, even those at home were deprived of and distracted from watching the game as they were not able to then continue to stream the game because power of the whole area was cut off by the Power Holding Company of Nigeria (PHCN) due to a grid failure. The concern about blackouts in Nigeria until date has not been addressed properly (Oluwole, et al., 2012.). The 13 February 2000 blackout that put Lagos stadium and entire area into prolonged darkness is one scenario that creates urgent need and raises concern for emergency response. It became essential to provide a backup generator to complete the tournament, as electricity power supply in the country remains intermittent and unreliable. This experience reiterates the importance of improving power generation in Nigeria, and a need to maintain a steady supply of electricity so as to curb the problems of unpredicted power failures especially during critical moments.

Electricity is about the greatest invention of man and it contributes tremendously to a nation's development. Despite its contribution in the society, the Nigerian power sector still operates well below its required capacity and power failure remains a frequent occurrence throughout the country (Oluwole, et al*.,* 2012). The blackout of 13 February 2000 in Lagos stadium that was triggered by a failure of the national power grid is only one among other similar occurrences that have befallen the country in recent years. The cause of power failures in Nigeria lies mostly in the discrepancy between demand for electricity and its actual

generation (Oluwole, et al., 2012; Maliki, et al., 2011), which is due to insufficient voltage generation resulting from low water levels, unavailability of gas to power turbines and inadequate plant maintenance that pervades every PHCN installation across the country (Oluwole, et al., 2012; Oyedepo, et al., 2018). At present, electricity generation in Nigeria fluctuates between 6882.8 MW and 7102 MW (Oyedepo, et al., 2018) and that is not enough to serve the country's electricity needs, thereby leading to frequent failure of power grids that causes blackouts, as demand is more than generation capacity (Oyedepo, et al., 2018). One of the major problems facing the present situation is the distribution of the final sub-circuit of Nigeria's electricity generation from 11,000/400-volt system that has proved challenging in recent times (Oluwole, et al., 2012). The result is frequent power failures. Hence, attention is needed to improve power generation and ensure a steady supply of electricity in Nigeria for the country to move into the group of developed nations with round-the-clock supply of electricity as interruption of power supply results in damage to the nation's reputation and to absence of private investment.

According to officials of one of the electricity distribution companies in Nigeria, the overwhelmed national grid that triggered this blackout had first collapsed on the Friday two days before the match but sufficient measures were not employed to fix the issue (Omoleke, 2011). However, implementing possible measures after the initial collapse to improve national grid operations should have evaded another collapse. Though the incident was overwhelming, officials of the Lagos National Stadium quickly arranged for a generator as an alternative to supply power until the end of the game. But such alternative power supply requires additional costs to be maintained, which many Nigerians cannot afford. People often express dissatisfaction over incessant power failures in the country (Omoleke, 2011) and PHCN lacks accountability. There is a need for government to improve accountability as well as properly monitor and supervise the activities of power distribution companies in order to ensure the provision of efficient and reliable services. Electricity supply should not be ignored in any society, as it is essential in various sectors and forms part of healthy living conditions (Ayodeji, 2004; Maliki, et al., 2011). The excruciating situation prompted the then President Olusegun Obasanjo into sacking the senior management of PHCN, and the presidency immediately took over management of the company even though it would not completely stop persistent power failures in the country. Until date,

power failure in Nigeria has constantly remained a big problem that needs to be addressed promptly. Investors still find it difficult to invest in Nigeria, businesses are shut down due to power failures and the cost for running alternative means of power generation, health, communication and education sectors has also been high (Maliki, et al., 2011; Omoleke, 2011) which contributes to high level of unemployment that leads to increasing rates of crime and social violence.

2.5. The significance of the three case histories

Emergency management perspectives recognise any incident that requires additional support to overcome its effects as a disaster, especially when it is sudden (Quarantelli, 1997; Alexander, 2005; Farazmand, 2007). Because building collapses, stampedes and blackouts are common events that suddenly occur especially in developing countries and they require urgent action to curtail or minimise their impacts (Helbing and Mukerji, 2012; Greenberg, 2014; Coppola, and Maloney, 2017), they cannot be completely roll out when considering planning for emergency management especially from the viewpoint of man-made disasters. Lately, such disasters have become common in Nigeria and their impacts have been very risky, extending from destruction of properties, damaged reputation to displacement of families and deaths (Ayodeji, 2004; Oyeniyi, 2007; Helbing and Mukerji, 2012;). In addition, this reminds us that there are societal and economic consequences associated with these kinds of events, while affected populations also need to be able to manage the situation and balance their daily lives (Quarantelli, Lagadec, and Boin, 2007; Kennedy, and Ressler, 2009; Nogami, and Yoshida, 2014). For example, the problem of power failures in Nigeria causes embarrassment and brings shame during an international football tournament that draws attention to emergency reactions. Generally, it would cause a harsh impact on the economy, cutting short productivity of businesses and government agencies alike whilst forcing entrepreneurs to spend more money providing backup or alternative power supply systems, instead of investing in staff and other equipment. Also, incessant blackouts may lead to operational failures and trigger damages in vital sectors especially health, education and communication among other areas (Maliki, et al., 2011; Omoleke, 2011). The problems created by power failures therefore, require urgent action to control such situations, as its impacts result in social violence and major disruption of activities in society (Biesen, and Chinen, 2005; Trentmann, and Normal, 2020). Similarly, the effects of building collapses have led to displacement of families and damage to properties while some people

face untimely death in Nigeria due to loss of their properties (Adedeji, 2013), if not directly involved or killed by the collapsed itself. Stampedes, on the other hand, may result in deaths and injuries that may require a huge input of resources to manage. Not only do deaths and injuries result from these events, but they also generate the need for emergency response that requires preparation and planning.

Our exploration of the three case histories in Nigeria aims to examine in greater detail the aspects of emergency management relating to the perspective of man-made disasters, and highlight the context in which building collapses, stampedes and blackouts may occur as well as an understanding of the way response is organised and emergency management activities are implemented around them. Because impacts of building collapses, stampedes and blackouts are about incidents, causes and responses, it is imperative that we examine themes of vulnerability, causes, response capacity and general perception of people about these events and their impacts. An appreciation of these issues would facilitate an understanding of the impacts of man-made disasters and what it means for emergency planning, response and management.

An understanding of the personal, societal and economic context of the impacts of these events is very important when we recognise that building collapse, stampedes and blackouts are among events that trigger emergency response and require sufficient planning to respond in a way that minimises their impacts (Quarantelli et al., 2007). Usually, the ability and capacity of people affected by an emergency or disaster and those involved in response and management determines the degree of impact of any given disaster and how the people can cope with it (Cannon, 1994; Kapucu, and Garayev, 2001). However, it is generally believed that developing adequate knowledge about the causes of any disaster, ability of disaster affected population to respond to it, and government's level of intervention in such occasions remains so fundamental to prepare for reducing their impacts (Perry and Lindell 2003; Alexander, 2015). But the degree of impacts created by these events depends on the nature of the relationship between affected populations, government and other emergency response agencies (Wachinger et al., 2013). Although building collapses, stampedes and electrical power failures are recognised to have impact upon society and thus call for concern to strengthen capacity of those involved in managing and responding to such disasters, responsible authorities have neglected these events especially in

developing countries not excluding Nigeria. Their impacts are thus becoming alarming, thereby generating the need to prepare better for them.

In order to provide effective response, it is important to have an effective communication system in place to enable efficient sharing of information (Sagun et al., 2009). This will enable first responders to share vital information with victims in order to identify the kind of support that may be needed, provide direction to allow for quick evacuation and support them with first aid services. Also, responding to any kind of these three events requires a sufficient level of resources, characterised by adequate planning, and sharing of available limited resources among different entities to improve coordination and response (Comfort, and Kapucu, 2006). Hence, the outcome of this investigation will serve as a wake-up call for emergency management organisations to identify their challenges and improve preparedness for a better response when such disasters occur again. It will also develop enhanced tools for assessing the capacity of any EMS.

2.6. Conclusion

The problem of emergency management in Nigeria is epitomised by government actions and the way it deals with disasters, and people's capacity to manage and cope with, and their perception, of disasters. However, it merely mirrors a larger question of the performance of disaster management institutions and the kinds of disasters that often befall the nation. Nigeria has not been able to put in place ample measures to reform its emergency management organisations in order to curtail or reduce disaster impacts, especially those related to induced by man compare to other countries of the world that have taken considerable measures to improve their emergency management approach. Therefore, building collapses, stampedes and blackouts have over recent years continued to remain a setback to emergency response and disaster management in the country. But it is important to understand their causes and impacts in order to establish a disaster management approach that enhances rapid response. Examining the three kinds of disasters by testing for the above case histories, and the level of response provided by responsible institutions, offers a detailed understanding of real-life conditions to enable a comparison with perceptions and opinions of people. It also enables identification of strength and weaknesses of the EMS aiming at developing measures for improvement. The outcome of this analysis will serve as a wake-up call for government to develop operational plan targeted towards responding rapidly to disasters and reducing their impacts upon society. Considering the three

case histories in this study provides an opportunity for disaster managers and emergency planners to better understand, recognise and identify the actual causes of building collapses, stampedes and blackouts; their real impacts; and the response efforts that are required to minimise such impacts. Hence, this chapter provides knowledge of some actual disaster events that have been recorded in Nigeria, and examined response to technological and sudden impacts events, while detailed explanation of actual measures that are in place and the capacity of Nigeria's EMS to deal with disasters is presented in the following chapter.

Chapter 3: Organisation of emergency management in Nigeria

3.1. Introduction

Nigeria has witnessed a variety of disasters, such as building collapses, oil pipeline explosions, outbreaks of fire, human stampedes, aircraft crashes, floods, destruction of forests, power failures and terrorism (Sadiq, 2012; Okoli, 2014; Adio-Moses and Taiwo, 2019), including attacks on herdsmen and farmers. Organised action is required by relevant authorities to control such tragedies and ensure the safety and security of the people. During these events, local, state, and federal governments have committed large amounts of resources, time, and money to lessen their consequences but how such resources are distributed and utilised is as yet not well defined (Kusumasari et al., 2010; Mashi et al., 2019). For instance, the stampede that took place during the Nigeria Immigration Service (NIS) recruitment drive on 15 March 2014 shocked the entire nation as not fewer than 18 people died with many injured across the country (Innocent, 2014). The event triggered urgent need for immediate action by relevant authorities to curtail its impacts, and emergency services were activated, while the presidency was also compelled to issue a presidential directive as part of the intervention process to the mishap. Over time, according to Nelles (2003), these kinds of disasters have generated risks and threatened the safety of life. And they have increased the level of vulnerability among Nigerian citizens, especially those that live in the city and in the coastal and riverine parts of the country. The uncertainty of these events, however, depends on how government respond when they occur and how resources are being shared, managed and utilised among various stakeholders that are involved (Kapucu, and Garayev, 2011). As such, understanding the pattern and consequences of these events or any disaster, and the needs that may arise with them as well as how response is organised, including how resources are coordinated and utilised by different actors during these times, will help in harmonising and integrating efforts that will further improve response especially in a multi-agency disaster management setting (Nsirimovu, 2005; Kusumasari et al., 2010; Mashi et al., 2019).

Disasters are likely to become more common in Nigeria due to the challenge of unemployment that has triggered increased urbanisation as a result of the quest for white-collar jobs and negligence on the part of the government in developing measures to mitigate and prevent disaster occurrences (Innocent, 2014). Their impacts can be severe in terms of human casualties, direct damage (i.e. the need

for repair and reconstruction of structures) and indirect effects (such as business interruption and loss of income) (Benson, 1997; Rose, 2009; Bubeck et al., 2017). However, this can be minimised by adequately utilising available resources through coordination and integration between different entities that are involved in response and by developing measures that promote effective response achievable through effective communication process to enhance overall implementation of disaster management activities (Leidner et al., 2009; Shittu et al., 2018). But according to Taiwo, (2015), the severe consequences of disasters in Nigeria are partly due to poor planning, lack of preparedness, poor coordination of emergency management activities and poor implementation of disaster management policies. This implies that, the country requires serious improvements in its disaster management processes to be able to prepare for, respond to, and reduce disaster impacts. Nevertheless, records have shown that, since the 1970s, successive governments have struggled to manage disasters in Nigeria and disaster frequencies and impacts have been increasing (Adekola and Lamond, 2018; Okon, 2018). However, the establishment of the National Emergency Management Agency (NEMA) in 1999 set up a platform which shows that Nigeria is gradually moving away from response and relief to a more proactive mitigation and preparedness approach in its disaster management process even though it appears more effort is still needed for the EMS to be fully grounded in this perspective. Notwithstanding, in order for the Nigerian government to achieve this massive task, set before it due to the increasing toll of disasters, through NEMA the federal government has developed different strategies and programmes, among which is the National Disaster Management Framework (NDMF), which is a comprehensive disaster management document that is meant to serve as a foundation upon which all plans, policies, programmes and procedures for disaster management in the country can be created, developed and made sustainable (NEMA, 2010; Mashi et al., 2019).

According to Midorikawa (2005), Lobo (2010), Mahul (2010) and Phillips et al. (2010), emergency planning, pre-financing disaster risk management and rapid response in emergency can drastically reduce disaster impacts and facilitate early recovery. And so, to identify existing gaps and weaknesses, and to improve rapid response and be better prepared for emergencies in Nigeria, it is important need to take into account the current situation by evaluating the capacity and capability of government and its agencies as well as other organisations and individuals that

take part in emergency response services. Doing so would enable identification of areas of improvement and promote development of measures that would strengthen the EMS and build the capacity of those involved. It is therefore important to develop adequate awareness of the situation and understand the level of resources available for emergency management as well as the capacity of those involved (Harrald, and Jefferson, 2007; Seppänen, et al. 2013). Such resources may include facilities, staffing and training, as well as activities and programmes designed to improve staff skills and knowledge of people in building their capacity around current issues about disaster management and emergency response (Coles and Buckle, 2004; Burke et al., 2010; Kapucu, Arslan and Demiroz, 2010). It further includes identifying communication capacities and the efficiency of the various channels of communication adopted in sharing disaster-related information (Leidner et al., 2009; Shittu et al., 2018), especially in a complex system like Nigeria where multiple agencies and different levels of government (federal, state and local governments) are involved. Undoubtedly, effective disaster management requires adequate allocation of resources to meet the needs created by a disaster (Kusumasari et al., 2010; Mashi et al., 2019), and this can be achieved through the coordination, cooperation and integration of efforts of different stakeholders involved (Perry and Lindell 2003; Seppänen et al. 2013). This demonstrate the importance of having adequate knowledge of the operations of an emergency operation centre (EOC) since this would promote information sharing among various entities and enable coordination and integration among them. Hence, this chapter aims to give an overview of disaster management in Nigeria, taking in to account the history and current situation, and the emergency response institutions involve in managing and responding to emergencies in the country and the relationships between them. It also focuses on the government and law-making structure for disaster management and on the institutional coordination of emergency management, before further considering the responsibilities of the various organisations involved in disaster management in the country. The chapter further outlines the channels of communication used in disseminating disaster information and the information-sharing pattern among the various emergency response entities in the country. It closes by outlining the factors affecting emergency management and disaster response in Nigeria.

So, Section 3.2 gives an overview of measures put in place in Nigeria for managing and responding to emergencies with particular attention to the history

and current situation. Section 3.3 presents a brief overview of the various organisations involved in disaster management in the country, while Section 3.4 considers existing relationships between them. Section 3.5 provides an account of the government and law-making structure for disaster management in the country, Section 3.6 outline the institutional coordination of emergency management in Nigeria, Section 3.7 reflects on the responsibilities of the different levels of government and organisations involved in disaster management in the country, and Section 3.8 gives an account of the channels of communication use in communicating disaster information in Nigeria. Finally, Section 3.9 focus on factors affecting implementation of emergency management activities in the country.

3.2. Emergency management in Nigeria: History and current situation

Organised disaster management in Nigeria dates back to 1906 when the responsibility to put out fires, save lives, protect properties, and respond to disasters was the sole mandate of the Fire Brigade (Okoli 2014; Okon 2018). In the 1960s and 1970s, under the direction of the offices of the Head of State and State Governors, disaster management functions were somewhat ad hoc (NDMF 2010; Sadiq, 2012) - performed base on directives from the Head of State and State Governors respectively. Between 1972 and 1973, there was a devastating drought that befell the country that remarkably affected lives, properties and the economy (Nweke, 2004; Sadiq, 2012). More effort was required to curb the difficulties imposed by this event. In 1976, in the wake of the devastating drought, the federal government created NERA, the National Emergency Relief Agency and charge it with the responsibility to addressed the problem (Nweke, 2004; Sadiq, 2012). Over time, NERA's scope became limited as the numbers of both natural and human-induce disasters occurring in the country increased. In 1990, an inter-ministerial body was then set up in line with the United Nations International Decade for Natural Disaster Reduction, with the mandate to develop ways of reducing natural disasters risks and address the limited scope of NERA as an emergency responder (Sadiq, 2012; Adefisoye, 2015). Decree no. 119 was passed by the federal government in 1993, which expanded the scope of NERA to make it an independent body under the Office of the President, and increased its function from risk reduction to include all kinds of natural disasters (Sadiq, 2012). In March 1999, according to Act no. 12 as amended by Act no. 50 of the 1999 constitution of the Federal Republic of Nigeria, the federal government created the NEMA and

charged it with the responsibility of coordinating and managing all types of disasters (Fagbemi 2011; Sadiq, 2012; Adefisoye, 2015).

Although organised emergency response in Nigeria dates back to the early 1900s, a comprehensive approach to disaster management only began in 1999 when NEMA was established (Sadiq, 2012; Adefisoye, 2015). The Nigerian EMS since then has undergone remarkable changes, including better organisational structure, more funding, curriculum development for emergency management education programmes, increased training for emergency personnel, and more collaboration with other countries and development partners on emergency management, among other issues (NDMF 2010).

In 2010, NEMA developed the NDMF, which serves as the existing framework for disaster management in Nigeria and offers a holistic approach to managing disasters, with participation from several stakeholders, including the federal, state and local governments, as well as civil society organisations (CSOs) and private sector organisations (Sadiq, 2012; Mashi et al., 2019), with each entity being assigned specific role (see Section 3.7). The framework was established in line with the mandate of NEMA to coordinate emergency management activities in Nigeria and it provides a regulatory mechanism that ensures efficient and effective disaster management by government officials, community leaders, private organisations, CSOs, and practitioners (Sadiq, 2012). It further defines the roles and responsibilities of disaster management stakeholders in the country (Sadiq, 2012; Adefisoye, 2015; Mashi et al., 2019). However, despite the achievements so far, disaster management in Nigeria still faces numerous challenges, including poor coordination, poverty, insufficient funding and inadequate training, which indicate that the system still has a long way to go in its development in reducing disaster impacts even though different organisations are contributing towards emergency response in the country with the NDMF as a guide to improve emergency management.

3.3. Emergency response organisations in Nigeria

NEMA is designated as the leading agency that coordinates emergency management in Nigeria but there are other similar organisations that are also involved in carrying out emergency management functions in the country which are established by Law. The Act that established NEMA mandated the agency to “formulate policy on all activities related to disaster management in the country and

co-ordinate plans and programmes for efficient and effective response during disasters especially at national level" (NEMA Act 1999: No 12; Adefisoye, 2015; Nweke et al., 2015; Mashi et al., 2019; Nnadi et al., 2020). Nevertheless, the rising severity of disasters has necessitated the participation of many other agencies with various experts in emergency management and disaster response in the country. Such agencies that perform similar functions in terms of disaster management existing in Nigeria are established under certain specific laws that grant them powers to be engage in disaster management and carry out emergency response functions (CFRN1999; Nweke et al., 2015; Mbaeze and Eneasato, 2019). For instance, the Acts that established many of these agencies also confer with the agencies respected powers to manage disasters of various categories within their capacity and jurisdiction although NEMA is meant to oversee all activities of these other agencies in terms of disaster management operations (NEMA Act 1999; Mashi et al., 2019; Nnadi et al., 2020). Some examples of such Acts and regulations that grant other agencies power to perform disaster management roles in the country, and the agencies established under such Acts with their respective disaster management functions are indicated in table 3.1. below.

Table 3. 1. Some Acts and agencies established by such Acts that perform disaster management roles in Nigeria

Acts	Agency	Functions
Police Act (1979: No. 23) - amended 2020	Nigeria Police Force	To prevent and detect crime, apprehend offenders, preserve law and order as well as protect life and property in addition to due enforcement of all laws and regulations with which they are directly charged with in the country Perform such military duties within or outside the country as may be required of them by, or under the authority of the Act or any other Act. Collaborate and cooperate with other similar agencies to take necessary actions and provide the required assistance or support to persons in distress, including victims of any form of disaster such as road accidents, fire disasters, earthquakes and floods among others.
NEMA Act (1999: No. 12)	National Emergency Management Agency	Coordinate and oversee emergency management functions in the country Formulate policy on all activities relating to disaster management in Nigeria and coordinate the plans and programmes for efficient and effective response to disasters especially at the national level
Nigeria Security and Civil Defence Corps Act (2003)	Nigeria Security and Civil Defence Corps	Protecting and rescuing civil population during emergency, and assisting in crowd and traffic control Assist in providing emergency medical services including first aids and distribution of emergency supplies to victims during emergency Carrying out rescue operations and control blatant occasions Maintain twenty-four hours' surveillance over infrastructure, sites, and projects of federal, state and local government Investigate and handover to the Nigerian police for further investigation any person who is involved in riot, civil disorder, revolt or religious unrest among other social crimes. Provide necessary warning to the civilian population in the times of danger Evacuate civilian population from danger Provide assistance to restore and maintain order in distressed areas in any form of emergency within the country

Nigerian Red Cross Society Act (2004)	The Nigerian Red Cross Society	In time of war, the society furnishes volunteer aid to the sick and wounded both of armies and among non-belligerents, and to prisoners of war and civilian sufferers from the effects of war, in accordance with the spirit and conditions of the conventions set out in the Schedule to this Act Perform all the duties devolved upon a national society by each nation which has acceded to the said conventions In time of peace or war, carry on and assist in work for the improvement of health, the prevention of disease and mitigation of suffering
Fire Service Act (2004)	Federal Fire Service	Extinguishing, controlling and preventing of fire Safe and protect life and property Perform such other humanitarian and other works as may be required of them under the authority of the Minister and the Act that it is established upon Promote inter-agency collaboration in the distribution and maintenance of fire protection equipment in order to minimize fire incidences in the country
Nigerian Civil Aviation Authority Act (2006)	The Nigerian Civil Aviation Authority	To ensure the efficiency and regularity of air navigation and the safety of aircraft, persons and property carried in aircraft and for preventing aircraft from endangering persons and property Collate and maintain data bank of aviation and aircraft accidents, incidents, and occurrences and promote accident prevention programmes within the aviation industry
National Oil Spill detection and Response Agency Act (2006: No. 15)	National Oil Spill Detection and Response Agency	Cary-out surveillance and ensure compliance with all existing environmental legislations in the petroleum sector including those related to prevention, detection and general management of oil spills, oily waste and gas flare in the country. Receive reports of oil spill and coordinate oil spill response activities throughout the country Ensure compliance with the provision of international agreement, protocols, conventions and treaties relating to oil and gas and oil spill response

		management Coordinate the implementation of plan for the removal of hazardous substances
Nigerian Airspace Management Agency Act	Nigerian airspace management agency	Secure the safety, efficiency and regularity of air navigation Provide air traffic services in Nigeria, including air traffic control, visual and non-visual aids, aeronautical telecommunication services and electricity supplies relating thereto, to enable public transport, private, business and military aircraft fly, as far as practicable and as safely as possible Procure, install and maintain adequate communication, navigation and surveillance and air traffic management facilities at all airports in Nigeria. Take necessary steps to prevent, as far as possible, penetration of control airspace by any aircraft, civil or military without co-ordination with the air traffic control unit concerned Co-ordinate the implementation of search and rescue services in the periods of emergency
Federal Road Safety Commission Act (2007: No. 22)	Federal Road Safety Commission	Prevent, respond to, and minimise accidents and clear obstructions on any part of the highway in the country Giving prompt attention and care to victims of accident and providing roadside and mobile clinics for the treatment of such victims Collaborate and cooperate with bodies of agencies or groups engaged in the road safety activities or in preventing and managing road accidents in the country Conduct research into the causes of motor accidents and methods of preventing them, and applying the results of such researches in the country.

As indicated in the table above, some primary and secondary agencies established by these Acts who are stakeholders in disaster management in Nigeria include the Federal Road Safety Corps (FRSC), Nigerian Army, Nigerian Navy, Nigerian Air force, Federal/State Ministry of Health (F/SMOH), Nigerian Armed Forces, Nigeria Police Force (NPF), Federal Road Maintenance Agency (FERMA), the Nigeria Fire Service (NFS), the National Security and Civil Defence Corps (NSCDC), the Red Cross, United Nations High Commission for Refugees (UNHCR) and National Hospital (NH) as well as some private individuals and groups (Moriam et al., 2015; Anthony et al., 2019; Mbaeze and Eneasato, 2019; Mashi et al., 2019; Nnadi et al., 2020). NEMA collaborates with these other agencies when the need to respond to any emergency or disaster arise in the country to ensure effective response during disasters. The standard operating procedure mandated NEMA to take responsibility in coordinating and alerting all other agencies in any emergency or disaster situation (Anthony et al., 2019; Mbaeze and Eneasato, 2019; Mashi et al., 2019; Nnadi et al., 2020), mainly because the 112-call centre is not yet fully operational across all the agencies throughout the nation to link up automatically in an emergency. However, the extent to which the various activities of these stakeholders are harmonised, coordinated and synchronised during national emergencies and disasters has remained a major concern in Nigeria. NEMA need to monitor the state of preparedness of all agencies that may contribute to disaster management within the country. In terms of budget and funding, the country allocates 1% of its national budget to the ecological fund, of which 20% of the fund is allocated to NEMA, while the remaining 80% is given to other ministries, departments and agencies that contribute to emergency management and disaster risk reduction in the country, as well as states and local governments (Olorunfemi, 2008; Adefisoye, 2015; Mashi et al., 2019). However, if more funds are needed following the degree of any given disaster, base on assessment by NEMA, the office of the Vice President can approve additional fund from the Environment Funds – while the national planning commission, facilitates resource mobilisation with international partners when the need arises (Olorunfemi, 2008; Umunna, 2020). As such, NEMA collects data from all stakeholders which is used to enhance planning, forecasting and field

operations in improving disaster management in the country. It further coordinates the activities of voluntary organisations engaged in emergency relief operations in any part of the nation and remains accountable for overall disaster management in the country.

3.4. Correlation between emergency management stakeholders in Nigeria

Effective disaster management cannot be accomplished without incorporation of the cooperative actions of different stakeholders (Ahrens, and Rudolph, 2006; Palttala, et al., 2012). One suitable way of accomplishing such cooperation is to mandate one particular entity to, where necessary, compel different stakeholders to take certain actions that will ensure disasters are effectively managed and response is better (Gopalakrishnan and Okada, 2007; Kapucu et al., 2010; Chen, et al., 2013). In Nigeria for instance, such powers have been delegated to NEMA (CFRN1999; NEMA Act 1999). However, even though NEMA is given such responsibility, and is also liable for providing resources and funding to support both state and local-level disaster management operations, other agencies also partake in response activities at different levels of government which need to be properly integrated and well-organised to harmonise and use resources effectively. Proper coordination of the activities and resources of different stakeholders depends on the way the agencies interact among themselves and how they share certain vital information (Heikkila, and Gerlak, 2005; Comfort 2006; Dawes et al., 2009; Bharosa et al., 2010). Accordingly, NEMA needs to improve its accountability and ensure adequate collaboration, integration and cooperation with other stakeholders by sufficiently sharing useful information to bridge this gap.

As indicated in Section 3.3 above, in Nigeria, the main source of funding for emergency management and NEMA, as provided in the NEMA Act, is allocation by the federal government through its ecological fund, although NEMA is granted the permission to accept gifts and donations from both local and outside supporters (Olorunfemi, 2008; Adefisoye, 2015; Mashi et al., 2019). However, considering the fact that most disasters occur at the local level, and affect mostly local population, the bulk of the agency's resources are therefore channelled towards relief and

rehabilitation, especially at local level, even though state and local levels contribute nothing towards funding the agency. Therefore, it is important for all levels of government and other organisations involved in emergency response to interact well with the federal-level agency and coordinate among themselves in making sure that available limited resources are utilised effectively and are channelled towards promoting effective disaster management in the country. For instance, Kazuare and Inkani (2017) contended that the impact of the 2012 flood disaster that cut across most of the 36 states of the country and caused damage worth millions of dollars could have been effectively mitigated if there had been effective interaction, cooperation and coordination between various stakeholders such as government, private organisations, community-based organisations, non-governmental organisations, charity workers and individual groups, among others at federal, state and local government levels. This would have persuaded judicious use of donations according to the need created by the event and the capacity of various stakeholders involved. As such, this reiterates that the difficulty of implementing activities and utilising resources in emergencies depends on the interaction between NEMA and other levels of government as well as other agencies involved (McEntire, et al., 2009; Okoli, 2014; Umunna, 2020). To curb this challenge in Nigeria, laws have been established embedded in the 1999 constitution under the NEMA Act that serve as legal policies for disaster management and provide guidance on the way NEMA should interact with other agencies in emergencies within the country (NEMA Act 1999; Sadiq 2012, Okon, 2018). Adopting this policy will therefore influence the way resources are allocated and response is coordinated. Hence, the pattern of interaction between various emergency management stakeholders in Nigeria remains highly imperative in understanding the effects of, and developing measures to reduce disasters considering the numbers of disasters that have affected the country lately even though the system of managing them has not been very effective.

Lack of interaction between stakeholders during emergencies has often placed too much burden on NEMA and has created difficulties for the agency in identifying the extent of the problem and the kind of relief materials that may be needed by victims (Adedeji et al., 2012; Essoh, and Abutu, 2018; Mashi et al., 2019). This advocates for an all-inclusive, profound and intensive approach that

will promote suitable interaction, and embrace and accommodate all stakeholders in dealing with emergent issues involved in disaster management. However, this approach has over time become very difficult to achieve in Nigeria, thereby creating several discrepancies in its EMS.

While the Act that established NEMA was structured in a way that includes important sections addressing different issues in disaster management, and also gave powers to the Governing Council of NEMA to provide policy direction on how the agency should go about managing disasters in the country and interacting with other organisations that partake in emergency response, the Act failed to clearly defined whether the Council can make bye-laws or issue guidelines on certain operational activities related to managing disasters and can oblige different stakeholders to adopt Disaster risk reduction policies and action programmes within the country. The major function of the agency has been specified in the Act and can be regarded as fairly comprehensive in terms of disaster management because they encompass a wide range of issues including preparedness, response, search and rescue, relief, rehabilitation and refugee management. Unfortunately, there is no clear definition on how NEMA should go about stirring the support and cooperation of other stakeholders in managing such complex issues. In addition, the structures for early warning systems at all levels of government are weak and require programmes to reduce disaster risk factors. Due to absence of provision in the NEMA Act to support specific activities and programmes that enhance disaster preparedness that would have helped to improve effective response and build back better, there will continue to be haphazard misappropriation of resources, duplication of efforts and inefficiency in managing disasters in Nigeria.

3.5. Government and law-making structure for disaster management in Nigeria

The major body that regulates issues of importance in Nigeria is the 1999 Constitution of the Federal Republic (Mohammed, 2016; Mashi et al., 2019). The constitution stipulates that Nigeria is a federal republic and as such comprises three levels of government: federal, state and local (CFRN, 1999; Akindele et al., 2002; Okafor, 2010). Three arms of government are included in the 1999

constitution: legislative, executive and judicial. The legislative arm takes charge of making laws, the executive arm is responsible for executing the laws made by the legislative arm, and the judicial arm interprets and implements the law in case of conflict and any other issues that may affect society. Overall, Nigeria practices a system of separation of powers, which allows the three arms of government to serve as a check upon each other (Mohammed, 2016).

The legislative arm of government is further divided into two branches: The House of Representatives and the Senate (CFRN, 1999; Oyewo, 2007; Kari, and Collins, 2019). The executive arm is headed by the President who is the Commander-in-Chief of the armed forces, at the federal level, and governors, at the state level with their various duties under state laws, while the local government chairman is the head at the local level (CFRN, 1999; Kari, and Collins, 2019).

The highest court of law in Nigeria is the Supreme Court (Suberu, 2008; Akanbi and Shehu, 2012; Nwanua, 2019). This is followed by the Court of Appeal, the Federal High Court, state high courts, magistrate's courts and customary or area courts (Suberu, 2008; Akanbi, and Shehu, 2012; Nwanua, 2019; Ermakova et al., 2019). The Supreme Court is the highest court of appeal and is headed by the Justice of the Supreme Court. Any decision taken by this court is final. With regard to the process of making laws, bills are deliberated by both legislative houses and are then sent to the President for final consent.

While there is no formal law regarding disaster risk reduction (with the exception of that which established NEMA) (NEMA, 1999), the 1999 constitution, section 305 (3) (e) provides that the President shall have the power to proclaim a state of emergency if there is imminent danger or if a natural disaster or calamity has affected the community or a section of the community in the federation (CFRN, 1999; Oyewo, 2007).

Nigeria is also a member of various regional organisations that issue guidelines to member states, which could affect the management or risk reduction of disasters. These organisations include the United Nations Organisation for Disaster Risk Reduction Africa Office, the UN Development Programme Regional Office, the Nigerian Red Cross Society and the Economic Community of West African States (ECOWAS) (Sarkin, 2009; Olowu, 2010; Aitsi-Selmi, et al., 2015).

Although there is as yet no formal policy on disaster management in Nigeria, the NDMF is the nearest instrument to a disaster management policy (NEMA,

2012; Sadiq, 2012 Mashi *et al.*, 2019). However, in recent years, NEMA has made several attempts to fulfil its mandate and has formulated plans, policies and guidelines to manage disasters (Mashi et al., 2019). These policies include the National Disaster Response Plan (NDRP), the search and rescue and epidemics plan, the national nuclear and radiological plan and the early warning system on epidemics (NEMA, 2012; Sadiq, 2012; Mashi et al., 2019). Due to gaps encountered in the implementation of these plans over the years, the NDMF is now working to increase the efficiency and effectiveness of disaster management in the country.

3.5.1. The National disaster management framework (NDMF) in Nigeria

The process of developing the NDMF began when NEMA established an in-house committee and charged it with the responsibility of developing a disaster management document that reflects global best practice in disaster management. The document, which serves as a baseline for inputs from different disaster management stakeholders in the country to ensure adequate participation, ownership and sustainability, was re-echoed in a round-table discussion – involving participants from the three tiers of government in Nigeria and other ministries, departments and agencies (MDAs) including the military, police, and paramilitary, CSOs, international non-governmental organisations (NGOs), development partners and the private sector (Adedeji et al., 2012; NEMA, 2012; Sadiq, 2012; Mashi et al., 2019), which generated fresh ideas and observations that expanded the scope of the document to include eight focus areas as shown in Table 3.2, with each focus area targeted towards achieving specific goals (Sadiq, 2012).

Disaster management in Nigeria requires multi-agency, inter-organisation and multi-sectoral cooperation and collaboration since different levels of government and other various entities take part, especially during response. Government at all levels and its agencies, plus the CSOs and private sectors, are therefore required by the NDMF to discharge their responsibilities so as to complement each other in achieving a shared goal of disaster management in the country (NEMA, 2010; Atala 2010-2011).

The various sections of the NDMF are designed to offer a holistic approach to disaster management and consider who is responsible for what during disasters and emergencies (Botha, et al., 2011; Ahmed, 2013; Okoli, 2014; Mashi et al., 2019). The framework serves as a legal instrument in addressing the need for reliability among disaster management participants within the country, and outlines all measurable, flexible and adaptable coordinating structures and bringing into line the key roles and responsibilities of all disaster management participants (NEMA 2010; Sadiq, 2012; Mashi et al., 2019). The NDMF further describes the best practices for managing disasters and explains a paradigm shift in disaster management from response and recovery to mitigation and prevention (Sadiq, 2012). And it represents a coherent, transparent and inclusive policy document that provides guidance for government officials, private sectors, CSOs, emergency service providers and community leaders on how to coordinate and manage disasters (Olorunfemi, 2008; Sadiq, 2012; Adefisoye, 2015; Okon, 2018; Mashi et al., 2019). At the same time, it emphasises the importance of understanding disaster management concept and operating guidelines in the country (NDMF, 2010).

Table 3. 2. Focus areas of the NDMF in Nigeria

Framework	Focus area	Goal
NDMF	Institutional capacity	Establish necessary institutional arrangements for implementing disaster management within the federal, state and local government levels
	Coordination	Develops strategic and operational types of coordination among stakeholders involved in disaster management
	Disaster risk assessment	Addresses the need for disaster risk assessment, hazard monitoring, vulnerabilities and measuring coping capacities to set priorities for risk reduction and stakeholders engagement
	Disaster risk reduction	Plan and implement plans, programmes and activities to reduce disaster risk
	Disaster prevention, preparedness and mitigation	Develop measures to prevent the occurrence of such disasters from having devastating impacts on people, infrastructure and economy, prevent disasters from occurring where possible and reduce the impacts when they eventually occur
	Disaster response	Establish an integrated and coordinated policy to rapidly and effectively address response to disasters
	Disaster recovery	Develop measures to bring back disaster-affected areas and people to normalcy through rehabilitation and reintegration
	Facilitators and enablers	Provide sufficiency conditions for integrating roles of emergency management agencies, information management and communication, monitoring and evaluation, education and training, public awareness and research as well as funding

3.6. Institutional coordination of emergency management in Nigeria

It is a fact of life that disasters cannot be completely avoided. At one time or another a community or nation will be faced with a calamity, a catastrophe, a disaster or emergency, whether natural or human-induced, and will require support from different actors to overcome the situation (Pelling, 2001; Alexander, 2002; McEntire, et al., 2002). Because disaster is a fact of life, it is important to prepare for when it eventually happens (Alexander 2002, Alexander 2003; Perry and Lindell 2003; Madry, 2015). In Nigeria, the government, particularly at the federal level, is responsible for the establishment and implementation of a NDMF that provides guidelines for the responsibilities of federal, state and local governments to prepare for when disasters occur (Sadiq, 2012; Adefisoye, 2015; Mashi et al., 2019). Government at all levels, the NGOs and CSOs, including the private sector organisations, international development partners and United Nations agencies, have followed a wide range of strategies and programmes to prevent and respond to disaster situations by establishing networks to effectively coordinate efforts and utilise resources in order to meet the needs of the disaster. However, these initiatives have not been undertaken in a consistent and fully productive manner, especially in Nigeria, as poor coordination and implementation of policies to support disaster management quiet remain a major problem (Adefisoye, 2015; Okon, 2018; Mashi et al., 2019). Emergency management activities remain uncoordinated without a coherent policy framework and as such, require a legal framework of actions to coordinate and implement them. Hence, the following sections consider the existing framework for coordination of disaster management and the organisational structure of disaster management in Nigeria.

3.6.1. Framework for coordination of disaster management in Nigeria

As identified in section 3.5.1, the NDMF is divided into eight thematic areas, with each of these areas having its specific function in improving disaster management in Nigeria. The second thematic area focuses on coordination of disaster management and is concerned with developing both strategic and operational types of coordination among stakeholders involved in disaster management as shown in Figure 3.1 (Sadiq, 2012; Mbaeze, and Eneasato, 2019; Mashi et al., 2019). It focusses on implementation of strategies to ensure effective

harmonisation of activities of government at all levels and those of the different stakeholders involved in managing and responding to emergencies within the country (Sadiq, 2012; Mbaeze, and Eneasato, 2019). The strategic type of coordination supports unity of efforts in implementing emergency management activities, and is concerned with both vertical and horizontal coordination mechanisms related to the overall direction of the disaster management structure in Nigeria (NDMF 2010; Sadiq, 2012; Adefisoye, 2015; Nweke et al., 2015; Mbaeze, and Eneasato, 2019). And it involves integration of emergency management programs with other activities of government and among stakeholders ranging from the community to federal level.

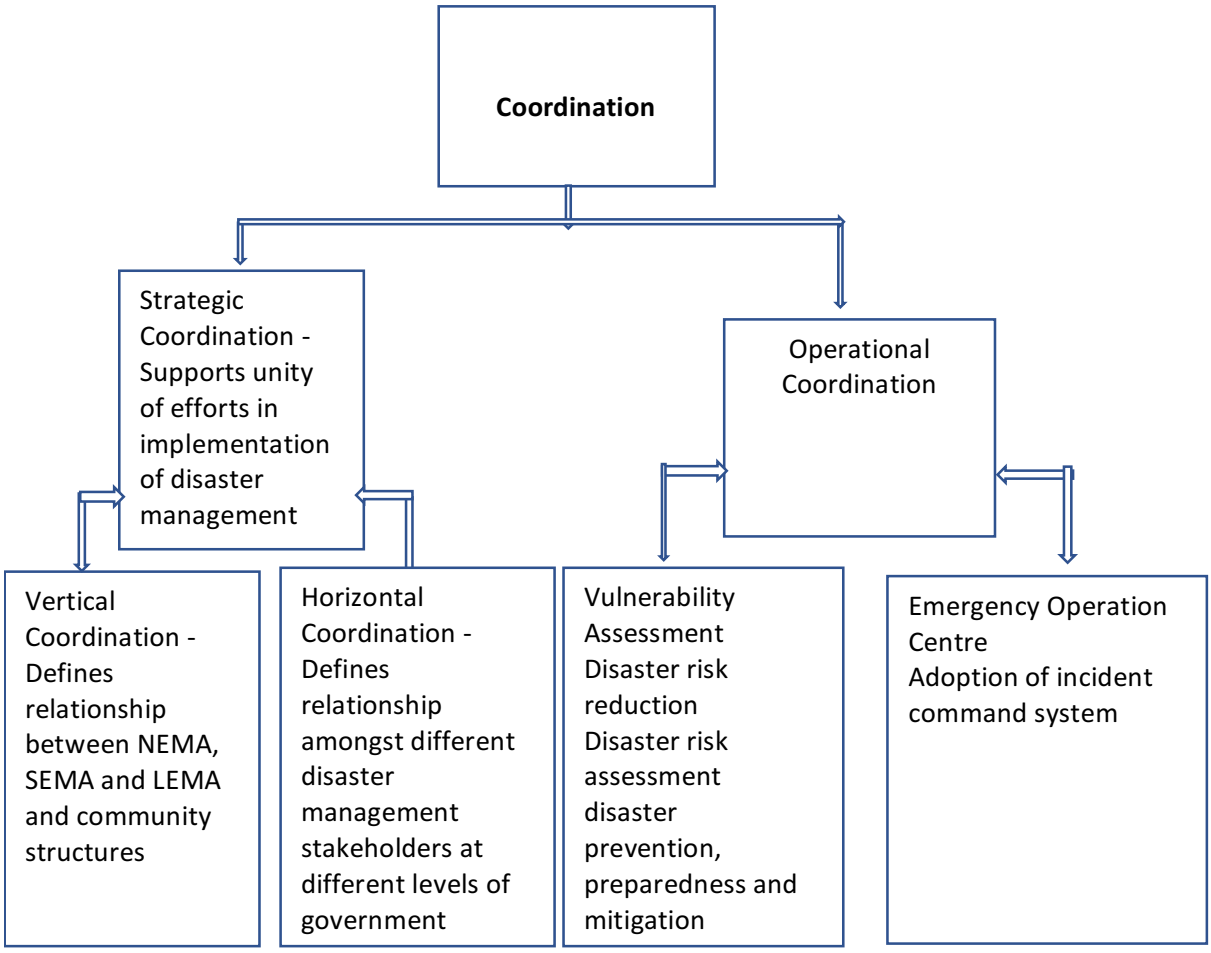

Figure 3.1: Framework for coordination of disaster management in Nigeria

The process of vertical coordination defines the relationship among NEMA, the State Emergency Management Agency (SEMA), the Local Emergency Management Agency (LEMA) and community structures, and shows how other levels of government rely on and refer to NEMA, with NEMA's zonal offices

coordinating the activities and operations of the other levels and various stakeholders involved as shown in Figure 3.2 (NDMF 2010; Sadiq, 2012; Nweke et al., 2015; Mbaeze, and Eneasato, 2019). It further specifies that SEMA is responsible for coordination of the activities and operations of LEMA and community structures, and then reports back to NEMA to ensure adequate support is provided. At the local government level, LEMA is responsible for coordinating the activities and operations of community structures, and reports to SEMA. Although vertical coordination deals with the relationship between government and other stakeholders involved in disaster management, horizontal coordination is concerned with the relationship among disaster management stakeholders at different levels of government (NDMF 2010; Sadiq, 2012). NEMA takes the lead in mobilising and collaborating with relevant federal MDAs, including Disaster Response Units (DRUs), police, paramilitary, international and local NGOs, and development partners, to ensure that resources provided during disasters are allocated and utilised to promote effective response. At the state level, horizontal coordination means SEMA taking the lead to mobilise and collaborate with relevant state MDAs, including DRUs, police, paramilitary, CSOs, state branches of international organisations, and development partners; while at the local government level, horizontal coordination means LEMA takes the lead in mobilising and collaborating with relevant departments and authorities (DAs), police, paramilitary, local NGOs, and development partners in ensuring effective response during emergencies.

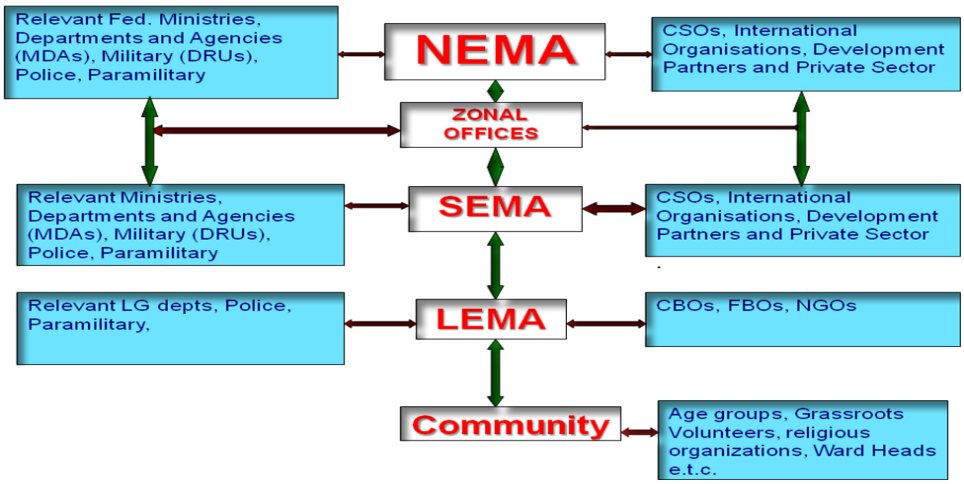

Figure 3.2: Horizontal and vertical coordination of disaster management in Nigeria (Source: NEMA, 2010)

3.7. Responsibilities: Federal, state and local government and community in disaster management in Nigeria

The responsibility for disaster management in Nigeria is shared by the federal, state and local government as well as usually the community in which the disaster strikes (Olorunfemi, 2008; NEMA, 2010; Sadiq, 2012; Olanrewaju, et al., 2019). Each level of government works with relevant MDAs, the military, police, paramilitary and CSOs, including international NGOs and private partners, as indicated in Figure 3.2, to improve the implementation of programmes and activities for efficient response and overall disaster management in the country. However, each level of government does have some distinctive roles, as detailed in Table 3.3.

Legislation to enable disaster management (the 1999 decree) mandates the establishment of NEMA at the federal level with its zonal offices in all the geopolitical zones across the country as well as a fully operational SEMA at the state level, and LEMA at the local government level (CFRN, 1999, NEMA Act 1999; Sadiq, 2012). The aim is to strengthen the country's capacity for disaster management in order to reduce the likelihood and, when they occur, severity of disasters. Nevertheless, because Nigeria's disaster management is centred on the principle of shared responsibility, it is important to integrate and coordinate properly among relevant stakeholders to improve response.

In line with the enabling legislation that led to establishment of NEMA at the federal level, NEMA is required to coordinate emergency management activities, liaise with other stakeholders, monitor events in order to collect information about disasters in the country (NEMA, 2010; Sadiq, 2012; Nweke et al., 2015; Mbaeze, and Eneasato, 2019). NEMA is further responsible for mobilising financial and technical support from private sector organisations; collects emergency relief materials from local, international and non-governmental agencies for distribution to people affected by disasters; and works closely with SEMAs and LEMAs to assess and monitor distribution of relief materials, assist in rehabilitation of survivors and facilitate establishment of enabling legislations in disaster management, among which the NDMF is one (Sadiq, 2012; Mashi et al., 2019). When the need arises, SEMA also coordinate and facilitate the provision of resources for search and rescue operations within the state, while LEMA coordinate emergency management activities at the local government level, monitor the activities and provide feedback to SEMAs (Sadiq, 2012; Mbaeze and

Eneasato, 2019; Mashi et al., 2019). Nevertheless, accomplishing this requires good communication to share information leading to identification of the kind of support that may be needed at each level of government to revive the affected area (Comfort 2006; Kapucu et al., 2010; Kapucu et al., 2013).

Table 3. 3. The role of different stakeholders in disaster management in Nigeria

Stakeholders			
Federal	**State**	**Local**	**Community**
Formulation of disaster management policies	Formulate state policies on disaster management	Coordinate emergency management activities at the local government level	Ensure commitment and preparedness among community members
Coordination of plans and programmes for the emergency management activities of other stakeholders	Coordinate plans and programmes at the state level for effective disaster management	Monitor the activities and provide feedback to SEMAs on the level of preparedness	Sensitise and build capacity in preparing for the initial response
Promote research activities relating to disaster management	Monitor emergency management activities	Collect and collate data on disaster and disaster risk areas within the Local Government Area (LGA) and report to SEMAs	Mobilise community resources and build capacity and resilience to prepare for, respond to and mitigate disaster impacts
Monitor the state of preparedness of all other organisations and agencies that may contribute to implementation of emergency management activities	Provide feedback to NEMA on the level of preparedness of the state to respond to emergencies	Mobilise support and resources from SEMAs when damage and need assessments exceed LGA capacity	
Collate data from relevant agencies in order to enhance planning, forecasting and field operations	Collate data and reports from relevant agencies at the state level to enhance planning, forecasting and field operations	Develop the disaster management capacity of community structures	
Promote public education on disaster management	Mobilise support and resources from NEMA when damage and need assessment exceeds the capacity of the state		
Facilitate provision of the necessary resources required for search and rescue	Facilitate establishment of LEMA at the LGAs level		
Enhance implementation of other disaster risk reduction activities	Work closely with LEMA to distribute relief materials.		

3.8. Channels of communication and information-sharing patterns in Nigeria

Recently, disaster management authorities across the globe have acknowledged the important role of communication and modern technologies in reducing disaster impacts, especially on vulnerable people both in rural and urban areas (Pelling, 2003; Wisner, et al., 2004; Gopalakrishnan, and Okada, 2007; Mitchell, et al., 2008; Blaikie, et al., 2014). As disaster management in Nigeria employs a multi-agency operational structure, it uses the principle of the Incident Command System (ICS) in any given disaster to control response personnel, facilities and equipment (Hanifen, 2015; Ibidapo, 2015). Worldwide, communication has witnessed remarkable improvement in terms of expansion, coverage, and managerial capability (Comfort, 2007; Kapucu, and Garayev, 2011), and Nigeria has seen similar improvements (Osabutey, and Okoro, 2015; Boso et al., 2016). Today in Nigeria, NEMA has executed a wide range of administrative, programmatic and specialised tasks that require unceasing communication with other disaster management entities in the country to carry out its inter-agency role and improve response during emergencies. The initial taskof NEMA is centred on notification, activation, mobilisation and deployment of staff, as well as setting up facilities to enhance emergency management in the country. However, to enhance response, it is yet very important for the agency to communicate and disseminate vital information with other emergency management entities (such as those identified in Section 3.3 above), the affected population and government officials.

Communication has been considered as an important area of emergency management that anchors all the four elements of disaster management, namely mitigation, preparedness, response and recovery – particularly in a multi-agency and inter-organisational set-up (Owolabi, and Ekechi, 2014). Currently, the possibilities and efficiency of disaster management have greatly increased given the evolution and advancement of communication technology, particularly in the areas of prevention and mitigation of disasters (Yodmani and Hollister, 2001). The evolution of satellite technology has also increased the chances and interoperability of information and communication technologies, which has make the gathering, processing, storage, retrieval and dissemination of information faster

and more reliable than it was in the past (Owolabi, and Ekechi, 2014). In Nigeria, different channels of communication are currently available that are used in communicating and disseminating disaster messages across the country, although their effectiveness differs depending predominantly on the intended purpose of the message shared, but also on the nature of disaster, the region that is affected and the socio-economic status of the affected communities (Owolabi, and Ekechi, 2014). However, it is important to restate that no one medium of communication can be sufficient enough for this purpose and, therefore, it is indispensable to consider combining different channels of communication depending on the purpose of the message and the target audience. For instance, even though traditional electronic media, such as radio and television, as well as print media, such as newspapers and magazines, have been well appreciated as effective means of communicating disaster information and warning messages to a large group of people (Haddow, and Haddow, 2013; McChesney, 2016), these forms of communication have their own shortcomings depending on the area and group of people involved (McChesney, 2016). For example, the majority of people in rural areas cannot read and write so they would not be able to read information provided through newspaper and magazines. Likewise, people who lack access to radio and television can also find it difficult in accessing information via these channels, thus creating some gaps in the spread of information.

Considering the contemporary advanced information and communication technologies involving the use of fixed and mobile telephones, a significant population of Nigeria now relies on using mobile telephones as dependable and efficient channel of communication (Agwu, and Carter, 2014; Owolabi, and Ekechi, 2014). This has considerably improved communication as through telephones warning messages can be sent quickly by making phone calls and sending pre-determined short message service texts (SMSs) to many people within a short time frame. However, the drawback of using telephones in Nigeria is the inability of many people to access the message due to an increased illiteracy level (Comfort and Dada, 2009; Familusi and Owoeye, 2014; Owolabi, and Ekechi, 2014). Wireless mobile devices have also been recognised as a useful channel in disseminating disaster information in Nigeria. For example, most Code Division Multiple Access (CDMA), Digital-Advanced Mobile Phone Service (D-AMPS) and Universal Mobile Telecommunications Service (UMTS) phones are capable of

broadcasting for emergency purposes to hundreds of millions of people at no extra cost to either sender or receiver (Owolabi, and Ekechi, 2014). Internet technology has again contributed significantly in enhancing emergency communication, particularly in developed countries where virtually every household is connected to the facility. By utilising the internet, emails, and instant emergency information can be shared among government officials, professionals, first responders and disaster coordinating agencies because many people as are connected to the internet technology – even though it has got its own inherent flaws, particularly in increasing the gap between those with unlimited access and those with limited access due to economic, linguistic and technological constraints (Putnam, 2002). Nevertheless, through the use of internet technology, social media (such as Facebook, WhatsApp, YouTube, LinkedIn, Skype, Twitter, Blog, etc.) have widely been used to disseminate disaster information and received immediate feedback in emergencies (Howe, et al., 2011; White, 2011; Saroj, and Pal, 2020). In addition to the traditional mass communication channels and modern satellite aided media mentioned above, other means of communicating disaster information, as identified by Wilson (1997) and Kalejaye et al., (2006), include well-organised indigenous communication channels such as market women leaders, charismatic opinion leaders, influential religious leaders, trade union leaders, mobile theatre groups and cinemas.

3.9. Factors affecting implementation of emergency management activities in Nigeria

The first problem that affects disaster management in Nigeria is poor coordination of disaster management activities (Olowu, 2010; Oruonye, 2012; Obeta, 2014; Olanrewaju, et al., 2019). For disaster management to be efficient, it requires effective coordination and integration of all activities that are required to build, sustain, and improve the ability to prepare for, protect against, respond to, and recover from threatening natural or human-induced hazards (McLoughlin, 1985; Comfort, et al., 2004; Chen et al., 2006; National Research Council, 2007). This is a multi-jurisdictional, multi-sectoral, multi-disciplinary and multi-service requirement (Adefisoye, 2015). Thus, it is imperative that agencies such as NEMA, the SEMAs, and LEMAs at the federal, state and local government levels, respectively, who are primarily liable to coordinate other relevant stakeholders in

Nigeria wake up to their duty and effectively organise their activities during emergencies. This involves pulling together the physical and human resources of an organization to attain its goals (Schuler, 1992; Wondolleck, and Yaffee, 2000). Emergency management is a complex, demanding and comprehensive process, in which effective response requires well-defined vision and foresight, careful planning, staunch commitment, discipline, proper and balanced coordination and good technical know-how (Perry and Lindell 2003). Therefore, the coordinator of emergency management is the liaison officer among the various departments, divisions and units that are responsible for disaster management activities. Effective emergency management involve the core phases of disaster management; mitigation, preparedness, response and recovery with each phase having its own approach (Turner, 1997). The response phase, which is regarded as the most difficult period, requires preparing for primary, secondary and tertiary levels of response depending on the nature and gravity of the emergency (Turner 1997; Adefisoye, 2015). To achieve this successfully, it is essential to ensure proper coordination and a holistic approach to disaster management by integrating well among different participants to harmonise efforts and resources (Twigg, 2004; Mashi et al., 2019). Notwithstanding the finction of NEMA, coordination of disaster management activities between different levels of government and other entities in Nigeria still remain a problem.

Also, the failure of the government to provide functional emergency services, especially at the state and local government levels is a setback to effective emergency management in Nigeria. Very frequently, the Government makes empty promises to victims, which are never implemented. These promises are intended to be used for media purposes and gain political recognitions, whereas victims are left unaided. Review shows that decentralisation of emergency management activities yields better results (Rondinelli, 1981; Rondinelli et al., 1983; Preble, 1997; Faguet, 2004; Bon 2015; Rumbach, 2016). Further studies also revealed that disaster management in the U.S for example, is backed up by several legislations that respects the federal structure of the country (Federal Interagency Floodplain Management Task Force, 1994; Coppola, 2006; Etats-Unis, 2006; May and Williams, 2012). Its further applied to countries like Switzerland, Canada, New Zealand, and Germany. But in Nigeria, it is obvious that there is yet, no functional emergency management structure in most of the 36

states and 774 local governments of the federation even though the Act that establishes NEMA granted power to all the states to establish SEMA while local government to establish LEMA across all the local governments in the country. It is interesting to know that in 2012, June 12 when the Abakpa bridge collapsed in Enugu due to heavy rainfall, commuters were stranded for several hours before the Enugu State Government could mobilise a private company to work at the site (Onwubiko 2012), an incident that could have been averted with proper planning and preparedness. The delay in response increased impacts from this event, a situation that would have been curtailed if government were strongly committed to provide functional services.

Another most important factor affecting disaster management activities generally, is the lack of trained personnel with inadequate skills to respond to emergencies (Paton and Flin, 1999; Perry and Lindell, 2003; Holguín-Veras, *et al*., 2007). Nigeria is not free from this problem. According to Adejuwon and Aina, (2014); Mohammed and Kawu, (2014); Okoroji, (2018) and Umunna, (2020), The lack of disaster management training platforms for Nigerians to acquire the necessary knowledge that would aid emergency response is a great setback to disaster management in Nigeria currently. As indicated by McEntire and Myers, (2004); Coppola, (2006) and Perry, (2007), effective disaster management is not exclusively government responsibility and the emergency response agencies involved but extends to the general public. Therefore, it is important for responsible authorities to provide adequate training for staff and volunteers, so as to improve their knowledge and prepare them better for unforeseen circumstances. In developed countries such as the United States, government has instituted programmes to train and develop the manpower of emergency management in the public through the establishment of schools (Alexander, 2015; Waugh, 2015). There are over 180 schools in the USA, for instance, with emergency management related programmes (Bob 2008; Kunreuther, 2008; Adefisoye, 2015). But this is not the case with Nigeria, and disaster management is thus increasingly difficult as disasters become more serious over time.

In India, an emergency training school located in Mumbai is a non-profit organization which has successfully trained 60,000 citizens to handle disaster situations effectively (Adefisoye, 2015; Taiwo 2015; Pal and Ghosh, 2018). They are disaster management volunteers (DMVs) (Times of India, August 2010 cited in

Taiwo 2015). The primary objective of this organization is to manage disasters with the aim of saving lives and protecting properties. Also, disaster management education has been included in secondary schools' curricula in India which has expanded disaster management knowledge (Adefisoye, 2015; Pal and Ghosh, 2018). Apart from the issues discussed above, another factor is poor funding. Consistent, prompt and adequate funding is essential to the effectiveness and efficiency of an organization (Adefisoye, 2015; Taiwo 2015). For an emergency management agency to function effectively, huge financial support is required in order to build human capacity and acquire up-to-date equipment and new technologies (Dawes et al., 2004; Kapucu and Garayev, 2011; Hu and Kapucu, 2016). However, the case is different in Nigeria. The government does not consider funding for disaster management activities to be a priority. This has been a huge task for NEMA. Many countries have experienced a paradigm shift from a government-centred approach in disaster management to a decentralised community participation approach example, Sweden and Canada (Cherry, 2014; Lewis et al., 2020), but Nigeria is still far from this in her emergency and disaster management approach, thereby ignoring an opportunity to reduce the effects of natural and human-induced disasters.

The lack of strong commitment on the part of government towards developing and implementing disaster management policies and regulations shows the inability of the EMS to mitigate, prevent and respond rapidly to emergencies particularly those resulting from human-induced hazards which are very common in Nigeria. Notwithstanding the existence of NEMA at the federal level, majority of the states have until date not been able to establish SEMA likewise most local governments are also yet to establish LEMA thereby creating gaps in NEMA's ability to coordinate and implement disaster management programmes (Sadiq, 2012; Adefisoye, 2015; Taiwo 2015). Inadequate availability of trained and skilled staff and poor coordination among different disaster management entities show that the EMS in Nigeira is not adequately prepared to reduce disaster impacts. Poor housing and infrastructure have greater impacts in the society (Wang, 2000; Hills and Stewart, 2005; Satterthwaite and Mitlin, 2013; Anguelovski, et al., 2016). Emergencies resulting from the collapse of buildings are triggered by the use of substandard materials and quack contractors (Bamgbose, 2015; Ogunsote, et al., 2014; Kolo, 2015; Ibrahim et al., 2019) which can easily be monitored by

responsible authorities, stampedes can be avoided by providing adequate control measures especially when organizing events that involve mass gathering (Illiyas, et al., 2013; Alzahrani and Kyratsis, 2017; Rahman, et al., 2017) while electricity power failures can also be avoided or reduced when adequate facilities are in placed to provide supply and authorities are held accountable (Joskow, 1998; Fuchs, et al., 2012; Aladejare, 2014; Oyedepo, et al., 2015). However, this has not been achieved successfully in Nigeria as a result of lack of commitment by responsible authorities and the absence of a well-developed emergency management plan that incorporates adequate monitoring and supervision of activities.

Chapter 4: Existing literature: Emergency management, disaster preparedness, risk, and emergency response

4.1. Introduction

This chapter focuses on reviewing the existing literature in the fields of emergency management, disaster preparedness, risk, and emergency response. Section 4.1 outlines a brief introduction to what the chapter entails. Section 4.2 considers an overview of the concept of emergency preparedness taking into consideration the concept of vulnerability and hazard, and the organisation and process of emergency management. Section 4.3 focuses on the framework for disaster management. Section 4.4 looks at the implications of emergency management with a critical review of emergency management implications of building collapses, stampedes and electrical power failures. Section 4.5 focuses on the value of emergency planning in fostering rapid response and minimising disaster impacts. Section 4.6 gives an account of the aspects of emergency management and disaster response that are relevant to the present research. This section provides detailed information concerning effective communication; resource availability, allocation and utilisation; and the operations of the emergency operation centre (EOC) in coordinating emergency response activities. Section 4.7 presents a review of community participation and the role of local and organisational culture in emergencies with an overview of the impacts of social capital in emergency management. Finally, Section 4.8 concludes the chapter by drawing together common understanding from previous sections to improve the present study.

Reviewing existing literature around these areas is very important, as the current thesis focuses on evaluating the effectiveness of Nigeria's emergency management and disaster response system with respect to human-induced hazards. Therefore, the purpose of the literature review is to provide an understanding of different scholarly views in the field of emergency management, disaster preparedness and emergency response, so as to enrich the content of the present research by identifying some important aspects of emergency management that need to be improved or incorporated into the EMS to increase its level of preparedness for reducing future disaster impacts.

It is well known that the impacts of disasters are likely to increase without the adequate preparedness of responsible authorities, which include government and its agencies, NGOs and CSOs (Hooke, 2000; Picou *et al.,* 2004). Large-scale disasters and emergencies often create sudden and profound changes in human systems, the built environment and the entirety of society, leading to response activities ranging from the planned to the improvised, which are carried out by both established and ad hoc organisations (Mendonca *et al.,* 2007). However, disasters impacts are now partly attributed to the failures of the responsible authorities due to their inability to carry out emergency management functions through adequate enforcement of regulations and response to disasters in a manner that is expected by victims as well as the general public (Picou *et al.,* 2004). Even though most disasters occur with devastating consequences within society – including property damage, human displacement and loss of lives and economic value – Toft and Reynolds (1994) argued that regardless of the size of a disaster, society can learn essential lessons that are used to improve preparedness against similar events in the future. According to these authors, lessons learned from previous events are used to enhance decision-making processes and facilitate the development of new policies and regulations, and such lessons help to develop new measures to improve the level of preparedness and response.

A multidisciplinary approach to managing and responding to disasters has the capacity to make an immense contribution to the understanding of the origin of disasters and to expand emergency preparedness (Picou *et al.,* 2004). Before, during and after disasters, coordination and integration of response efforts remain a challenge, as different individuals and organisations are usually involved (Jaeger *et al.,* 2007). This raises concerns about several issues around the interoperability of technology, the impact of disasters, communications, inadequate information-sharing patterns, resource allocation and utilisation, and lack of pre-existing social networks and functional EOC designed to support effective response (Jaeger *et al.,* 2007). Nigeria is not exempt from these challenges in managing emergencies. While often when government officials consider emergency management they only focus on response, without considering the other essential parts, such as hazard mitigation, preparedness and recovery, it is nonetheless very important to prepare for and put in place measures to facilitate prompt response during disasters. Hence, emergency preparedness remains invaluable before disasters finally occur

as the process involves a wide range of activities that go beyond search and rescue, emergency medical services, temporary shelter, feeding and restoration of damaged properties.

The process of emergency preparedness takes into account all essential activities and begins with planning, which involves the development of emergency operations plans to guide response activities, the establishment of EOC to support decision-making processes, coordination and allocation of resources, and provision of disaster training to emergency responders before and after disasters (Choi, 2008; Jaeger *et al.,* 2007; Waugh and Streib, 2006). Also, due to the emergence of new threats and the evolution of existing ones, it has become imperative to improve the level of preparedness of emergency management organisations in order to respond to disasters as expected by people.

Today in Nigeria, the frequency of human-induced hazards has raised serious concerns about the need to improve the level of preparedness in the national EMS. However, to improve the effectiveness of disaster management and emergency response organisations in relation to environmental changes, several factors are involved, including coordination, collaboration, communication, resource allocation and capacity development (Gilissen *et al.,* 2016). Nevertheless, only limited attempts have been made to transform such findings into operational frameworks that could help evaluate EMSs (McConnell, 2011; Bossong and Hegemann, 2013; Kuipers *et al.,* 2015). As such, evaluating the effectiveness of Nigeria's emergency management – bearing in mind existing literature, especially on the implications of the operation of an EOC, communication ability and resource availability – would foster the development of such findings into a framework that would play a valuable role in strengthening emergency response and disaster management, particularly in Nigeria and perhaps other developing countries as well. Besides strengthening the response ability, such a framework would also enable the process that would adequately monitor the progress of the current EMS, identify its strengths and weaknesses, and serve as a tool to improve the level of preparedness. To start with, a general overview of emergency management is provided in the next section.

4.2. Overview of emergency management

The common nature of disasters in our contemporary society and their associated impacts have led to the emergence of different views by scholars and practitioners about the concepts of emergency management and disaster preparedness. Although several definitions of emergency management have been provided by different scholars, the present thesis adopts that which was provided by the United Nations International Strategy for Disaster Risk Reduction (UNISDRR), which defines disaster management as "*the systematic procedure of using administrative decisions, organization, operational skills and capabilities to implement policies, strategies and coping capacities of the community and society in minimizing natural hazards impacts and their related environmental and technological disasters*" (UNISDRR, 2004). The above definition centres on emergency preparedness, capacity building and disaster response that involves complex management procedures, multiple organisations and the development of measures to ensure adequate coordination, cooperation and integration of efforts and resources. Considering that the disaster management structure in Nigeria is centred on the principle of shared responsibility between federal, state and local government, alongside non-governmental, private sector and civil society organisations, this definition would help to support an investigation into emergency management and the implementation of emergency response activities. This provides an opportunity to develop measures that would improve preparedness.

The process of emergency response generally requires putting in place measures to enhance rapid response when emergencies eventually arise (Haddow and Bullock, 2004). This involves capacity assessment and identification of areas that need improvement within any EMS in order to develop measures that would enhance preparedness. Given the increasing incidence of human-induced hazards in Nigeria, their associated impacts and the need for urgent action to curtail them, putting in place adequate measures and building the capacity of responsible authorities in managing and responding to such emergencies would foster a reduction in their frequencies and impacts. To do this, adequate planning is required. According to Alexander (2003), emergency powers and special measures are often required during emergencies. The process involves coordination, cooperation and collaboration among various agencies in ensuring

adequate allocation and utilisation of resources to meet the needs of affected populations. Bearing in mind the high level of losses and increasing cost of responding to emergencies, government and its agencies, including civil protection authorities, are therefore required to plan and prepare ahead of disastrous events in order to mitigate, prevent or respond rapidly to impacts (Alexander, 2002). This points to the need to provide an improved robust, stable and flexible emergency response plan within an EMS that can be tested, amended and induced to function in the most difficult situations, as disasters cannot be completely avoided (Alexander, 2003). It can be achievable through an assessment of current systems to identify aspects of emergency management that require improvements. Since Nigeria is not completely free from disasters and considering the increasing occurrence of human-induced hazards and their associated impacts, this reinforces the need to plan ahead.

Disasters generate both direct and indirect consequences that make the process of planning more complicated. To halt the situation, efforts are required by different actors, such as government and its agencies, non-government organisations, the private sector, community groups and individuals. Hence, it is very important to fathom the causes of disasters and their pattern of occurrence, as well as the level of human vulnerability and the capability of government and other responsible emergency response organisations to enhance adequate allocation of resources during emergencies (Alexander, 2002). As disaster management in Nigeria involves a combination of efforts across federal, state and local government – with participation from other agencies and individuals – identification of the capacity of each entity involved would go a long way towards improving the level of preparedness and ensuring adequate allocation and utilisation of resources. Therefore, to understand the capacity of each entity and the needs of the emergency, adequate information becomes essential to facilitate the allocation of resources. As suggested by US Federal Agencies (Subcommittee on Disaster Reduction, 2005), regularly updated information about a given event enables emergency managers and disaster planners to identify the kind of support that may be needed by affected populations and help them to plan and allocate available resources in a way that reduces disaster impacts (Subcommittee on Disaster Reduction, 2005). However, notwithstanding several attempts that have been made to improve emergency management, most agencies may not have the

capacity and remain unwilling to embrace proactive measures in dealing with multiple hazards (Prater and Lindell, 2000). The lack of adequate capacity to put in place mitigation measures by responsible authorities results in severe consequences in the way the response is conducted (UNISDRR, 2004). This is because responsible authorities may have failed to actively address disaster risk reduction in their policies and practices (IPCC, 2014) – a situation that may not be different in Nigeria – as a result of the lack of an emergency planning standard and management regulations, which fosters vulnerability to a variety of hazards.

4.2.1. Concept of vulnerability and hazard

Societies are increasingly becoming complex as the systems they depend on, such as transportation, finance, electricity, housing, health, education and human security, are becoming more interconnected (Rinaldi *et al.,* 2001; Little, 2004). The management of the complexities of such systems is progressively becoming uneven, given that different actors are involved who may have different interests and intentions (DeBruijne and VanEeten, 2007). As a result, managing emergencies in an uncertain, complex and ambiguous situation involving different actors generates a considerable challenge, as different groups of actors may have different capabilities, capacities and interests (IRGC, 2005; Bristow *et al.,* 2012). Hence, to reduce the level of vulnerability and ensure a reduction in disasters' impacts within a given society, it is imperative to assess the kind of hazards, and their pattern of occurrence, and to understand the ability of individuals, groups or the entire society – together with that of responsible authorities such as government and its agencies – to deal with disruptions and improve preparedness. But such understanding is becoming more difficult to achieve due to the increased dependencies and lack of integration between institutions, as noted by Djalante *et al.* (2013). Given the kinds of events that affect Nigeria, in which the majority of Nigerian citizens and the national infrastructure are now becoming more vulnerable, the need to conduct an assessment to enable an all-hazard mitigation and prevention approach towards emergency management has become paramount.

According to Djalante *et al.* (2013), disasters are increasingly uncertain and complex events that occur at different magnitudes due to rapid environmental and socio-economic changes. To respond effectively and manage such events,

adequate knowledge needs to be accumulated about the kind of hazards that may lead to disaster and its associated impacts. Also, it is essential to understand the local, socio-economic and institutional capabilities of organisations involved in responding to and managing emergencies, as well as the needs created by disasters in affected communities, so to enhance preparedness and allocation of resources (Adger *et al.,* 2005). According to Barquet and Cumiskey (2017), facing current and future disaster challenges requires a combination of approaches involving mitigative, preventative and preparedness measures. This kind of approach is invaluable, especially in situations where emergency management and response to disasters involves combined efforts across different entities such as federal, state and local government, and other NGOs and CSOs. In this case, the understanding of vulnerability to different kinds of hazards that may affect society, their pattern of occurrence and the capabilities of the various organisations involved in response would enable an improvement in the level of preparedness. However, the adequacy of disaster risk reduction measures not only depends on the way they are being implemented but also requires an understanding of the physical, political and socio-economic situations in which such measures are being anticipated together with their potential benefits and drawbacks (Barquet and Cumiskey, 2017). As emergency management in Nigeria is based on a shared responsibility between government and its agencies, NGOs, private sector organisations, groups and individuals, considering different views of different stakeholders would enable a balanced assessment of the socio-political, environmental and economic impacts of decisions in disaster risk reduction.

In the same way, Vulturius and Keskitalo (2013) argued that effective implementation of emergency management and disaster risk reduction measures at different levels of government depends on factors such as the kind of information available about the disaster, the availability of resources (including skills of emergency response personnel), the availability of technological facilities and equipment to aid information sharing, access to decision-making processes by populations affected by disasters and financial availability to support organisational planning for emergencies. Emergencies often trigger the need for additional support, so collaboration, cooperation and integration of efforts across different entities become essential to ensure adequate allocation of resources and improved preparedness to mitigate, prevent and reduce vulnerability in society. To achieve

this, communication remains invaluable in sharing exact information about disasters and understanding the capacity of each entity involved. Also, the operation of EOC would foster coordination and allocation of resources, while adequate resource availability and utilisation would promote rapid response and minimise impacts when disasters occur. For instance, Penning-Rowsell *et al.* (2014) and Schanze *et al.* (2006) stated that the extent of damage induced by any given disaster depends not only on the degree of the hazard but also on the ability of organisations involved in implementing emergency management activities to cooperate and integrate with one another. As Nigeria's emergency management involves different actors across different levels of government, adopting such practice would foster vulnerability reduction and enhance adequate utilisation of resources when disasters occur, as they cannot be completely avoided.

Aside from institutional factors, daily experiences and the local knowledge of people directly involved in using resources, particularly in risk-prone areas, has proven to be vital to the extent that they accept policies and measures that generate support for mitigation and adaptation (Keskitalo, 2013, Lujala *et al.,* 2014, Rod *et al.,* 2012). Accepting such policies by local people would make vulnerability mapping more locally relevant and reliable. Hence, reducing vulnerability to hazards requires the involvement of local people in decision-making processes to help them develop and build their capacities. For instance, due to some meaningful losses to local people caused by disastrous events such as the Southeast Asia tsunami of 2004, the Haiti earthquake of 2010 and the Pakistan floods of 2010, a significant increase in appreciating the importance of managing disaster risk using local people emerged (Adjie *et al.,* 2014). Even though the concept of disaster begins far back with the study of threats of natural disasters (Phil *et al.,* 1976), a detailed understanding of the concept has developed significantly since its early development in the 1980s (Gabor and Griffith, 1980 in Adjie, *et al.,* 2014) leading to a multidisciplinary approach to emergency management (Marandola and Hogan, 2006). The development of the multidisciplinary approach, and a participatory method involving local people and key disaster management actors, fosters the integration of different opinions into formal decision-making processes as the ability to reduce risk from hazards and response to emergencies largely depends on the political, economic and technological capabilities within the reach of various actors (Adjie, *et al.,* 2014). That is why Birkmann (2013) confirmed that a system

or society that is highly exposed to threats, is susceptible to their effects and has less adaptive capacity would be more vulnerable.

The broad concept of vulnerability has been discussed and applied in various inter-disciplinary studies and is used to analyse problems in social sciences, economics, agriculture, psychology, ecology, environment and many other subjects (Absar and Preston, 2015; Bergstrand *et al.,* 2015; Shaw and Elger, 2015; Costa *et al.,* 2016; Swartz *et al.,* 2015; Wang *et al.* 2015a; Ouedraogo *et al.,* 2016). This concept is multidimensional as it includes the responses of individuals, groups and social networks to hazards. Adger and Kelly (1999) stated that vulnerability reflects the condition of individuals, groups or communities affected by a disaster, while Dwyer *et al.* (2004) further suggested a broader range of research subject matter for vulnerability studies drawing on the typology of human communities.

Increased attention to strengthening the ability of society to deal with, adapt to and recover from disasters influences risk management. Concepts such as societal safety and resilience, and the establishment of national security strategies amid a whole-of-government approach, demonstrate this development (Olsen *et al.,* 2007; Somers, 2009; Boin and McConnell, 2007; Caudle and Spiegeleire, 2010). This means that disaster management actors should focus more on assessing the consequences of unexpected events and how individuals, groups or society cope and deal with them in order to continue their normal lives without undue stress. Some countries have adopted a capability-based planning approach and have been able to implement capability assessment as part of their risk management efforts in preparing for a variety of hazards (Houdijk, 2010; MSBFS 2010). Although there are still some disagreements on how capability assessment is linked to other risk management activities such as risk assessment, vulnerability assessment and resilience, capability assessment is an important tool that helps disaster managers understand their strength and identify areas that require improvement and the kind of support that may be needed for effective response when disasters occur. Adopting this measure in Nigeria would enable identification of the capabilities and capacities of government and its agencies including other related organisations that are responsible for emergency response activities to improve their level of preparedness by developing measures that would enhance the allocation of resources and responsibilities based on the capacity of each entity involved and the needs raised by the disaster.

4.3. Framework for disaster management

Although some disasters can be predicted, it is well known that many disasters occurring around the world are not predictable and their disruptive effects cannot not be completely avoided. Notwithstanding these experiences, it is expected that through development of an emergency management plan that supports all-hazards identification processes – as well as risk assessment and capacity assessment with a constant review of response approaches – many hazards can either be mitigated, prevented or completely avoided, or at least their impacts can be minimised following prompt response facilitated by existing plans. Assessing the capacity of response organisations involved would enable an understanding and determination of the kind of support that may be required to promote and strengthen organisational capabilities in preparing for and responding to emergencies, and to improve the coping ability of affected populations.

According to Faulkner (2001), a well-articulated disaster management plan would help to avoid confusion and duplication of efforts. This would lead to a more efficient response. Establishing a pre-set plan to guide responses of those involved would potentially reduce stress during disasters and emergencies (Cassedy, 1991). Based on this ideology, while some disaster management models such as that developed by Young and Montgomery (1998) provide details of a crisis management plan and place more emphasis on communication aspects, other authors such as Cassedy (1991) and Drabek (1995) have also developed disaster management models that detail the main disaster management components that can be adopted to support the development of a strategic plan to improve preparedness and response. As shown in the framework developed by Cassedy (1991), a good disaster management plan should include the selection of a team leader, the development of a team, a contingency plan, specified actions and the establishment of a crisis management command centre. These forms the process of developing effective strategies to manage disasters. Hence, including all such elements in a disaster management plan will enhance coordination, integration and efficient utilisation of resources. Also, the framework developed by Drabek (1995), which was structured around the order in which response efforts need to occur to necessarily cope with emergencies is considered beneficial in enhancing planning for disaster management. Based on the framework, establishing a relationship

between the different components of emergency management remains a concern that needs to be addressed.

Likewise, as disaster management processes involve contributions from different individuals, groups, organisations and government bodies, who together may have different capacities and interests than would a single entity, response to sudden events must consider the more fluid relationships between various participating agencies and organisations involved, in order to effectively coordinate and integrate their efforts towards achieving common goals. A positive development in holding disaster preparedness meetings by government officials and its agencies, NGOs and local people would lead to adoption of sound disaster management practices. To this end, a framework (as shown in Figure 4.1) that focuses on all phases of disaster management and capacity development is adopted to support this study. The framework takes into consideration risk assessment, hazard identification, capacity assessment and plan development, which appear to be the main concerns leading to poor management and response accomplishments in Nigeria. Adopting such a framework in a complex EMS would aid an understanding of the kind of support that may be required in an emergency and improve the level of preparedness of the entire system.

Inside this framework, a structured approach of managing and responding to disasters and emergencies is developed, and measures to continually improve preparedness are included to enable continual update of the framework, given the future emergence of new approaches to emergency management. The framework focuses on planning and management deficiencies and suggests measures to improve disaster management since disasters are well known to be triggered by events over which the victim has little or no control and the impacts are to some extent unavoidable.

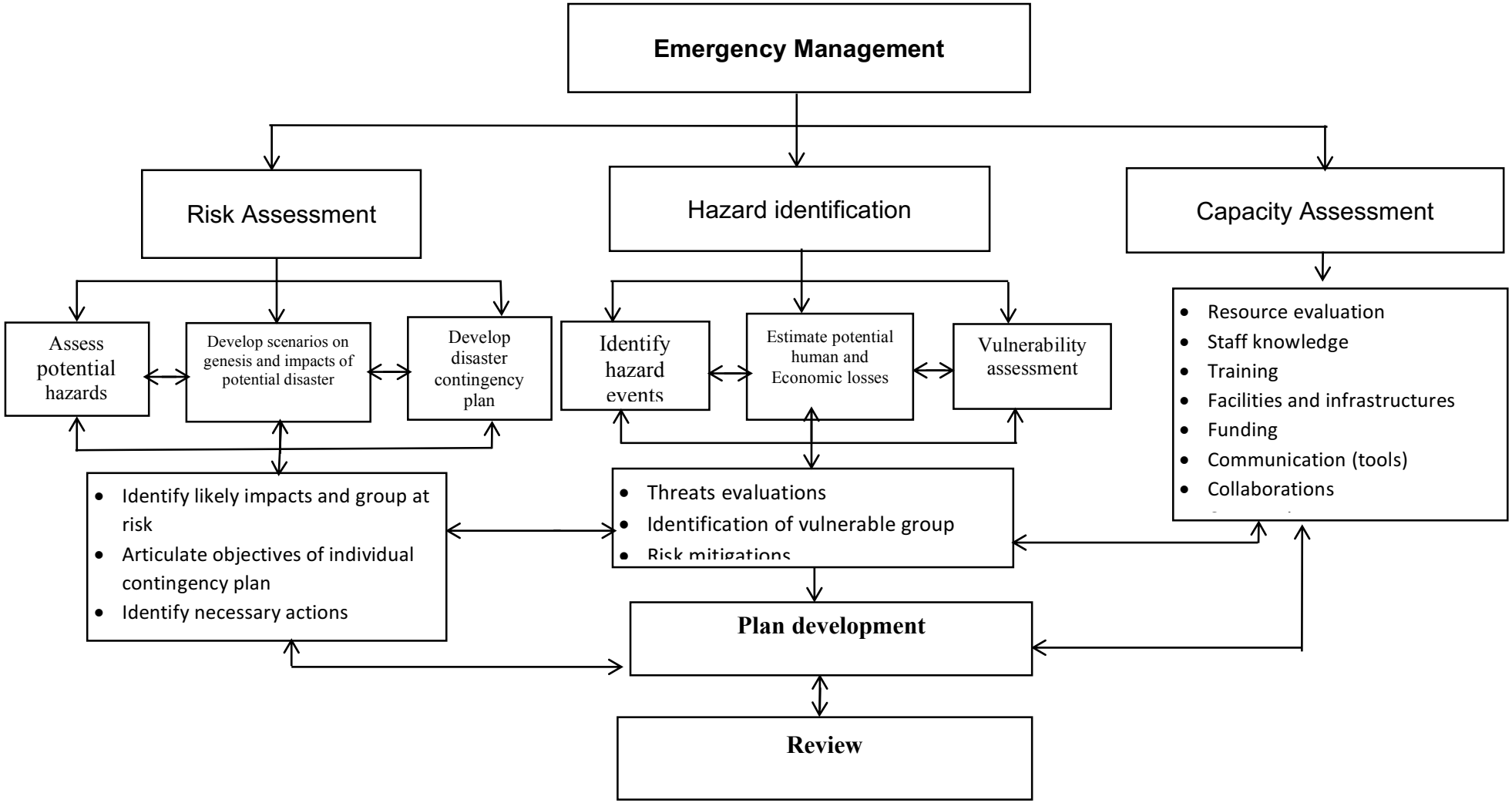

Figure 4.1: Proposed framework for disaster management

4.4. Implications of emergency management in reducing disaster impacts

Emergency management is becoming an issue of concern even at the global level following disaster incidents such as the 9/11 terrorist attacks, Hurricane Katrina, the 7 July, 2005 London bombs, car bombs of 17 May 2016 in Iraq, the Indian Ocean tsunami and floods in China, among other events that generate pressure to improve existing emergency management plans so as to respond better to future emergencies. According to Choi (2008), to respond effectively in emergencies, public administrators need to be encouraged to develop strategies and policies that protect lives, properties and the environment against unforeseen natural or human-induced hazards so that, when emergencies arise, response will be rapid. As such, all public, private and non-profit organisations involved in emergency response and implementation of emergency management activities need to improve extensively their ability to communicate and coordinate between themselves during emergencies to provide the needed support by utilising available resources in a way that reduces disaster impacts (Naim *et al.,* 2010). Accordingly, it becomes important to establish new strategic approaches to facilitate the development of emergency management plans that include all actions such as mitigation, prevention, preparedness and response to support a long-term commitment of organisations' interests in managing emergencies. Choi (2008) contended that this can only be accomplished when organisations maintain a clear focus on their strategic agenda in all decision-making processes. However, Naim *et al.* (2010) asserted that in trying to achieve high performance rates during emergencies, rapid assessment of organisations' abilities to restore disrupted systems, share relevant information to enhance allocation and utilisation of resources, exhibit flexibility in decision-making processes, and to expand coordination and build trust with other organisations involved (as well as the public) remain essential in order to improve preparedness and planning. Such an approach would be useful in the present thesis, on the grounds that different organisations are often involved in managing emergencies within the study area, which requires coordination and adequate allocation of resources based on the capacity of each organisation and level of government involved to meet the needs posed by the disaster.

Although several studies have provided some useful sources of information, yet, substantial actions are required to increase information dissemination processes during crises and emergencies so as to improve the level of preparedness in sharing disaster-related information and promoting effective implementation of disaster management and emergency response activities (Canton, 2007). As a result of the demand from the public for protection, the government needs to take action and become involved in emergency management activities (Choi, 2008). As suggested by Paton, and Flin, 1999 (1999), even though several attempts have been made to deal with complex, unpredictable and dynamic emergency response issues, emergency managers still face some difficulties – such as personal dangers, lack of communication, absence of team operations or integrated emergency management – that make it difficult for them effectively to pursue their activities. Hence, it is important to identify those factors that can be controlled or reduced, and consider how emergency managers can be trained to deal with complex situations to safeguard society and the well-being of individuals or groups. This would help to improve their level of preparedness and promote effective response in emergencies (Paton, and Flin, 1999). Even though in many instances emergency management is considered as a function of law enforcement, Choi (2008) suggested that government and its agencies need to develop intergovernmental and inter-organisational actions at all levels, including federal, state and local governments, in order to ensure effective utilisation of resources. By doing so, contemporary emergency management approaches would be improved, as managing and responding to emergencies is a complex process that requires necessary collaborations, cooperation and coordination to respond according to the needs posed by the event.

All organisations involved in emergency management and response activities need to provide sufficient numbers of personnel with the required skills and have adequate facilities to support implementation of their activities during emergencies (Naim *et al.,* 2010). This advocates that, for disaster management to be effective, it is important to identify the strengths and limitations of both emergency managers and organisations involved by considering the availability of resources such as personnel, facilities and funding so as to understand their capacity and determine the kind of support that they may require to improve it (Paton, and Flin, 1999). Accordingly, assessing a complex EMS with consideration of specific actions, such as the following, would enable an understanding of the

capacity of each organisation involved and promote improved level of preparedness by developing new measures to enhance preparedness: training and exercise programmes that are provided to develop staff skills and knowledge, communication facilities and tools to support sharing of disaster-related information, and their coordination ability for ensuring available resources are allocated and utilised effectively.

Nevertheless, some suggestions have also been made to improve intergovernmental and inter-agency collaboration and cooperation in responding to disasters, and to establish essential networks for resource allocation and information sharing in emergency management (Choi, 2008). Centralised planning and decentralised execution of plans, strengthening intergovernmental response processes, building cooperation among public and non-profit organisations, providing more training for operations of emergency management strategic planning and recruiting professional emergency managers have been found to be invaluable in improving emergency management activities (Choi, 2008; Paton, and Flin, 1999; Parton, 1996). Hence, adopting a disaster management approach involving inter-agency and intergovernmental collaboration and cooperation with adequate communication tools and networks to disseminate disaster-related information, an EMS that encourages adequate resource allocation to reduce the challenge of resource shortage in emergencies, and an operational EOC to facilitate decision-making processes during disasters would be helpful in Nigeria to strengthen disaster management capacity and reduce the impacts of disaster upon society.

Having looked at the general picture of implication of emergency management, we now consider the specific one linked to particular kinds of disasters or major incidents related to this thesis, starting with emergency management implications of building collapses.

4.4.1. Emergency management implications of building collapses

Fundamentally, there are five common factors that, alone or in combination, trigger building collapses: bad designs, faulty construction, foundation failure, unusual loads and unexpected failures (Suppasri *et al.,* 2015). These lead to increased damages, loss of life and human displacement. Generally, faulty construction is recognised as the most common cause of building collapses due to bad building designs and faults in the building process, leading to construction errors and failure to consider all stresses and weights of the building in the process.

Faulty construction also emerges as a result of over-dependence on wrong data and poor choice of materials used, leading to erection of poor and substandard buildings. The increasing numbers of people affected by building collapse disasters, particularly in urban areas (Pelling, 2003) leads to the acknowledgement of the negative impacts of building collapses on the development of the society. In line with United Nation's eighth Millennium Development Goal, which aims to intensify collective efforts to reduce the numbers of people affected by disasters and the impacts of both natural and human-induced disasters (UN, 2000), substantial efforts from government, groups and individuals, especially those in the building industry, need to be harmonised in ensuring buildings are built according to standards to reduce the numbers of buildings that collapse and their impacts.

Due to urbanisation, urban population densities are increasing, and more people are becoming vulnerable as, due to lack of space and resources, people tend to settle even in risky locations and uncertified buildings. This exposes them to the hazard of building collapse (Levy and Hall, 2005). Although engineers are aware that the progressive collapse of buildings cannot be completely prevented or avoided, it is argued that building tools can be designed in a way that improves the performance of buildings to resist or better withstand collapse (Vona *et al.,* 2017). Designing buildings with multi-hazard resistance and ability to withstand progressive collapse from all threats including natural and technological disasters is encouraged as a means of improving building quality. Some specific mitigation strategies to prevent building collapses, as identified in Vona *et al.* (2017), include the use of soil, poles, planters and retaining walls. Quantification of dimensional characteristics of the buildings is also a key step to assess and examine the consequent application of structural mitigation strategies. Detailed information about a town, its streets, buildings and their aggregation are central in the estimation of potential damage of buildings. For instance, in the USA, FEMA recommends that all buildings should be designed in a way that improves and facilitates emergency rescue and response operations – through effective placement, structural design and use of emergency exits as well as electrical and mechanical systems within the building.

To improve building mitigation and prevent buildings from collapsing, the need to assess the vulnerability of a building arises in order to understand the hazards associated with such a building and the impacts that may result if and when it collapses. This can be accomplished through proper building design during

the building process and estimation of human and financial losses that may result when a building collapses if not properly constructed (Suppasri *et al.,* 2015). This approach would also promote proper use of land and encourage emergency planning especially within urban areas during the process of putting up new buildings. Several parameters can be used in building assessment, including age, type, height, dimensions, structural quality and quality of materials used in the building (Vona *et al.,* 2017). Such information provides adequate knowledge about the building characteristics and is used to enhance planning for unforeseen events that may result from the collapse of buildings.

Adequate knowledge of building characteristics, traditional materials and construction techniques is essential to assess and retrofit buildings, and in determining the best strategy to improve town planning. Structural interventions therefore need to guarantee building safety, and maintain building reliability and utility for residents. Identification of factors that influence a building's resistance to collapse is very important in the development of strategies to improve building standards during the building process. As Tay, *et al.* (2016) suggested, deck thickness, slab reinforcement and connection design are essential factors that influence resistance to progressive collapse in frame buildings. This implies that the deck of buildings has a huge impact on building strength, as the load-carrying capacity and thickness of the building depend on the building strength. Hence, increasing deck thickness of a building would improve its robustness and enable the building to resist collapse. Slab reinforcement also contributes greatly to the resistance of buildings to progressive collapse. It helps to control cracks that may lead to shrinkage and creep effects of the concrete cladding of buildings (Tay, *et al.,* 2016). Strong and ductile shear connections complemented with sufficient slab reinforcement and effective deck continuity can be an effective approach to increased robustness of building design and performance. Having considered the emergency management implications of building collapse, the emergency management implications of stampedes are next.

4.4.2. Emergency management implications of Stampedes

Stampedes are one of the most prominent hazards in mass gathering events, but they have received little attention worldwide in terms of formulating strategies that effectively manage mass gatherings events and respond when stampedes occur. Several works in the literature have shown that the majority of stampedes in the world result from religious festivals and are commonly triggered

when people rushed towards something that seems pleasing to them (for instance to take a front seat during a crusade) or away from something perceived to be threatening to them (example the sound of a gun, a surge of people or a rumour) or competition (Alison et al., 2013; Faisel et al., 2013). Before the organisations involved seek approvals from concerned departments to hold their events, there is a need to make arrangements for event safety at the preparation stage. Various features of the event, such as type, venue, and duration, including the history of accidents following previous similar events, need to be reflected upon to support the development of a safety plan that would include all safety components required to hold the event and protect the people attending the event (Faisel et al., 2013).

Crowded situations are increasing all over the world as a result of population growth, urbanisation, improved transportation systems and advanced technology, among other factors (Sharma et al., 2016). The increased frequency of events leading to mass gathering hazards and the rate of human stampedes occurring around the world has raised concerns and serves as a call for disaster managers and emergency planers to improve preparedness to mitigate, prevent and respond rapidly to crowd-event disasters. Some common factors that are likely to result in crowd disasters are crowd density, restricted access points into large capacity venues, poor crowd control measures, and lack of complete information about a particular area and the kind of activities going on in the area (Gayathri et al., 2017). Likewise, some common mass gathering events that may result in human stampedes include festivals, religious gatherings, sporting events, concerts and political rallies (Sharma et al., 2016). To enhance planning and improve response to disasters at mass gathering events, it is very important to have an understanding of the influence of crowd profiles, the psychological characteristics of the people involved, weather conditions, unfamiliar evacuation routes and crowd safety (Gayathri et al., 2017). Before commencing an event, appropriate crowd monitoring and crowd control measures are necessary. These are used during and after the event to obtain feedback and report lessons learnt with the aim of improving preparedness and enabling effective crowd management in future mass gathering events that could result in disasters.

Adequate preparedness is required in order to increase the understanding and development of plans to improve response to events associated with mass gatherings that could result in disasters (Madzimbamuto, 2003; Alison et al., 2013; Sharma et al., 2016). Recently, large-scale human activities have become more

common and crowd safety is beginning to require more security attention as it raises concerns about protecting those who participate in mass gathering events. As a result, the relevant authorities are invited to prepare well for activities involving mass gatherings so that if they eventually result in disasters such as stampedes, the response can be rapid and impacts minimal (Gayathri et al., 2017). This emphasises the importance of analysing crowd dynamics and associated characteristics to enable event planners to understand the movement and needs of crowds when planning for emergencies associated with mass gatherings. For example, stampedes sometimes may occur when people respond to flow disruptions and start falling in front of a crowd or large volume of traffic that disrupt crowd movement (Gayathri et al., 2017; Alison et al., 2013; Ka et al., 2009). Such events lead to panic and worsen situations, potentially leading to death due to unconsciousness and crush (Alison et al., 2013). Increasing preparedness towards such events would guarantee effective response by putting in place adequate measures to facilitate crowd management (Madzimbamuto, 2003; Sharma et al., 2016). While it is argued that developed countries with rich resources and operational infrastructures use their available resources to completely investigate crowded disasters and appropriately document and report them in order to track and improve response to future events, developing countries are still faced with the challenge of resource shortage and lack of operational infrastructure that makes it difficult to carry out such investigations even though mass gathering events are not uncommon (Madzimbamuto, 2003). The majority of events are overlooked and are not reported in ways that would enable lessons to be learned and preparedness improved. The poor attitude towards recording and reporting mass gathering events may be attributed to lack of help and support in the form of incentives, as well as rigid administrative and economic systems in which government and its agencies fail to prioritise human security. According to Madzimbamuto (2003), the poor attitude of government and its agencies results in organisational failures that lead to lack of ability to make key decisions that would improve emergency management.

Architectural and infrastructural designs, as well as technologies and mechanisms for crowd monitoring and control, are identified as necessary parameters in managing large crowds and preventing potential disasters emerging from mass gatherings (Sharma et al., 2016). When planning for mass gathering events, we need to consider these parameters very carefully because they help to

define the best crowd flow directions and crowd density thresholds in different areas, which would enable adequate preparedness for unforeseen circumstances that may arise. Also, according to Sharma et al. (2016), crowd modelling and simulation, using real-time crowd management systems, are other useful approaches in planning for crowded events and predicting crowd abnormalities. However, Gayathri et al. (2017) suggested that a more sophisticated and continuous monitoring system, such as early warning system, is helpful when planning for crowded events in order to prevent disasters. This is helpful in assessing infrastructure around where the event would take place and evaluating the efficiency of existing crowd control measures. Materials, mechanisms and infrastructural changes to put in place adequate mitigation and response measures are needed before the event is conducted (Sharma et al., 2016).

So that organisers of mass gathering events organise and coordinate their events with less pressure and minimise the events' impacts on the well-being of entire communities, at the planning stage it is very important to develop effective risk management strategies to factor in concerns about response if stampedes eventually occur (Faisel et al., 2013). The process would help to identify factors that can influence decision-making by event organisers, agencies involved in managing events and emergency service providers so as to understand the protocols of organising mass gatherings events. This involves consideration of the procedures required in seeking permission to hold mass gatherings, such as risk assessment, safety measures, contingency planning and factors that may lead to stampedes, as well as legal implications of any event that may result in stampede. Additionally, management aspects of government and its agencies, including professionals working in the field of emergency management, need to be reflected upon when planning for mass gathering events to strengthen their capacity towards rapid response when stampedes arise (Faisel et al., 2013). Because emergency response and disaster management often involve inter-agency and multidisciplinary approaches, planning for mass gatherings events also requires the identification of potential hazards in order to enable the design and execution of appropriate measures for collaboration and cooperation between different organisations and levels of government.

Failure to take proactive measures in preparing for mass gathering events by addressing issues concerning access points, exits and regulating the number of people admitted into a particular venue and failures in taking crowd control

measures of addressing unplanned incidents that may lead to stampedes at the planning stage of an event has huge impacts on the success or failure of response when stampede occurs (Alison et al., 2013). Ka et al. (2009) maintained that a combination of high crowd density and difficult venue access points often leads to stampedes especially when fear is initiated, but even during pleasant activities. Lack of sufficient venue entry and exit points may hinder effective response as emergency service providers may find it difficult to access the venue during stampedes. Hence, the use of focused crowd control measures, including provision of sufficient exits in crowded situations, will enhance rapid response to crowd disasters. And so, when planning for events involving large crowds, attention should be focused on clearly designed pressure points such as entry points, exits points and stairwells. This would help to balance crowd dispersion and offer reliable entrance routes to rescue personnel in the event of emergency (Alison et al., 2013; Ka et al., 2009).

To overcome stampede challenges and reduce the risk of communication failures, cellular telephones, dedicated land lines and prearranged radio frequencies are important requirements for ensuring effective communication in disseminating information to facilitate response operations. On this note, it is essential to include the possibility of large-scale disasters that may overwhelm local resources in preplanning activities to ensure rapid response when stampedes occur. For example, during Hajj events, temporary medical tents or seasonally closed hospitals may be reopened, depending on the required surge capacity to ensure effective event management and response if stampedes arise (Ka et al., 2009). Immediate field-to-hospital notification and access to a system of nearby triage stations and hospitals enhances the ability to respond to stampedes. However, the system-based approach works better when the triage stations and hospitals have appropriate staffing and a pre-existing incident command structure for multiple casualties during the time of peak danger.

4.4.3. Emergency management implications of blackouts

Electrical power failure is a common experience throughout the world. Prolonged power failures have been recorded in several countries that were connected to power grids failures and required response interventions to curtail their impacts. For example, between 30 July and 1 August 2012, three large blackouts were recorded in India, which are recognised globally as the world's

largest blackouts so far (Zeng et al., 2015). The blackouts, which spread over a wide area, led to extended power outages with huge impacts on India's population. Also, in 2003, there were blackouts in Toronto and Ontario, Canada, that led to trapping of several people in subways and elevators. People with disabilities were also stuck in high rise buildings, and public transit was shut down due to the blackouts, which generated the need for emergency response (Murphy, 2007). In the same way, in the USA, the 2003 Northeast Blackout and the World Trade Center terrorist attacks of 11 September 2001 gave rise to national concern and prompted national government to issue Executive Order 13010 which established the President's Commission on Critical Infrastructure Protection (Clinton, 1998), targeted towards assuring continuity and availability of critical infrastructure operations (DHS, 2005).

Today, society is increasingly dependent on electricity to carry out industrial activities, commercial activities and household tasks such that, any one power outage can result in several losses. This generates the need to mitigate blackouts, and to prepare to respond rapidly when they eventually occur in order to reduce their impacts. Considering that blackouts affect the operations of other essential systems, it becomes imperative to improve preparedness by the various organisations involved to respond rapidly when such events occur so that their impacts will be minimal. According to Zeng et al. (2015), blackouts affect society in several ways, such as traffic paralysis; large numbers of people being trapped in subways and roads; the shutting down of electric railway stations; interruptions of communication networks, health systems, water supply systems, and financial and stock markets; and social disorder. Factors including issues related to protection of power grids, inadequate voltage, insufficient remedial actions, inadequate training, poor communication and/or coordination, high transmission utilisation, lack of regulations, inadequate situational awareness, failures in operation procedures, design issues, maintenance errors, insufficient technical upgrades, lack of generation reserves and insufficient maintenance of the power supply system are considered the cause of power failures generally (Veloza and Santamaria, 2016). As society continues to depend on electricity in many ways, interruption of supply can have direct or indirect effect on the stability of social order and economic development (Zeng et al. 2015). As Christopher, et al. (2007) noted, reducing the impacts of blackouts requires electrical safety and protection of electrical infrastructure which can only be possible through adequate planning by

developing measures that consider the above actors as a means of improving preparedness.

In the field of electricity system resilience, existing literature demonstrates the need for government to develop policies that protect electrical infrastructure and ensure continuous operation of its facilities to prevent blackouts from occurring, while also attempting to reduce their impacts when they eventually occur (Christopher et al., 2007; Veloza and Santamaria, 2016). For example, the Executive Order 13010 that was issued following the 2003 Northeast Blackout and World Trade Center terrorist attacks of 11 September 2001 shows part of government's concern in ensuring continuity and availability of critical infrastructure after major incidents (Clinton, 1998; DHS, 2005). As power failures have negative impacts on society, developing measures to mitigate, prevent and respond rapidly when they occur form part of a preparedness strategy to manage emergencies resulting from power failures. Measures such as implementation of regulations, compliance and enforcement of policies that hold responsible authorities accountable are useful to improve reliability of power supply systems and, perhaps, to prevent blackouts from occurring (Veloza and Santamaria, 2016). For example, the compliance with the Operation Handbook of the Union for the co-ordination of transmission of electrify (UCTE) power system and the mandatory enforcement of a system reliability standard in the North America power system contributed immensely to improving power supply in this area.

As stated by Zeng et al. (2015), the lessons learned from previous blackout events can be used to improve preparedness towards safety and stability in the operations of electric power grids to prevent future blackouts and respond in a way that reduces impacts if they do occur. For instance, the outcome of the 11 September 2011 event in the United States provided the New York City public agencies with considerable experience in responding to emergencies related to blackouts (Mark et al., 2006). Following the 9/11 disaster, emergency response agencies adopted an incident management system comprising an all-hazards approach that allows for easier communication between different agencies by adopting a common structure and familiarising themselves with response-specific languages and procedures. Murphy (2007) stated that policy makers need first to understand the complex interdependencies of critical infrastructure in order to protect it. Even though blackouts associated with natural hazards cannot be completely avoided, the literature argues that improvements in technology and

other safeguards might reduce their frequency and impacts (Mark et al., 2006). Similarly, the 2001 electric power disruptions in California cost businesses billions of dollars (Rinaldi et al. 2001, cited in Murphy, 2007) and raised concern to understand and develop measures in modelling impacts of disasters on interconnected infrastructures in order to improve preparedness and response to similar situations. Given that power failures continually occur in Nigeria, adopting a similar approach will enable development of measures that will reduce the occurrence of blackouts and build capacity of emergency response organisations to improve in the way they react when power failures occur.

Responses to blackouts require coordination of efforts, especially within a complex system, to provide the required services in halting the situation. For example, during the 2003 blackout in Toronto and Ontario, Canada, while the city declared a state of emergency at the local level and mobilised its EOC, efforts were coordinated across different agencies such as fire, police, emergency and medical services to provide the aid that the affected population needed (Murphy, 2007); this demonstrates the need for adequate coordination of activities across different agencies and organisations in dealing with blackout emergences. Also, it is imperative to understand all kinds of hazards that are associated with complex system failures in order to manage potential solutions effectively when preparing for blackouts (Christopher et al., 2007). Adequate planning using inoperability input-output models developed by Christopher et al. (2007) remain invaluable in this case for conducting an analysis of a blackout with the aim of identifying critical sectors and calculating impacts in terms of inoperability and economic losses. Accordingly, to respond to and manage blackout emergencies successfully, emergency managers and disaster planners need to become familiar with available resources, their organisations' abilities to provide alternative power supply in extreme cases and the related challenges that may be encountered during the process, which influence their decision-making process towards improving response to blackouts (Christopher et al., 2007; Murphy 2007, Mark et al., 2006). For example, during the 1965 blackout in America, all communication systems including telephones were left with no power and failures in several networks resulted in interruption of radio communication, which required urgent attention to restore the system (Mark et al., 2006). As such, it becomes necessary to always review performances during blackouts and consider available resources in providing a back-up power supply to enhance preparedness (Mark et al., 2006).

Government needs to increase its level of commitment and investment in electrical power to strengthen the operations of electricity infrastructure (Christopher et al., 2007). Resource allocation and other hazard management options to restore sectors that are rendered inoperable through blackouts can be addressed using sensitivity and uncertainty analysis of past events. However, due to complex interconnected systems associated with power supply, policy makers find it difficult to understand the exact effect of such events –the challenge lies on implementing effective resource allocation to mitigate current damages and prepare for future response. Having consideration of emergency management implications with respect to the three forms of hazards central to the thesis, the next section looks at the value of emergency planning in emergency management.

4.5. The value of emergency planning

During disasters or emergencies, urgent attention and additional efforts are often required to bring the situation under control and reduce the impacts of such events on the affected community or population. As such, it is always important that the responsible authority plans ahead of unforeseen circumstances in order to respond rapidly when eventualities arise. This requires that the responsible authority identifies and understands the causes of events following previous incidents or disasters and increases the capability of emergency response organisations to respond to and manage disastrous situations effectively. As disasters and emergencies require rapid adjustments on the part of both the socio-economic system and government agencies to absorb, mitigate and respond rapidly to reduce their impacts, planning for disasters and emergencies becomes necessary; this will foster the development of procedures and measures that can be practiced through regular training, joint exercises with the different organisations involved in the implementation of the plan and documentation of the process, which can be formed into a plan for use in response to emergencies and disasters when they arise (Perry and Lindell, 2003). As Perry and Lindell (2003) suggested, the best way to reduce the physical impacts of disasters is to adopt a good emergency preparedness plan and practices that clearly state who is responsible for what among different entities during sudden catastrophes. This will ensure a coordinated response in line with the need created by the event on affected community or population, and will foster rapid response during disasters and emergencies and reduce disasters impacts in society.

An emergency preparedness plan includes pre-impact actions and considers both human and material resources that may be needed to support active response in disasters and emergencies (Peterson and Perry, 1999). Such a plan includes measures that would support rapid response and enhance quick recovery and reconstruction of disaster-affected areas. According to Lindell and Perry (1996), an emergency preparedness plan identifies the initial mandate that a disaster of any given magnitude may place on the society and promotes the development and documentation of measures to ensure rapid response in emergencies to reduce their impacts. When emergencies arise, in which vulnerable individuals, groups, areas and infrastructures are often affected, they trigger the need for rapid response. As a result, to enhance planning and improve preparedness, there is need to understand the kind of hazards affecting a particular area or community, their likely impacts when they result in disaster and the capacity of organisations responsible for implementing response activities. A well-structured emergency plan would therefore identify and allocate responsibilities to specific actors to facilitate adequate utilisation of resources and enable response according to the needs of the disaster. These buttresses the importance of capacity assessments when preparing for disasters and emergencies. A well-articulated preparedness plan also considers an assessment of needs to identify both human and material coping abilities for dealing with emerging issues around emergency response (Lindell and Perry, 1992; 1996). Such a plan recognises all hazards within an area and considers the structures of organisations that coordinate and implement response activities and efforts from other government and non-government agencies (William, 1985). As vulnerability, resources and organisational structures may keep changing with time, likewise the skills of emergency response personnel may also be lost if they are not constantly being practiced and used regularly. Emergency planning would create an opportunity for continual training and exercising of skills to keep personnel knowledge and skills up-to-date and maintain the level of preparedness for rapid response and the minimising of impacts.

Some studies, such as that of Alexander, (2002) have revealed that disasters are not just extraordinary events but are events that repeatedly occur with more concentration in some particular areas. This implies that the frequencies and times of disasters can be predicted and planned for in advance. For instance, Alexander, (2002) also noted that even some of the technological disasters

experienced in the world today are more or less predictable and they occur in the same predicted pattern. This suggests that owning and implementing an operational emergency preparedness plan that considers all hazards and their impacts is helpful in mitigating, preventing and responding to disasters in a way that would reduce their impacts. Since emergency planning envisages hazards, causes, consequences and patterns of occurrence to put in place measures to deal with them, then the value or importance of planning for emergencies must not be overlooked in complex systems of disaster management, especially those that involve efforts from multiple organisations and different levels of government. This is because, as Peterson and Perry, (1999) and Alexander, (2002) have noted, a good emergency plan helps to assign responsibility and identify who does what during disasters and emergencies in order to enhance rapid response.

In addressing concerns about responses to disasters, some difficulties may interrupt the ability to execute a targeted response in the way that is anticipated. However, Alexander, (2002) suggested that adequate information gathering, strategic studies and policy analysis would help to understand the pattern of emergencies, while Peterson and Perry, (1999) suggested that informal communications with emergency responders during training or comments from emergency planners in discussions among colleagues in other organisations often yield valuable improvements in preparing for disasters and emergencies. This promotes assessment of hazards, reduces the risk to life and the danger posed by actual and potential disasters (Alexander, 2002; Perry and Lindell, 2003), reduces damage, and ensures public safety after disasters and, accordingly, care for disaster survivors and poor people in the society (Alexander, 2002). This indicates that a lack of emergency planning can easily lead to loss of life and cause more injuries or damage during disasters that could otherwise be avoided (Alexander, 2003). As disasters occur in different phases, they create different response patterns, leading to significantly different emergency planning processes between authorities, depending on the kind of hazard and risk, and the capability, skills, resources and motivation of those that participate in disaster management and response activities (Perry and Lindell, 2003). However, the level of available resources for carrying out emergency response activities determines the level of threat awareness and the nature of planning.

Having considered the value of emergency planning in general perspective, let us now look at emergency planning in different political and legal frameworks.

4.5.1. Emergency planning in different political and legal frameworks

The importance of developing an integrated disaster management and emergency response plan to include all forms of activities and structural and non-structural measures to prevent or reduce hostile effects of hazards has been highlighted above. It is well known that disasters create the need to harmonise resources and strengthen capacity of response organisations to prepare for rapid response. Even though different nations of the world have different response capacities and capabilities, emergency management policies in different nations are often developed in a way that suits their capacity and emergency needs. However, in addressing issues around emergency preparedness, it is very important to develop strategies that would increase the ability of individuals, groups, communities and organisations in coping with and adapting to disruptions, to minimise their impacts (Farmer, 2003). Therefore, government and its institutions need to be committed in directing knowledge and power, and informing practices that legally control emergency management activities and influence rapid response when disasters occur (Farmer, 2003). Such practices would promote preparedness and enhance rapid response to reduce disasters' impacts in society.

To improve preparedness, first, it is essential to understand the capacity of individuals, groups, communities and organisations involved in coping with disaster situations (Kwok et al., 2016). This would enable an understanding of the kind of support that each entity may need to improve their capacity and enhance development of an emergency management plan according to their capacity and needs. As such, underprivileged and vulnerable groups need to be involved in policy decision-making processes, as they are often affected directly by such decisions – but, in many cases, they are often neglected when developing disaster management policies and preparedness plans, which makes them more vulnerable. For example, according to Uscher-Pines et al., (2007), about 37 pandemic plans from Europe, the Pacific Rim, Middle East, Africa and America failed to analytically identify underprivileged groups, and fewer than 25 of these documents considered the economically or socially underprivileged groups, thereby making them more vulnerable (Blake et al., 2017). Likewise, in Nigeria, severe disaster impacts are recorded among the underprivileged who lack access to adequate resources and are not involved in policy decision-making processes (Nsorfon, 2015).

Even though different countries of the world have different guidelines to support disaster management and provide protection for their citizens in disasters and emergencies, some guidelines can be applicable to other countries with a similar structure of government. For example, the Government of India (GoI) developed a National Disaster Management Plan (NDMP) that focuses on the need to include all those responsible in implementing disaster management functions within the GoI and active participation and integration of all other disaster management stakeholders when responding to major disasters (DM Act 2005). This serves as a complete document to promote emergency management activities throughout the country (National disaster management plan, 2016). The plan puts in place mechanisms to coordinate different institutions at the national, state, district and local government levels and precisely address the responsibilities of the National Executive Committee (NEC), Ministry of Home Affairs (MHA), Cabinet Secretariat and National Disaster Management Authority (NDMA) in India (National disaster management plan, 2016). Having such an integrated plan in Nigeria, given the complexity of disaster management and emergency response, will go a long way to foster improved preparedness and enhance rapid response when emergencies occur. The plan clearly outlines the operating structures and tools used regularly at all levels of government to respond to emergencies and provides a framework of direction for all government agencies in all phases of disaster management (National disaster management plan, 2016). Additionally, the plan recognises the need to minimise uncertainties and specifies who is responsible for what at different stages of managing disasters and responding to emergencies. This facilitates a paradigm shift from a relief-centric approach to a more proactive, holistic and integrated approach of strengthening disaster preparedness, mitigation and response in India (National disaster management plan, 2016).

Similarly, the United States of America owns an emergency operation plan (EOP) that guides implementation of disaster management and emergency response activities. The EOP permits local government to act as first responders to disasters, while state government works closely with the federal government to provide the necessary assistance when local capacity is exceeded. Although the federal government is expected to organise its resources and channel the efforts of voluntary agencies and private enterprises in the community, and also seek external assistance if necessary, Section 101 (b) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act recognises the responsibilities of states and

local emergency management independently and provides a logical and continuing opportunity for the federal government to assist state and local governments in implementing their disaster management functions (A Guide for All-Hazards Emergency Operation Planning, 1996). This suggests that developing a disaster management plan that clearly indicates who coordinates the activities of all participating agencies and organisations would promote preparedness and foster integration among different levels of government in emergency management. In any given system, all elected leaders are legally responsible for ensuring that appropriate actions are taken to protect people and property against disasters and emergencies. In the USA, emergency preparedness is a joint responsibility between federal and state governments by means of their political units. Governments discharge their emergency management responsibilities by taking four inter-related actions: mitigation, preparedness, response and recovery. Although each of the four phases is treated as a comprehensive process, each phase builds on the accomplishments of the preceding phase with the overall aim of reducing disasters impacts.

In the same way, New Zealand (Aotearoa) has adopted a core preparedness plan that provides a framework that offers attention to the needs of the underprivileged groups (Blake et al., 2017). For instance, the Ministry of Civil Defence and Emergency Management, which is a business unit of the department of Prime Minister and Cabinet, used its National Civil Defence Emergency Management Plan to distribute its preparedness and response requirements (Wellington, 2015). The plan targets central and local governments, emergency services and non-governmental agencies and clearly outlines the roles, responsibilities and actions required by each agency in an emergency. There is also the Aotearoa/New Zealand Ministry of Health's National Health Emergency Plan which informs citizens how to prepare for unforeseen events. They adopt an all-hazards approach with the aim of reducing the likelihood of hazards and preparing for, responding to and recovering from disasters. The plan encourages collaborative and multidisciplinary approaches in responding to disasters and emergencies (Blake et al. 2017). Considering the disaster management and emergency response structure in Nigeria, where federal, state and local government including non-governmental and private sector organisations are involved, developing an integrated plan that outlines clearly the responsibility of each entity would foster coordination and cooperation for rapid response.

Emergency management and disaster preparedness in many developed countries have yielded better outcomes by aiming at the individual level that enables people to respond, adapt and recover without being reliant on federal and state support or intervention (Becker et al., 2012); accepting a similar approach in Nigeria would improve their level of preparedness and promote effective emergency management as people currently perceived emergency management to be a government responsibility and they depend solely on government for emergency response.

4.6. Aspect of emergency preparedness relevant to this research

Disasters are growing rapidly in response to major changes in society. More people now migrate to urban areas in search for better lives, thereby increasing urban populations and the demand for housing, electricity and other social amenities. The impact of disasters is likely to increase in the future, based on a comparison of the relationship between development and vulnerability (Hooke, 2000; Picou et al., 2004) including human loss, property damage and economic losses. Disaster management involves all organised activities geared towards the readiness of a political jurisdiction to react constructively to threats from the environment in a way that minimises the negative consequences of disasters for the health and safety of individuals and the integrity and functioning of physical structures and systems (Perry and Lindell, 2003). Managing disasters involves preparing and planning for unforeseen events. Adequate preparedness enables emergency managers and disaster management authorities to put in place measures to prevent, mitigate and effectively respond when the actual disaster occurs. However, Picou et al. (2004) have argued that the apparent increase in the toll of human-induced disasters is attributable to a combination of factors such as population growth, increased urbanisation and global economic pressure. Perhaps this is an issue of concern in Nigeria, as urbanisation is becoming greater due to migration of many Nigerians to urban cities in search of better living conditions.

Wells et al. (2000) further asserted that more people are at risk and vulnerable to several hazards due to the manner in which humankind deploys its resources and technology in the contemporary world. Being a nation in which the majority of her citizens constantly struggle to meet earning needs, Nigeria is not exempt from this experience. Disasters are already severe in Nigeria, with recent incidents of floods, bomb blasts, GHG emissions, building collapses, human stampedes, power outages, oil spillages and road accidents, among others (NEMA, 2012), leading to

devastating effects on human life, property damage and economic loss. The tendency of disaster impacts to increase is likely to continue, especially in situations where there is no adequate preparedness plan to mitigate, prevent and respond rapidly to disasters. This suggests the importance of evaluating real situations in order to identify the causes, and evaluating the capacity of various emergency response organisations with the aim of improving resource allocation, strengthening communication ability among different agencies for effective information sharing, and developing strategies to promptly respond to disasters in order to curtail their negative consequences (Wells et al., 2000).

Recent research shows that effective learning from past events improves organisations' ability to plan and prepare for future disasters and emergencies (Pidgeon and O'Leary, 2000). The simple message of human-induced disaster theory is that, despite the intentions of all those involved, the objective of safely operating technological systems could be undermined by some very familiar normal processes of organisational life (Turner and Pidgeon, 1997). Hence, it is important for multidisciplinary participation to contribute to the understanding of the origin of disasters, and to the expansion of emergency management and disaster preparedness to include planning, mitigation, and recovery in addition to response and reconstruction (Alexander, 2001).

Substantial efforts have been made on emergency preparedness and disaster management in many developed nations and measures are in place to reduce risk, vulnerability and disaster impacts (McMaster and Baber, 2008). Investigation into the field of disaster management shows that having an operational state represents more than avoidance of risk or managing error, and having a positive engagement with the construction of operational safety, that extends beyond controlling and mitigating unexpected events seeks to anticipate, and plan well for emergencies using the concept of a safety culture and organisational learning (Wells et al., 2000; Weichsel and Gartner, 2001). The application of this concept in Nigeria's emergency management structure would help to create an efficient response pattern to the increasing toll of human-induced hazards and provide emergency managers the opportunity to evaluate their performance and learn from previous events to improve future response. Further study conducted on the application of emergency preparedness, emergency planning and good communication to share information about disasters confirmed that emergency preparedness, emergency planning and good communication technology to

disseminate information is helpful to improve emergency management activities (Alexander, 2003). This is essential in Nigeria, as the impacts of human-induced hazards are becoming more devastating with little or no commitment from government in terms of preparedness to prevent, mitigate and promptly respond when emergencies arise.

The causes of many disasters are now attributed to industries or government for not enforcing regulations that predict or respond to disasters the way victims expect (Picou *et al.,* 2004). This needs to be addressed to reduce disaster risks and vulnerability in society. As Perry and Lindell (2003) noted, identifying the readiness of a political authority or government to respond to threats occurring in society or induced by humans – to minimise their negative effects on individuals and on the integrity and functioning of the physical structures of the entire EMS– helps to improve response to emergencies. However, in seeking the causes of most modern calamities, we must consider very seriously the interaction between technological and organisational failures that results from errors and events that are taken for granted and accompanied by a collective failure of organisational intelligence (Pidgeon and O'Leary, 2000). Hence, the following subsections consider aspects of emergency preparedness that are relevant to this research, such as effective communication, resource availability and allocation, and operations of EOCs, with the aim of improving the preparedness and emergency management activities in Nigeria.

4.6.1. Effective communication

Responding to disasters, whether natural or human induced, requires a communication protocol for ensuring adequate dissemination of information to enhance the allocation of resources. Although response sometimes may be spontaneous, to a large extent it involves ad hoc functions involving government agencies, non-government organisations, voluntary bodies, local communities and emergent groups, which makes it difficult to command attention or enforce compliance in ensuring effective service delivery in emergencies (William and Gregory, 2006). Effective communication between different entities involved in emergency management such as federal, state, local government and other related organisations would encourage adequate sharing of disaster information and resource allocation. According to Matthew (2006), in disasters and emergencies, communication is effective when there are adequate tools and good networks to share information between various actors involved and affected

communities. Availability of adequate information enables allocation of resources in a way that meets the needs created by the disaster. Comfort (2007) further supported this view, stating that effective communication depends on interoperability of mechanical devices such as radios, hand-held data devices, mobile telephones, landline telephones and satellite networks to distribute information. This implies that improving the standard and reliability of such tools would ensure adequate distribution of information during and after emergencies and enhance adequate resource allocation and utilisation. As Kapucu et al. (2010) noted, communication speaks to how people understand each other, and the way information is being disseminated between emergency service providers and affected communities influences response effectiveness. According to Hiroki et al. (2016), adequate sharing of information between government and its agencies, emergency service providers, and communities affected by disasters would enable early evacuation, facilitate disaster education and establish a system that would encourage residents to voluntarily evacuate before, during and after disasters without delays. This would further help to reduce the numbers of disaster victims because, with adequate information, response operations can be rapid. Hence, provision of adequate communication tools and facilities to share information in emergencies should not be neglected at the planning stage.

As Sebastien and Harivelo (2015) highlighted, the importance of using mobile devices such as smart phones, mobile telephones, landline telephones, microphones and smart watches, and mobile networks such as Wi-Fi, in gathering information and communicating it between residents, emergency service providers and government and its agencies must not be neglected when planning for disasters and emergencies. The number of mobile phones and their pattern of distribution in relation to disaster victims are important factors affecting effective communication in emergencies (Ram and Oliver, 2012). As such, increasing the numbers of mobile phones and improving their pattern of distribution can help to improve communication in emergencies. Additionally, the use of a combination of existing technologies such as cellular networks, wireless local area networks (LANs), wireless mesh networks, geographical area networks and wireless personal networks also has a huge impact upon emergency communication. However, in Nigeria it is not yet certain that such technology is available in adequate amount to support communication between various organisations and affected communities. This has raised a call to investigate the communication

ability of the Nigerian EMS and evaluate the availability of communication tools, to identify the communication challenges associated with the EMS and improve communication preparedness. Accordingly, as suggested by Sebastien and Harivelo (2015) and Ram and Oliver (2012), building networks that can easily be accessed by disaster victims, emergency service providers and government agencies would facilitate adequate sharing of disaster-related information, and enhance the following: the allocation of resources for rapid response and search and rescue operations, the promotion of interoperability, and the ability of disaster survivors to declare their location to a command centre for rescue operations.

Involving local communities in disaster management and emergency response activities, especially in countries with a top-down disaster management structure, seems to be very difficult due to the struggles in understanding the public's needs and expectations, and their propensity to react in particular ways to disaster messages. To overcome this challenge, adequate sharing of information would create a kind of disaster prevention network that would enable local populations to share their expectations, communicate their needs and voluntarily evacuate following warning messages before the actual disaster occurs (Hosseini et al., 2014). Such networks can influence decision-making processes, promote strong awareness of disaster prevention and ensure rapid response during emergencies. Even though government and its agencies pay more attention to restoring public order in disasters, the public, however, gives priority to obtaining information and protection, and even expects compensation from government (Hosseini et al., 2014). This implies that communication, whether with the public, the mass media or any other entity, needs to demonstrate an appropriate level of compassion, concern and empathy from designated authorities because, as Matthew (2006) and Kapucu et al. (2010) observed, the characteristics of the person sharing the information and the kind of message being shared play a significant role in increasing the credibility of the message and the way people perceive it before, during and after disasters.

Because emergency management cannot be successful without integrating efforts from different actors – such as government and its agencies, NGOs and CSOs – collaboration among them has become crucial and this can only be achievable through effective communication to share adequate information (Kapucu et al., 2010). Not only does effective communication enhance allocation of resources, it also fosters integration of efforts, builds trust, strengthens

collaboration and enhances the development of mutual understanding among various actors (Hosseini et al., 2014). However, the type of information shared and its frequency determine the success or failure of collaboration in an emergency (Kumar, 2007). Sharing relevant information between different partners is always complicated and requires a sustainable solution from both practitioners and scholars in order to tackle the challenge. A well-coordinated disaster management and emergency response depends on the kind and quality of information about the disaster available to different actors to support coordination and allocation of resources (Kapucu et al., 2010). As such, communication would enhance mutual understanding between people and enhance the transferring of information within and among organisations to improve preparedness and rapid response when disasters strike. However, some challenges such as the time information may be communicated and some internal constraints, such as information technology barriers, can restrict development and dissemination of emergency management documents within the required time frame (Curnin and Heumüller, 2016).

Communication exercises have additionally been identified as a helpful approach in improving the level of communication preparedness to enhance effective sharing of information and aid organisational performance in emergencies (Curnin and Heumüller, 2016). Communication exercises help in testing the communication capabilities of all organisations involved and identify their communication challenges, with the aim of improving them and boosting their information-sharing pattern when disasters occur. An assessment of specific emergency management plans and evaluation of the communication skills of personnel and available communication-improving training would therefore lead to the development of a robust emergency management plan and enhance rapid information sharing, helping organisations to respond promptly and reducing the number of lives lost during disasters (Curnin, and Heumüller, 2016; Ram and Oliver, 2012).

Since emergency response measures cannot be implemented without bringing together local people, embracing community-based activities in emergency management is crucial in reducing disaster impacts. Lack of adequate communication networks and tools among local residents, government and its agencies, and emergency service providers constitutes a difficulty in implementing short-term disaster management plans, leading to ineffective response during emergencies (Hosseini et al., 2014). Hence, to boost communication effectiveness

and enhance adequate information sharing and allocation of resources, it is essential to provide adequate communication technology, facilities and good networks that would allow rapid sharing and dissemination of information between several disaster management actors such as government and its agencies, emergency service providers, and the communities affected by disasters.

4.6.2. Resource allocation

Disasters are frequent and inevitable events that occur around the world. When they are not properly managed, they will continue to disrupt and threaten individual lives, communities, organisations and certainly economies (Curnin et al., 2015). In disasters and emergencies, different organisations, including government and its agencies, NGOs, CSOs, and private sector organisations and groups, come together and form a multi-group and multi-level emergency response structure that requires adequate preparation and planning under uncertain situations to coordinate resources and improve responses (Mei-Shiang et al., 2007). All the different agencies involved need to complete different kinds of tasks, such as evacuation, search and rescue, allocation of resources and transporting disaster casualties from disaster scenes to hospitals for medical attention, and all this needs collaborative effort (Wang et al., 2014). Hence, multi-agency collaboration and resource allocation in emergencies are two fundamental necessities to enhance effective response (Wang et al., 2014). However, Curnin et al. (2015) pointed out that the efficiency of emergency response depends on the severity of the disaster, type of available resources, pattern of distribution of the available resources and complexity of response strategies adopted by the organisations involved. This suggests that developing strategies involving coordination and adequate sharing of resources among various collaborating emergency response agencies would improve the level of preparedness for disaster management and increase rapid response. Allocation of resources, according to Aakil et al., (2012), involves assigning tasks and resources to different actors through the formulation of activities that support resource procurement and distribution to emergency response agencies, and casualty management, in order to maximise the operational efficiency and minimise disaster impacts. This implies that adequate allocation of resources in line with the needs created by a disaster of any given magnitude would reduce the challenge of resource shortage in emergencies, foster rapid response and reduce disaster impacts in the society.

The various agencies that come together during emergencies own different organisational cultures, operating practices, experiences and capabilities and are required to perform some unusual roles in emergencies (Curnin et al., 2015). Thus, understanding the capability of each response organisation would promote timely preparations and enhance adequate distribution of resources to improve the efficiency of response (Curnin et al., 2015; Mei-Shiang et al., 2007). Accomplishing such a task requires development of activities leading to the identification of the role and capacity of each organisation involved. As emergency needs require the involvement not only of traditional emergency services, but also non-emergency agencies such as military, paramilitary and CSOs, among others that may need more staff to maintain operations (Mei-Shiang et al., 2007; Xu and Li, 2015), identification and training of surge staff to perform all emergency functions in advance of emergencies therefore remain very important in preparing for disasters and emergencies (Xu and Li, 2015). According to Xu and Li (2015) and Alexander (2003), such training need to be provided on continual basis as it helps to keep staff knowledge up-to-date.

As Janssen, et al. (2010) noted, managing emergencies primarily depends on the support of people. Many people at disaster locations who do not even belong to any specific organisation often serve as first responders, contribute to response efforts and assist in decision-making processes (Janssen et al., 2010). Giving more attention to human actions – for example, through empowerment of first responders, supporting decision makers or helping victims and volunteers during planning phase – would improve preparedness and strengthen the capacity to minimise impacts. Emergency management involves complex socio-technical operations and functions, requiring interaction with both technical and social aspects of the society (Janssen et al., 2010; Xu and Li, 2015). The socio-technical approach gives equal consideration to both technical and human factors during the planning process (Mumford, 2006) and considers interdependencies among various subsystems, technologies and social systems to optimise performance of the whole system (Janssen et al., 2010). In complex systems involving different actors in emergency response, such an approach would help to ensure adequate sharing and utilisation of resources and reduce the burden of resource shortage.

In emergencies, available resources in performing tasks are usually limited, leading to competition among different organisations. To optimise response efficiency and reduce the challenge of resource shortage, responsible decision

makers need to allocate limited available resources in a way that is expected to lessen the number of fatalities (Fiedrich et al., 2000). However, until now, decision-making during emergencies has been based on the expert knowledge of decision makers, and this remains a complex problem in emergency management due to the magnitude of incoming information and time pressures (Fiedrich et al., 2000). Nonetheless, Bigley and Roberts (2001) reiterated the need to consider three crucial issues, despite limited resources in emergencies, for effective resource allocation: First, it is essential to identity crucial tasks for each response organisation because sharing limited resources based on specific tasks' requirements would improve the efficiency of resource utilisation and avoid failures of crucial tasks. Secondly, recognise the resource-sharing pattern, where leaders responsible for different emergency response goals negotiate the amount and time of shared resources to avoid potential resource conflicts and lessen the challenge of resource shortage. Thirdly, evaluating the relative importance of a particular task in relation to other tasks enables inter-agency cooperation according to the priorities of particular tasks. Accordingly, establishment of resource-sharing networks between various agencies involved in disaster management, such as government and its agencies, NGOs and the private sector, may improve the level of preparedness and contribute to a clearer response sequence.

4.6.3. Operations of emergency operation centres (EOCs)

Whether they are natural or human induced, disasters create emergency needs that require support from different organisations in order that society can overcome the stress of the event. The functioning of emergency operation centres (EOCs) has been found to be useful in coordinating responses to complex emergencies and ensuring adequate utilisation of resources (Xu and Li, 2015). EOCs are responsible for strategic disaster management and emergency response activities (WHO, 2013) through coordination, definition of roles for each organisation involved in emergency response and management of disaster-related information (Xu and Li, 2015). EOCs play an important role in efficient communication and distribution of information, assigning personnel and supplying transport during emergencies. They conduct routine exercises and risk assessments to maintain emergency operations and enhance continuous improvement by boosting activities destined to reduce disaster impacts.

A functional EOC comprises representatives from a range of organisations, such as government agencies, NGOs, local communities, volunteers and CSOs who contribute by transporting casualties, tracking fatalities, establishing shelter and providing needed support to affected people during disasters (Ryan, 2013). Neal and Phillips (1995) noted that the EOC cannot function effectively using only internal personnel and resources. They suggested the need to include emergent volunteers and staff from different organisations into an organised emergency response to improve the EOC's capacity for effective operations and functions (Neal and Phillips, 1995; Ryan, 2013). However, planning an EOC's functioning is a difficult task to undertake due to the pressure and uncertainty created by disasters. It requires organisations to commit additional effort, personnel and resources outside their normal routine within a limited time frame and with varying information. Despite the challenge, EOCs must prioritise their planning requirements in order to function effectively.

During disasters, both human and material resources are not always readily available at the time they are most needed to address different challenges and issues faced by affected communities. However, an operational and well-equipped EOC is able to adapt to, predict and respond to disasters in a way that meets the shortages (Ryan, 2013). Constitution of an EOC, although it is not always used on a regular basis, may take up to weeks, months or even years to be achieved, but once activated, it facilitates coordination, storage and distribution of information to enhance response. Those individuals called upon to participate in the EOC at the time of activation are often required to perform unfamiliar roles and to use unfamiliar equipment under a limited time frame that requires some form of training (Ryan, 2013). In many situations, the EOC personnel that are called upon to work are not the normal and regular first responders and may lack the experience and understanding of what they are going to face. To improve preparedness and the capacity of response personnel, there is the need to provide adequate training for EOC staff and responders in order to increase their level of preparedness (Ryan, 2013; Xu and Li, 2015). Training schedules bring those who are going to work in the EOC into the centre on a regular basis and acquaint them with the surroundings in a non-threatening environment, thereby improving their level of preparedness for when the actual event occurs. Also, EOC staff will get to practise their skills in a non-emergency situation, as they would during a live event, so that they can obtain feedback from multiple sources, practise how to communicate with people

from different fields and foster the development of an action plan for the real event (Lutz and Lindell, 2008; Ryan, 2013). Effective training can help personnel to define their roles, learn from other people and remain able to carry out their functions (Lutz and Lindell, 2008).

Another useful approach to improving the capacity of EOC staff is to make them acquire knowledge and experience through periodic exercises involving representatives from all organisations contributing to emergency response (Militello et al., 2007). This will give members the opportunity to interact, explore each other's roles and resources, develop strong relationships and test the capability of each response organisation to make members of the organisations become familiar with the procedures and tools that are used in the EOC.

Again, the emergence of new technology and related changes in work systems, as well as organisational structures, has massively contributed to planning in any EOC towards improving preparedness (Camilla et al., 2012). Normally, EOC planning efforts are based on the most recent, accurate, reliable and valid information. Communication and information sharing are essential elements in the operation of the EOC, as unreliable and unconfirmed information can lead to bad planning and result in misuse of resources (Camilla et al., 2012; Xu and Li, 2015). The existing communication channels need to be strengthened to enhance interoperability and better communication among different agencies, emergency service providers and government. This is accomplished through the development of standard procedures agreed by relevant stakeholders involved in emergency response (Xu and Li, 2015). Since EOCs rely on information for effective planning, having real-time information flowing into the centre on a continuous basis would enable planners to act based on the most recent available information so that they can make planning efforts more effective. Hence, establishing networks of communication and for sharing information within the EOC is a very important way of enhancing planning and improving preparedness.

Section 4.6 has highlighted the importance of resource availability, effective communication and operation of the EOC in promoting effective implementation of emergency management activities, with their relevance to the present thesis. Disasters often affect communities and their impacts are felt by the people within such communities. The next section highlights the importance of community participation and the role of local and organisational culture in emergency management.

4.7. Community participation and the role of local and organisational culture

A community is considered to be a group of people with common aims (Johnson and Smilowitz, 2007). They may be underrepresented and vulnerable through living in a particular geographical location (Johnson and Smilowitz, 2007). West and Lakhani (2008) further extended the view of community beyond groups of people living in a particular geographical location to include a voluntary association of actors who lack common organisational relationships but are connected by a shared instrumental goal. A disaster often affects communities and its impact is felt by community members. Hence, it is always important to involve community-based organisations at the planning phase of disasters and emergencies to enable them contribute to decisions that are directly affecting them in the emergency (Plodinec et al*.,* 2014). While affected communities are always seen as first responders in emergencies, members of the community require some kind of ability to cope with disaster situations while waiting for intervention by the necessary authorities. As West and Lakhani (2008) noted, involving communities in key decision-making processes would play a significant role towards preparing them for unforeseen eventualities. However, this an understanding, and coordination of resources to facilitate their participation given the complex nature of emergencies. As such, the role of social capital cannot be neglected when dealing with community participation in emergencies.

In complex organisational, social, environmental and technological concerns involving different actors, various networks are needed in order to allocate resources. To accomplish such network, there is the need for a social structure that can facilitate the actions of individuals, groups and organisations and show the relations between them (Coleman, 1990; Midgley et al., 2013). The concept of social capital as seen as available resources that are accessible to individuals or groups through participation in a social network therefore emerged (Elena and Jordi 2017). Social capital can be used to promote the public good or undermine it, as practitioners and policy makers may find it difficult to wait for researchers to discover all they need to know before they take necessary actions (Sophie, 2004). Notwithstanding the above suggestion, in a performance-driven era and with structures that involve different actors, it has been shown that increasing investment in social capital supports allocation of resources and builds organisations' and communities' efforts in yielding positive results (Sophie, 2004).

Also, as Midgley et al. (2013) noted, involving the community in decision-making processes facilitates and supports stakeholders' engagement and strengthens responses during disasters.

Even though social capital has no fully established definition so far, the concept is viewed from multiple, distinct dimensions and subtypes of social category that are used in investigating and conceptualising relations and connections among different individuals, groups, and communities (Elena and Jordi, 2017). Nevertheless, different scholars such as Bourdieu, Coleman and Putnam have explained social capital in their own different thoughts and opinions (Bourdieu, 1986; Coleman, 1990; Putnam, 1993). Despite the differences in the explanations presented by different scholars about this concept, what is common and can be understood as being an essential part of social capital is the presence of network structures between people or groups of people that can facilitate certain actions of different actors within the structures (Morgan, 2011). These include resources available for individuals or groups that can be accessed directly, through connections or through given networks within the social capital network or structure (Elena and Jordi, 2017). Organisations and society own different collaborative relationships, in terms of knowledge and power distributions, and the desired knowledge and power in some situations remains in the hands of some actors who do not have a common organisational structure (Konsti-Laakso and Rantala, 2017). In this way, the knowledge and mitigating powers become limited to only the privileged population leaving the underprivileged and underserved ones unaware and unprotected. The study of the relationship between social capital networks and disaster management aims to understand how different resources and network characteristics influence individual and collective efforts to reduce disasters impacts (Morgan, 2011). While Haynes (2009) argued that the concept of social capital has a number of serious weaknesses, conclusions nonetheless show that social capital has proven to be a more informative effort that allows social consideration of explanations still driven by economic discourse. To enhance an even distribution of knowledge and power, a participatory approach involving local communities remains rational and analytical even though Turnhout et al. (2010) argued that such an approach has not gained much popularity in the real world. However, the method is well known. Hence, neglecting the basic principle of community involvement in key disaster decision-making processes may have long-

term negative impacts on community development, as most decisions would have a direct effect on the community (Mafukidze and Hoosen, 2009).

The measurements involved in social capital networks can help to make the concept more noticeable for people who find social capital difficult to understand. They may promote allocation of resources and help funders and community organisations to build more networks for effective operations (Putnam, 1993). In complex disaster management structures, social capital should be made known to those who do not know and trust it, as it would help them to establish networks for resource utilisation. Elena and Jordi (2017) and Haynes (2009) emphasised the need to consider the principle behind social capital as it involves different dimensions. The relationships between people at every level of government depend on the context in which social capital is applied. The direct or indirect involvement of community and other stakeholders in decision-making processes, especially those concerning policies, plans or programmes affecting the community, enhances creation of networks and builds the community's capacity to react positively to disaster information (Quick and Bryson, 2016). Through community participation, different stakeholders can interact with government agencies, political decision makers, non-profit organisations and business organisations to develop, create and implement policies and programmes that affect them. Arnstein (1969), cited in Konsti-Laakso and Rantala (2017), suggested that involving the community in decision-making enables community members to be included in political and economic processes at the developmental planning stage. This means that before choosing to use any measure of a social capital network, attention must be given to the kind of variable that need to be measured, the inferences that are intended to be made and the mechanisms on which the association or relationship would be built (Haynes, 2009). Through community participation, the traditional approaches of arranging stakeholders' involvement, such as hearings, comments procedures and reviews, are organised (Innes and Booher, 2004). According to Putnam, social capital reflects the sense of belonging, trust, interaction, norms and values, among others, which enable communities to contribute in a way that will affect their situation. And yet, in Nigeria, this concept has not yet been accepted to support a more informative approach of community engagement. Decisions are often taken at government levels and policies formulated without involving local communities, leading to lack of trust and absence of sense of belonging, thus increasing the severity of disasters' impacts

as it is always difficult for communities to integrate and cooperate with authorities involved during disasters.

Involving communities in key decision-making processes enables community members to determine how information is shared, goals and policies are established, resources are allocated, programmes are organised and operated, and benefits distributed (Konsti-Laakso and Rantala, 2017). Irvin and Stansbury (2004) argued that increased community participation in government decision-making processes yields significant benefits. It is a good and ethical practice that promotes doing the right thing, especially when preparing for disasters and emergencies (Innes and Booher, 2004; Seltzer and Mahmoudi, 2012). The practice facilitates identification and collection of useful data from disaster-affected areas, establishment of legitimate frameworks for planning and increasing effort towards rapid response in disasters and emergencies. Given the complexity of disaster management in Nigeria, adopting this approach would enhance preparedness, allowing community members to contribute towards making key decisions that affect them and enabling an understanding of how resources are utilised to reduce impacts. Community engagement helps to address the moral and ethical commitment of emergency planners to make sure that those to be affected by any given decision have a hand in the decision-making process, and it supports the development of a robust plan by bringing a broader, feasible set of views to address emergency management issues (Seltzer and Mahmoudi (2012). This means of informing public through understanding their problems helps explore and generate potential solutions to support the public (Quick and Bryson, 2016). Thus, developing an emergency management strategy that involves active community participation would promote the sharing of knowledge and would keep citizens informed of what to do during and after a disaster.

When affected communities are satisfactorily informed and empowered to participate in emergency management activities, they influence the success of operations positively in all phases of disasters (Lawther, 2009; Denters and Klok, 2010). The lack of a specific framework involving the community results in bad design, leading to adverse effects (Alam, 2010). For instance, after the 2004 Indian Ocean tsunami, at least 15 government and non-government organisations were set-up to help a population of about 6,000 people in Bann Hadd Diaw, Thailand, where the organisations already had their own existing recovery mission that was not flexible enough to contain issues that were raised by affected populations,

leading to failures in tackling the fundamental political-economic issues of the affected population (Sadiqi et al., 2017). According to Hutanuwatr *et al.* (2012), this is because they had already planned the scope of their activities without involving the community and they failed to leave space to accommodate what they were not aware of at the time of the plan. This means that for an emergency management plan to be robust, it needs to be flexible and amendable and to consider community interest so that issues that were not addressed originally can be included when the need arises.

Therefore, as a community involves different groups of people, suitable procedures to actively include and encourage them in decision-making need to be promoted (Lloyd-Jones, 2006; Sadiqi et al., 2017). Active participation must begin with and be promoted through community empowerment in order to enable communities to have their inputs in decisions that are important for their immediate recovery, building desirable resilience and improving their capabilities for further strategic development (Peng et al., 2013). This will enable members of the community to contribute their own knowledge and skills to the process that will later affect their future. The increasing occurrence of contemporary disasters has called for national, state and local governments to make use of considerable options in exercising their powers and responsibilities in terms of resource allocation. This includes the establishment of social networks that promote and support coordination, integration, cooperation and the formation of relationships, where national resources are directed towards helping the establishment of both budget priorities and effective lines for disseminating information to help communities and other stakeholders make more informed and logical decisions (Olshansky et al., 2008). That is why Ye and Okada (2002) suggested that incorporating the initiatives of communities and local governments into disaster management plans makes a huge contribution to improving preparedness and enhancing mitigation, prevention and response.

4.8. Conclusion

Disasters are recognised as unavoidable events that continuously generate response needs. Existing literature argues that no matter how large a disaster is, with adequate preparedness, response can be rapid and its impact on affected populations can be minimised. Based on the extant literature, strengthening the emergency response capacity of organisations involved and improving their level of preparedness requires an understanding of current situations and approaches

adopted towards emergency management by such organisations. Such an understanding would help to define their capacity and capability in implementing emergency management activities and programmes to meet the needs of people. Since the complexity of emergency management involves the participation of individuals, groups, government and its agencies, NGOs, CSOs and private sector organisations, scholars have argued that adequate networks to share resources and information between various agencies would help to promote allocation of resources based on the strength of each entity and would foster rapid response in emergencies.

The implications of emergency management have been discussed with a particular focus on building collapses, human stampedes and electrical power failures. This is to guide the scope of this thesis according to its goal and objectives. Factors leading to such disasters have been reviewed with the target of developing improvement measures to mitigate, prevent and respond rapidly when such factors eventually result in emergencies. The factors for building collapses include bad building design, additional load, use of substandard materials, unskilled labour and lack of regulations, among others. Crowd density, restricted access points into large capacity venues, poor planning, poor crowd control measures and lack of complete information about an area affect stampedes, while some common events such as religious gatherings, sports meetings and political rallies have been identified as associated with stampedes generally. With regard to electrical power failures, literature showed that failures in electric power grids, inadequate voltage from generating sources, inadequate training of staff operating the systems, insufficient remedial actions, poor communication and/or coordination, high transmission utilisation, inadequate situational awareness, failures in operation procedures, maintenance errors and insufficient technical upgrades are factors that affect power failures worldwide (Veloza and Santamaria, 2016).

The need for adequate collaboration, cooperation and integration further arise given that the implementation of emergency management and response activities involves multidisciplinary and multi-agency functions. This accelerates the allocation and utilisation of resources. As noted in Fiedrich et al. (2000), optimising response efficiency requires government and decision makers to allocate limited available resources in a way that lessens the number of fatalities during disasters and supports development and implementation of policies and

regulations to reduce disaster risk. This can be achieved through collaboration, cooperation and integration among different actors.

The operations of EOCs have had a useful impact upon emergency management and response. An operational EOC enhances coordination and integration of efforts and activities across different organisations in order to reduce the challenge of resource shortage in emergencies. This means that the role of a functional, well-equipped and accessible EOC must not be neglected when planning for emergencies, as it enhances coordination and allocation of resources. Improving the capacity of the EOC by providing adequate staffing and training, exercises and acquisition of adequate equipment and facilities to support its operations would improve preparedness and support rapid response in emergencies. Repetitive training will not only promote effective response but also keep staff knowledge and skills up-to-date, while availability of adequate information would enable an understanding of the kind of support that is needed to improve preparedness and response.

In conclusion, this chapter has reviewed the evidence for building collapses, crowd stampedes and electrical blackouts and has considered the findings of the emergency management literature that are pertinent to managing events of this kind. The next chapter provides detail of the methods that are adopted to collect and analyse data in order to enrich the outcome of the present research.

Chapter 5: Methods: Data collection, presentation and analysis

5.1. Introduction

The following section discusses the methods that are adopted in this research to obtain data for the evaluation of effectiveness of Nigeria's emergency management system (EMS), particularly patterning to man-made disasters such as those identified in this study. The research considers improving EMS and disaster response in terms of resource utilisation, information sharing pattern and operations of EOC, as well as it aims to identify specific areas that needs improvement within the Nigerian EMS. As is a common knowledge that the outcome of any research relies much on the quality of data and research methods, this chapter focuses on the data collection tools and method that aim to provide evidence as best as possible about the research target and considers how the data are presented and analysed to provide a clear interpretation and an understanding of its outcome. It adopts a data collection method that statistically compares opinion and perception of people in relation to emergency response efforts at different levels of government in Nigeria, such as federal, state and local government, as well as other emergency response organisations involved. It targets is to obtain data that shows the relationship between the different entities as well as demonstrates the overall institutional capacity for disaster management in Nigeria in terms of resource availability, utilisation and sharing, communication capacity including tools and networks for sharing information, and the operations of EOC in coordinating resources and managing information. This is because, the level of resources available for emergency management, the communication tools and the information-sharing patterns in disseminating disaster related information between different levels of government, agencies and communities affected by disasters, and the functioning of an emergency operations centre (EOC) remain vital in dealing with, and implementing disaster management activities.

Considering the importance of data quality as evidence to research outcome, it must be collected and presented and analysed in a precise manner to define its meaning in a general context of the research goal and objectives no matter the limitations involved even though they cannot be completely avoided. Hence, this section has introduced the chapter, giving an insight of what it entails. Section 5.2 would outline the research approach adopted in the study and provide a framework for data collection. Section 5.3 gives an account of the data collection

techniques used in obtaining information for the research, taking in to consideration the choice for choosing the techniques and sampling process. Section 5.4 considers the way data is represented for easy interpretation. Section 5.5 reflects on the limitation of the research and methods used, while Section 5.6 focuses on ethical concerns. Finally, Section 5.7 describes the data analysis methods used in this research to obtain the results.

5.2. Research approach and context

Even though it is difficult to measure the overall performance and efficiency of emergency response base on its complexity – for different disasters require different response efforts and different communities may also require different needs – nevertheless, by evaluating the consequences of any given disaster compare to the capacity and capability of those affected, and the manner at which government and its agencies, including other disaster management entities react towards the event, in terms of provision of resources, communication tools and the pattern of sharing information, and the coordination of efforts and resources towards the implementation of disaster management programmes gives an insight to the ability and level of preparedness as well as help in building capacity and enhancing preparedness towards improving EMS. Because different entities often participate in emergency response, it requires collaboration, integration and cooperation as they may all have different contributions to make. Thus, it is invaluable never to undermine the fact that, assessing the level of resources, availability of communication tools and the pattern of sharing information in addition to the function of an EOC in coordinating activities of all entities that contribute to emergency response will help to create awareness and identify gabs between different participants so as to strengthen their capacity towards improving the EMS. Doing so, would enable an understanding of the ability of Nigeria's EMS while helping to strengthen emergency management efforts – all towards improving response, and reducing disaster impacts.

Considering the above supposition, focusing on man-made disaster perspective which is central to this study and attempting to evaluate the capacity of emergency management in Nigeria, with respect to the kind of disasters identified in this study, the present research identifies six organisations that predominantly participate in emergency response and disaster management in the country: the National Emergency Management Agency (NEMA), the Federal Ministry of Health (FMOH), the Nigerian Police Force (NPF), the Nigerian Security

and Civil Defence Corps (NSCDC), the Federal Road Safety Corps (FRSC) and the National Hospital. These six organisations are considered as they are the government establishments that primarily participate in emergency response and implementation of emergency management activities within the country. While the organisations are correspondingly charged by law with the responsibility of managing and responding to emergencies, but notwithstanding, NEMA coordinates all of their activities to ensure organised and better implementation of programmes for improved response. As the activities of these organisations are predominantly involved in emergency response and disaster management in Nigeria, information about the disaster management situation in the country provided by staff of these agencies aims to offer more reliable data to support the research target.

Based on the goals and objectives set at the beginning of this study, and bearing in mind the reliability and quality of data for the purpose of developing a robust framework for improving emergency response and disaster management, information was collected from staff of the above mentioned agencies, about the level of resources available for emergency response in Nigeria; the operations of the national EOC with respect to its capacity, which was evaluated in terms of staffing and facilities available to aid coordination and integration between different emergency response agencies; and the communication ability and networks for sharing of information between federal, state and local governments, including other organisations that are involved in the implementation of emergency management activities in the country. The information was then analysed to enable a comparison between opinion of people from different organisations about the capacity, ability and level of preparedness of the Nigeria's emergency management institutions in dealing with emerging disaster issues in the country. To obtain information from the above identified key agencies in order to answer the research questions, questionnaires and interviews were the main data collection tools used during the survey and it was administered to staff during working hours in their various work places. And staff were selected from these agencies on the basis of their number of years in service (which counts to their level of experience), rank in the organisations, gender and age aiming at obtaining more reliable information from experienced workers. The questionnaires and interviews were targeted towards developing an understanding of staff perceptions and opinions about disaster management in Nigeria which was been compare with

real life situations using some case analysis indicated in Chapter 2. Questions around factors affecting building collapses, stampedes and blackouts in Nigeria were considered, while at the same time taking into account the effort of government at all levels towards effective response to, and management of disasters including their level of relationship to combine efforts towards a common goal of reducing disaster impacts upon society. As part of the effort towards understanding different government levels' strengths and their level of preparedness, specific questions were asked about whether available resources were adequate and were coordinated and shared among the different levels of government in a way that meets the challenge of resource shortage and the needs of affected communities. This included questions regarding, staffing, training and availability of facilities and tools to support planning and response.

As the importance of an EOC cannot be overlooked in coordinating emergency response and implementation of disaster management activities towards effective response to, and management of disasters, specific questions were further directed towards the functioning of the national EOC in Nigeria, its accessibility and staffing, as well as the availability of communications tools in disseminating information between different disaster management stakeholders. This was engaged as operations and activities at the EOC can help to improve coordination and better response. Thus, attention was focused on investigating the networks for sharing resources between different levels of government as well as intergovernmental and inter-agency relationships that ensure cooperation and integration of efforts among themselves during emergencies. The survey was conducted in the offices of participants as that is where the actual planning process begins. This is because disasters often generate information needs and raise concerns of resource allocation, while communication between government, emergency service providers and affected communities remains paramount; this information can easily be found in the documents available within their offices.

5.3. Data collection

As stated earlier, the purpose of this research is to evaluate the effectiveness and efficiency of disaster management and emergency response organisations in Nigeria aiming at developing measures that will improve the entire EMS in the country. The assessment focused on the level of resources that are available within the EMS to support emergency management activities and response; the communication tools and information-sharing networks to

communicate and disseminate disaster-related information in an emergency; and the work of the national EOC in coordinating and allocating resources in a way that minimises disaster impacts. Considering the issues around emergency management and the nature of Nigeria's disaster management structure, both qualitative and quantitative methods were used to obtain data for the analysis. Both methods were adopted to enable participants to express their thoughts about the EMS in Nigeria and to provide a clear understanding of the capacity and capability of the Nigerian government and its disaster management agencies in organising and implementing emergency management functions in a way that minimises disaster impacts in the society; this is because the methods allow survey participants the chance to give a detailed account of their opinions and perceptions of what is obtainable within the EMS given that they are either directly or indirectly involved in planning or response. Thus, using the two methods aimed to enable a critical analysis and the comparison of the participants' accounts with actual response in real disaster situations such as, cases identified and presented in Chapter 2. The combined method in this research is essential because information obtained through these means can provide adequate knowledge of the current situation compare to opinions of participants, and identify areas of improvement within the EMS to strengthen the country's disaster preparedness.

Considering the kind of information that is needed to support the present research and its outcome, this research adopted a structured questionnaire and interview methods that focused around issues such as the way available resources are shared between federal, state and local governments, including other disaster management stakeholders, and the adequacy of available communication tools and available networks for sharing information in emergencies. The investigation also focused on whether the national EOC in Nigeria is fully functional, can easily be accessed and has adequate capacity in terms of availability of resources and communication tools to support coordination and integration between federal, state and local governments in emergencies. Other questions relating to the causes and factors affecting vulnerability to building collapses, stampedes and blackouts were also asked together with others about the way people perceive emergency management in the country (see Appendixes 1 and 2). The aim was to provide participants the opportunity to present and discuss their thoughts about how emergency response and disaster management activities are being organised, coordinated and implemented in Nigeria while at the same time allow them to

highlight what is lacking that needs to be improved in order to build the EMS capacity and capability to minimise disaster impacts. The questionnaires were then administered to staff of the following agencies that are predominantly involved in emergency planning and response in the country: NEMA, FMOH, NPF, FRSC, NSCDC and the National Hospital as identified earlier. Staff of the agencies were selected on the basis of their rank, number of years in service, age and gender, and worked in three particular cities that have frequently experienced the collapse of buildings, stampedes and impacts of electrical power failures: Abuja, Lagos and Port Harcourt. This was to ensure that the information provided through the survey gives a true representation of the EMS in Nigeria.

Adopting this method aimed to facilitate an understanding of how different agencies perceive and respond to emergencies, as well as to determine their capacities and capabilities, and areas within the different organisations that need improvement to increase preparedness towards mitigating, preventing, and responding to disaster situations in the country. The purpose of using these methods was to test staff knowledge of their organisation's ability and level of preparedness for effective emergency management, and provide them the opportunity to highlight their concerns, give their opinion and make suggestions for improvement.

The questionnaires were administered to staff during working hours and they were either interviewed individually or in groups depending on their availability and whether they preferred to be interviewed with colleagues or not. This method and process was helpful as planning for disaster and emergency response activities is normally carried out within the office premises and during working hours; some of the participants often pointed at records within their reach, indicating their efforts and commitments towards improving disaster management. Several questions concerning response efforts and the capability of individual agencies were included in the questionnaires and interview questions to enable participants to speak about their agency's efforts towards mitigating disasters and responding to emergencies. Some specific questions about the level of resource availability; information-sharing procedures and tools; capacity building for staff, such as training, skill development, emergency exercises to test the capacity of individuals and response institutions; and funding to support acquisition of facilities and tools in boosting effective response were enquired. Also, questions around the operations of the national EOC were included and aimed to develop the knowledge

of how emergency response activities are coordinated in Nigeria among various different disaster management institutions to meet the needs of affected communities in emergencies (see Appendix 2). First, the participants were requested to sign a consent form, as shown in Appendix 3, to indicate their willingness in taking part in the survey, as participation was completely voluntary. To ensure anonymity, the signed consent forms were kept separately from the completed questionnaires, while the completed questionnaires retrieved across the six agencies were then analysed statistically using SPSS and Microsoft Excel aiming at offering a simple interpretation of the results.

Data obtained from the questionnaires and interviews were analysed at different levels so as to determine the adequacy of resources available for emergency management in Nigeria; investigate the various networks available for sharing disaster-related information and other resources among different institutions including federal, state and local governments; determine the efficiency of the operations and accessibility of the national EOC during emergencies; and examine responses to electrical power failures in reducing its impacts upon society. The analysis further extends to examining the causes of building collapses, stampedes, and power failures and their impacts. Also, information regarding people's perceptions and opinions about disaster management in Nigeria was analysed to understand the factors that influenced the people attitudes towards disaster messages in the country. Even though, as according to Fontana and Frey (2000), interviews have their own limitations as there is no simple means for accessing the outcome as they are co-created between the interviewer and the interviewee, however, interviews in this research gave an opportunity to gain access to people's knowledge and experience of how disaster management activities are being organised and emergency response is being conducted around their organisations and to enable the development of a robust preparedness plan that takes into account all aspects of emergency management.

As noted by Schwandt (2000) and Hubbard et al. (2002), the acquisition of adequate knowledge of events that occur and their evaluations take place within a conceptual framework that is used to describe and explain real world situations. As a result, the information obtained in this research through structured questionnaires and interviews is used to evaluate the Nigerian EMS and examine the people's views in anticipation of developing a framework of disaster management and emergency response based on findings to improve such actions

in Nigeria. Understanding the impacts of disasters within affected communities would give an opportunity to examine the relationship between those that are holding power and the groups of people in the community, to increase their capacity and awareness in order to prepare for future events. Based on this, much of this research focuses on the relationships between disaster management agencies and the variables that are employed in coordinating and integrating among the different stakeholders to enhance rapid response in emergencies.

5.3.1. The choice for questionnaires and interviews

Questionnaires and interviews were chosen as the best methods for this research, as participants already have ample knowledge of the system and such an approach would allow them to provide detailed accounts of their knowledge, aiding analysis of the real situation in the country. The questionnaires allowed respondents to select from available options, to demonstrate their opinion based on some underlining indicators to explore possible answers, thereby enabling them to contribute to the decision-making process of the research; the interview was adopted as different individuals may have different views that can best be explained during open discussions rather than restricting them to the available options provided in the questionnaires – this would have lost some of the meaningful information that supports the outcome of the research. As Neal and Walters (2008) noted, “interview tends to create a forum for joint discussions and reinforce agreement rather than allow space for more diverse or contradictory truths to be expressed”. Thus, the choice for this method was to allow open discussions where detailed information could be obtained and the participants’ views clearly expressed in a way that conclusions could be drawn to improve the EMS. Notwithstanding the advantages of using both questionnaires and interviews, some respondents may also not be willing to provide accurate information about the subject due to organisational factors, which constitutes one of the limitations for the research. However, by using the questionnaire technique, participants are encouraged to provide the best information they could in a very simple approach. Also, most people prefer to express their feelings in action rather than giving written answers, which can be facilitated through the process of responding to the interview questions. To ensure reliability of the data, field notes and a diary were used, while critical observation of respondents’ reactions was carefully made during the process.

Although the research initially chose questionnaire and interview methods rather than group discussions, either method would have been a valid means of accessing information. However, it is obvious that interviewees would have different levels of knowledge regarding emergency management and response within the country, for example concerning response activities and resource allocations which is better explain and understood during interview discussions. The difference in people's knowledge may have been lost in group discussions considering their characteristics and approach to issues. For instance, in one of the agencies, NEMA, a challenge was encountered that some people were not willing to provide accurate information about their organisation in public; this may have proved difficult to explore effectively in groups, either because of conflict erupting of interest or because of information being covered up for fear of causing offence through revealing some vital information about their organisation at that level. The questionnaires were randomly administered to both technical and administrative staff who are involved in both response and planning processes after obtaining agreed consent.

5.3.2. Sampling: Organisation and people

Purposive sampling was used in this research. The sample units were chosen based on particular characteristics possessed by the individuals and organisations to support detailed exploration and understanding of the main ideas of disaster management and emergency response issues in Nigeria, as well as examining government efforts towards reducing vulnerability and disaster impacts in society. Sampling locations were sought on the grounds of frequency of building collapses, stampedes and electricity failure, and because of the kind of activities going on within such locations due to many people now migrating to urban locations in search for better lives. The sample was designed to include relevant agencies and individuals that predominantly participate in disaster management and emergency response in Nigeria: NEMA, FRSC, NPF, NSCDC, FMOH and National Hospital. These are government agencies which represent a broad view and understanding of government position in disaster management. Organisations were sought based on their involvement in emergency response, while individuals within the organisations were selected on the basis of their experience (depending on the number of years they have put in service), rank, age and gender to ensure accuracy of the information obtained. This implies that participants identified in the research were chosen from among individuals who have better awareness of

disaster events and adequate knowledge of the emergency response and disaster management situation in their various organisations and Nigeria in general. For example, some participants who had many years of work experience must have participated practically in some or several response activities, which supports the authenticity of information obtained, rather than merely entertaining theoretical assumptions and beliefs. This significantly enhanced the richness of the data collected for this research, as different people could reflect and compare their experiences in responding to emergencies and about efforts provided by the government.

To ensure a representative sample from the six organisations that were finally selected in this study, 50 questionnaires were distributed to each agency. Therefore, 300 questionnaires in total were administered across all the agencies and a total number of 158 questionnaires were retrieved as indicated in Table 5.1. Ten interviews were proposed per organisation. The target audience were both technical and administrative officers who were between the ranks of grade level 7 and above, serving as senior staff in their various organisations, and had predominantly been involved in one response or more. Information provided by this group of people from different organisations and across various locations enabled an interesting comparison of response efforts and level of preparedness between different organisations; such information would also be emboldened to develop measures to foster coordination, cooperation and integration. Given that the analysis is based on information provided by people of the same level and similar experience although from diverse organisations, one could determine inter-agency relationships and the existing relationship between the different levels of government such as federal, state and local governments in sharing resources to bridge the gap of resource shortage in emergencies. Even though equal number of questionnaires were distributed among the various agencies that were selected for this survey with the same target group of audiences, staff of some agencies were very reluctant to participate in the survey which contribute to the differences in the numbers of completed questionnaires retrieved. In addition, some agencies had their staff on field activities at the time of the survey, which created discrepancies in the number of responses that were retrieved back from the different organisations. Also, some agencies seemed to have fewer staff than others did at the ranks that were selected to participate in the questionnaires and interviews, which reduced the number of responses obtained from such

organisations. However, available information from those that took part provided reasonable knowledge of the perceptions and opinions of disaster managers in Nigeria and supported an understanding of the level of preparedness within the EMS as well as revealing areas of improvement.

Table 5.1: Number of questionnaires administered and retrieved

Name of org.	**No. of Questionnaires Administered/Org.**	**No. of Questionnaires Retrieved**
NEMA	50	18
F/SMOH	50	21
FRSC	50	27
NPF	50	36
NSCDC	50	28
National Hospital	50	28
Total	**300**	**158**

5.4. Data presentation

Data collected in this research are presented in tabular form using numbers, and in graphs using charts, to demonstrate clear and simple interpretations and relationships between different sets of data. The purpose is to show associations that exist between different government levels, government agencies and other related disaster management organisations in Nigeria in terms of sharing resources, communicating and disseminating information, and the coordination and integration of efforts, as well as to demonstrate sufficiency or shortage of resources, equipment and tools that are used to support emergency management functions in the country. The data are presented using tables and graphs to enable the readership to compare different information and link it to the research subject while at the same time simplifying participants' opinions and still maintain the position of the researcher. This is because information presented in tables and charts can easily be interpreted and understood rather than leaving it vague and in a questionnaire and interview format.

In presenting the data from this research, it is kept in mind that some readers may find it difficult to understand certain approaches and would give little or no considerations to them. As the research approach was designed with the desire to

improve policy, the data are presented in a way that the results are well communicated while still maintaining the reliability and simplicity of the general views. In this regard, I take the form of writing in the third person while strictly maintaining the researcher's original views and real occurrence in society. As part of the anonymity and confidentiality policy, no personal identification information was retained during the survey; rather, numbers were used to represent some basic information such as gender, age, organisation, rank, etc., which was also transformed into tables and graphs for clarity. It was, however, difficult to represent responses from participants and at the same time clearly express the conceptual findings of the research, as it was not always easy to create balanced of the data, with conceptual clarity, especially in the abstract sense, given the huge amount of data and limited words counts. Even though findings presented in this thesis only represent a small proportion of the entire population of people in the various organisations working in the area of disaster management and emergency response in Nigeria due to some research limitations (specified in Section 5.7 below), the results are based on the whole data set that was collected during field surveys – this will enable readers to make their own judgements on the findings rather than simply accepting the views presented by the researcher.

5.5. Data Analysis

Fundamental to this research, descriptive analysis, comparative analysis, and regression analysis are the principal techniques that are used to analyse the data with the aim of identifying the level of relationships that exist between different organisations acknowledged in this research in relation to disaster management and emergency response in Nigeria.

To begin with, descriptive statistics were used to characterise and summarise demographic data of participants in order to enable identification of the group and class of people who participated in the survey and their various organisations. This method provided detailed understanding of the frequency of responses obtained from each organisation and each participant's level of experience in relation to the number of years they have put in service and their rank. Details are presented in Chapter 6. Other techniques, such as comparative analysis and multiple linear regression analysis, were used to analyse data related to efforts from government and its agencies in responding to emergencies within the nation. This was used to show associations and relationships between the different levels of government (such as federal, state and local governments,

including other related disaster management bodies) in integrating their efforts towards effective implementation of emergency management activities in the country. Such analysis aimed to provide ample knowledge of Nigeria's current disaster management situation, and to identify existing gaps between the different levels of government concerning the integration and allocation of resources and the sharing of information to aid effective response in emergencies.

A combination of both methods was further used to analyse related data concerning the operations of the EOC, resources available within the centre and its communication ability in supporting coordination, cooperation and integration among all emergency response stakeholders in the country. The functions of the EOC were considered in relation to its location, accessibility, available resources, communication tools and networks for sharing and disseminating information, and its activation scale. The above techniques were used to show relationships, and demonstrate barriers between the functions of the EOC. Regression analysis was further employed to show the coefficients of variables with a linear relationship in order to indicate how location of EOC, accessibility of EOC, resource availability, communication ability and activation scale of EOC affects the function of an EOC and emergency response in general. The target was to determine the impact of the operations of the EOC, the availability of adequate communication tools and the availability of adequate resources – which includes, in this context, personnel, financial and technological resources – to support and enhance effective implementation of disaster management.

In as much as collection of large amounts of data and compiling them into spreadsheets alone does not enable an understanding of the characteristics of the sampled population or describe the research impacts, adopting the techniques listed above helped to identify specific relationships and comparison that support an understanding of the general system under investigation. Such analysis creates comprehensible information and presents results about the current situation in Nigeria's disaster management in a simple and clear manner. To address the research questions outlined earlier in the previous chapter, the data were analysed and summarised in a way that enables an understanding of percentages of participants involved at different organisations, their gender, rank, level of experience, and opinions and perceptions about the subject under investigation, and an understanding of the contribution of the data to the research goal and objectives. Described herein are the various statistical techniques used in

summarising this research to identify its patterns, and show existing relationships and networks between federal, state, and local governments. Details of the results are presented in the Chapter 6 in a simple and clear way.

5.6. Ethical concerns

As this research is supported by the university, university guidelines for ethical approval were adhered to and supervisors approved it as satisfactory before proceeding to field, although in any case ethical concerns were minimal in this research. As a lone researcher, my obligations to colleagues were minimal even though it was important to take into consideration the university's reputation by avoiding concerns that will damage its name and that of the body that sponsored this project. I was fully aware that ethical concerns are highly important in both qualitative and quantitative research involving human subjects. This research considered ethical implications and weighed their potential benefits against the possible harm that may result from the data collection process before proceeding to fieldwork.

Moreover, as individuals were asked to respond to sensitive questions about their organisations, obligations to participants were considered to be an ethical process, as information obtained from them needs to be treated with high degree of sensitivity. As a result, effort was made to gain informed consent in order to enable participants to freely decide whether to take part in the survey or not. Participants were clearly informed in the consent form about what their participation would involve and the reason for carrying out the survey. It was clearly specified in the consent form that participants have the right to withdraw their participation at any time without any penalty, and contact information was provided for the participants to channel further complaints in the event of unsatisfactory feelings about their participation. As part of the obligation to ensure anonymity and confidentiality, some personal information about participants was withheld. Participants were further informed of how the data would be stored using a password-protected device that cannot easily be accessed by non-members of the sponsoring body and that, if they wished to see findings from the research, a summary of the findings could be sent to them. There were no objections, however, from any of the participants. Nonetheless, the researcher affirms that, if there had been any objections, attempts would have been made to resolve any disagreement or misinterpretation before completing the project.

5.7. Limitations

It is anticipated that the research will provide understanding of the concepts of disaster management, emergency response, and disaster preparedness, and a detailed understanding of institutional capacity of disaster management in Nigeria and the various available networks for sharing disaster information and the allocation of resources; however, several limitations appear to affect the outcome of the research. To begin with, only a small sample of individuals within the different organisations participated in the survey, as it was difficult to involve every member of staff, which means that some potentially interesting situations were omitted. Participants were further considered only on the grounds of experience and rank. The selected cities were also only considered on the basis of previous disasters, whereas there are ample chances that disasters could occurred in any part of the nation. Likewise, the research only took place within a specific time frame, although it is designed to give considerable knowledge of some of the processes by which emergency response institutions respond to emergencies, especially those resulting from human-induced hazards. Additionally, some participants were not willing to disclose exact information about their organisations for fear of the offence of acting contrary to their organisation, which makes it difficult to show a true representation of response intervention during emergencies. And information gathered was only based on participants' opinions and perceptions. They may have failed to provide details concerning the actual facts of what is going on within the system. Also, most participants pay less attention to research and were not fully disposed to take part in the survey when they received a request from the researcher.

Chapter 6: Data presentation and analysis

6.1. Introduction

This chapter presents the principal findings of the research from all the questionnaires and interviews that were fully completed and retrieved from participants across the six organisations who took part in the survey, as specified in Chapter 5. This first section introduces the chapter and provides details of what it contains. Section 6.2 gives account of the demographic information of participants and organisations involved in the survey to demonstrate the validity of the information gathered from the survey and its reliability in supporting the research goal and objectives. Section 6.3 presents the outcome of the survey concerning the opinions and perceptions of the participants about emergency management in Nigeria as well as providing knowledge helpful for understanding areas needing improvement. Section 6.4 gives an account of the participants' views about the causes of vulnerability and its impacts in Nigeria, with particular attention to the factors affecting vulnerability to specific forms of disasters in Nigeria such as those considered in this study; it further ascertains which of the three disasters given attention in this research most frequently occurs in Nigeria. Section 6.5 outlines evidence of factors affecting building collapses; Section 6.6 provides data concerning power failures and what the participants think about it; Section 6.7 concerns some common mass gathering events that often result in stampedes in Nigeria as supported by the participants' thoughts. This is followed by exploration of the participants' judgment of and insight into operations of the EOC in Section 6.8, while Section 6.9 presents the data on the evaluation of available resources for emergency response in the country – including findings on intergovernmental efforts, networks for the sharing and allocation of resources, and inter-agency dependency in supporting cooperation and integration, especially between different levels of governments and other organisations – all towards effective emergency management. Section 6.10 gives account of the analysis of the participants' perceptions and opinions on the level of preparedness of Nigeria's emergency management institutions. Section 6.11 provides details about communication and information-sharing patterns during emergencies in Nigeria, by considering communication tools and networks employed within the system to promote effective dissemination of information during disasters and emergencies. Finally, the last section concludes this chapter by drawing insight from all the

information gathered and presented in the various sections to explicitly support the research outcomes.

6.2. Demographic data and profiles of emergency managers in Nigeria

The responses obtained from each of the six organisations involved in the survey are presented in this section with the aim of determining a true representation of the participants in order to offer the best possible analysis and validity of the results in line with the research goals and objectives. The target is to help contextualise the research findings in order to formulate appropriate recommendations for improving emergency preparedness, response and overall disaster management in the country. Such demographic information includes the classification of participants based on organisation, gender, rank in their organisation and numbers of years in service which accounts for their experience as per emergency response and disaster management considering their participation in previous disaster responses. Based on the numbers of questionnaires that were completed by participants and retrieved, a simple percentage analysis is then conducted in order to define the percentage of responses obtained from each organisation and to ascertain percentage of responses with respect to the other above-listed indicators within the respective organisations with the aim of ensuring a true representation of data for accurate results. The total numbers of responses obtained from each organisation that took part in the survey is presented in Table 6.1.

Table 6.1: Number of response by organisation

Name of organisation	**Number of responses**	**Percentage (%)**
NEMA	18	11.4
F/SMOH	21	13.3
NPF	36	22.8
FRSC	27	17.1
NSCDC	28	17.7
N/HOSPITAL	28	17.7
TOTAL	**158**	**100%**

The analysis in Table 6.1 shows that the majority of responses were obtained from the NPF (22.8%), followed by NSCDC and National Hospital (both 17.7%), then the FRSC (17.1%) and F/SMOH (13.3%), while NEMA constituted 11.4% of the entire survey. Although the majority of responses were obtained from the NPF, but the percentage does not seem to show any significant difference in the number of responses obtained from the other organisations, which means data can be used for a true comparison without bias as it appears to be a true representation of the sample across the various organisations. Even though, there is no much difference, it was recognised during the survey that most staff of NEMA were on field activities as at the time of the survey and some of the few who were available were not willing to provide detailed information about their organisation or participate in the survey for fear of the offence of acting contrary to their organisation's interest. The situation in the FMOH was also similar as most of their staff were not willing to participate in the survey due to poor attitudes towards research. The data above was then presented graphically in order to simplify the analysis and provide a clearer representation of the results (see Figure 6.1).

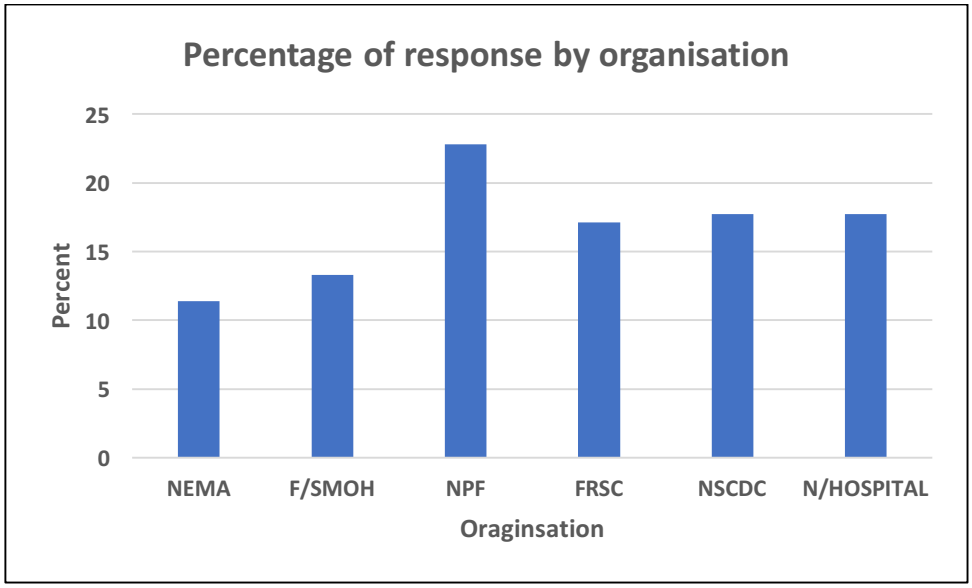

Figure 6.1: Number of responses by organisation

In addition, the overall numbers of responses base on gender are shown in Table 6.2 and further plotted graphically in Figure 6.2 for ease of understanding the results. As indicated below, the majority of the responses were obtained from

male participants (56%), with fewer female participants (44%), which shows that more men responded than women in the survey.

Table 6.2: Number of responses by gender

Gender	Frequency	Percentage
Female	69	44
Male	89	56
Total	**158**	**100%**

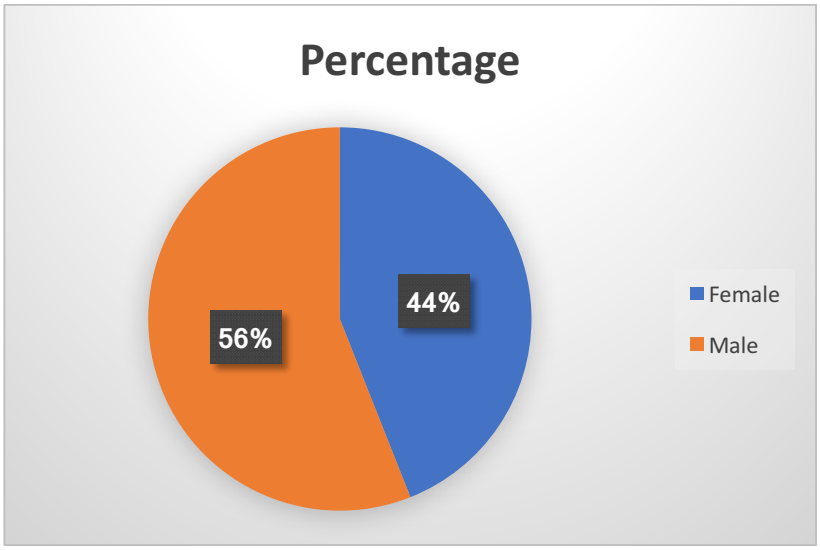

Figure 6.2: Number of responses by gender

Furthermore, the number of responses per rank of participant was analysed and is presented in Table 6.3. This data was used to determine which staff level has the highest response in order to demonstrate the level of understanding and significance of the data in promoting the research objectives. It is believed that the more numbers of years spent in service determines the level of promotion acquired as well as the experience achieved. As such, available information from this group is essential to compare with the reality thereby helping to understand clearly the capacity of the Nigerian EMS. The data was further represented graphically in Figure 6.3 to demonstrate a clear understanding of what the result entails. As indicated in Figure 6.3, the majority of responses were obtained from staff between the ranks of grade level 7 and 10 (51%), followed by those in the ranks of grade level 12 and 15 (30%). That category of staff who fall between the rank of grade level 4 and 6 represented 13% of the overall responses while staff at the rank of

Deputy Director and Directorate level contributed 6% and 1% only, respectively. Hence, it is concluded that staff between the ranks of grade level 7 and 15 contributed more to the survey than did those between grade level 4 and 6 and those of Directorate levels. Nevertheless, it is important to note that between grade level 7 and 15 is the most active, technical and senior cadre and are predominantly involved in implementation of major activities while the junior staff between grade level 4 and 6 are very often non-technical staff who are not directly involved in response activities, likewise Directorate cadre who only stay back and harnessed reports.

Table 6.3: Number of responses by ranks

Rank	Frequency	Percentage (%)
[4-6]	20	13
[7-10]	81	51
[12-15]	47	30
[DD]	9	6
[D]	1	1
TOTAL	**158**	**100%**

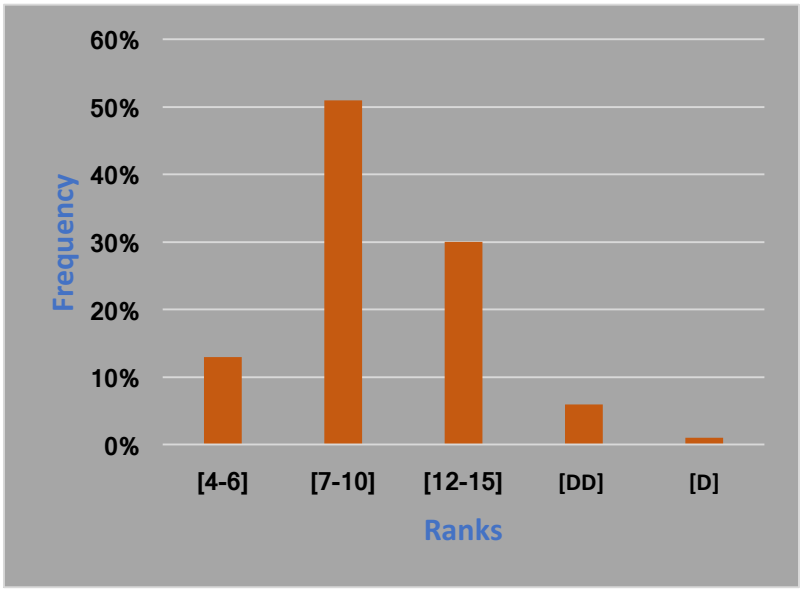

Figure 6.3: Number of responses by rank

Finally, responses were again analysed based on participants' number of years in service, shown in Table 6.4 with the result again simplified in (Figure 6.4) to give a better understanding. Participants' number of years in service were used

to determine the level of experience and skills of staff who participated in the survey. It is expected that the greater the number of years in service, the more the experience and skills acquired. As indicated in Table 6.4 and Figure 6.4, the result shows that majority of responses were obtained from staff within 1-7 years in service (31%) followed by those with 16-22 years in service (30.4%) and 8-15 years in service (24.7%). Then responses obtained from staff with 23-30 years in service were 10.7%, which was followed by those with 31-36 years in service (3.2%). Although, majority of the response was obtained from staff with 1-7 years' experience, but common of them are professionals and technical staff who fully and often participate in any emergency response and implementation of disaster management activities within the country. This analysis concludes that the majority of the information was obtained from people who have sufficient knowledge about disaster management and implementation of emergency response activities in Nigeria, seen if the fact that combined they have many years in service. Adding together the total groups of responses shown in Table 6.4 indicates that they together have ample experience about implementing emergency management activities in their various organisations. Thus, their level of experience is helpful in contextualising the Nigerian EMS.

Table 6.4: Number of response by years in service

Years in service	Frequency	Percentage (%)
[1-7]	49	31
[8-15]	39	24.7
[16-22]	48	30.4
[23-30]	17	10.7
[31-36]	5	3.2
TOTAL	**158**	**100%**

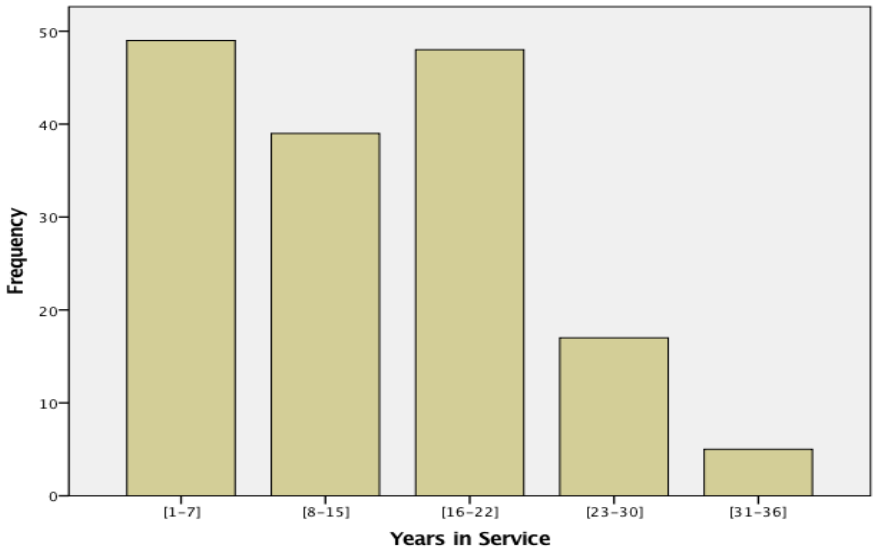

Figure 6.4: Graphical representation of number of response by years in service

6.3. Perception of the participants about emergency management in Nigeria

Opinion was sought about the participants' levels of satisfaction concerning how emergencies – particularly those emerging from the kinds of disasters considered in this research – are being responded to and managed, and the way information is shared between government, its agencies and the general public during disasters and emergencies to ensure that resources are coordinated and distributed according to the need created by the disaster, and response is well organised to reduce disaster impacts. The number of responses gathered from the survey is presented in Table 6.5. Specific questions were asked around public satisfaction of the way emergency response and disaster management activities are being orgainised, implemented and managed, especially given a complex and multi-agency disaster management approach and a top-down EMS like that in Nigeria. Participants across all the organisations and cities were asked to choose on a scale of 1 to 5 (1 = Very unsatisfied and 5 = Very satisfied) their level of satisfaction about the way responses are conducted around disasters resulting from the three forms of hazards and the way information is communicated and shared during disasters and emergencies towards enhancing adequate allocation and sharing of resources for rapid responses in Nigeria. This was conducted with the intention of revealing respondents' opinions about governments' abilities to provide adequate support during disasters and emergencies in order to minimise

disaster impacts, and how satisfied the people are with the way information is communicated between various government levels, emergency service providers and the public during emergencies as they seek to ensure response is rapid and impact is reduced.

Table 6.5: Opinion of the participants about the level of satisfaction with response to disasters and information-sharing ability

Hazards	**Responses**				
	Very unsatisfied	**Not particularly satisfied**	**Neither satisfied nor unsatisfied**	**Quite satisfied**	**Very satisfied**
Building collapses	16	50	49	91	16
	7.20%	22.40%	22%	40.8	7.20%
Human stampedes	20	38	48	90	26
	9%	17%	21.50%	40.40%	11.40%
Electrical power failures	34	55	63	55	15
	15.20%	24.70%	28.30%	24.70%	6.70%
Information sharing	8	37	48	97	31
	3.60%	16.60%	21.50%	43.50%	13.90%

Based on the participants' opinions indicated in the above table, the majority of the participants (40.8%) are quite satisfied with the way responses are conducted around building collapses and human stampedes (40.4%), contrasted with electrical power failures with which only 24.7% demonstrated some level of satisfaction; about 28.3% of the entire responses choose not to say and another 24.7% were not particularly satisfied with the way response to power failure is carried out. But in terms of sharing information between different stakeholders, a large number of respondents (43.5%) indicated that they are satisfied with the way information is shared between those involved. However, looking at the discrepancies in their level of satisfaction with responses to the different kinds of hazards, it perhaps shows that more cooperation and collaboration may be needed to improve effective and satisfactory response to any kind of disaster in the country.

Further enquiry was carried out with the aim of understanding whether disaster management policies and regulations exist and are sufficient in Nigeria to promote effective implementation of emergency management activities, using a scale of 1 to 5 (1 = Strongly disagree and 5 = Strongly agree). The percentage of number of responses based on respondents' opinions is indicated in Figure 6.5.

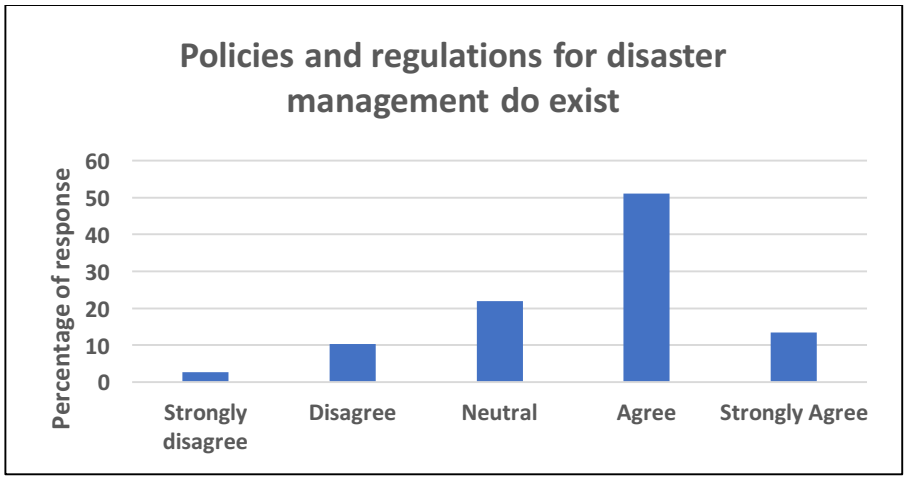

Figure 6.5: Percentage of number of responses about existence and sufficiency of disaster management policies and regulation in Nigeria

As shown in the above figure, the majority of the people (51.1%) believed that policies and regulations for disaster management do exist in Nigeria to control emergency management, while 22% of the entire participants choose not to comment. Nonetheless, it is not clear how effective the policies are, and how adequate they are implemented to achieve the purpose of reducing disaster occurrence and their impacts which raises further concern that requires swift actions to build the capacity of those involved and provide a clearer understanding of the functions of these policies.

The general opinion of the participants concerning the level of preparedness of the Nigerian disaster management and emergency response system was investigated with specific questions on whether the participants think the EMS needs some improvements and whether resources available for managing emergencies are adequate to sustain emergency management activities in the country. A simple percentage analysis was then used to show the percentage number of response obtained during the survey. The results are presented in Figures 6.6 and 6.7 respectively.

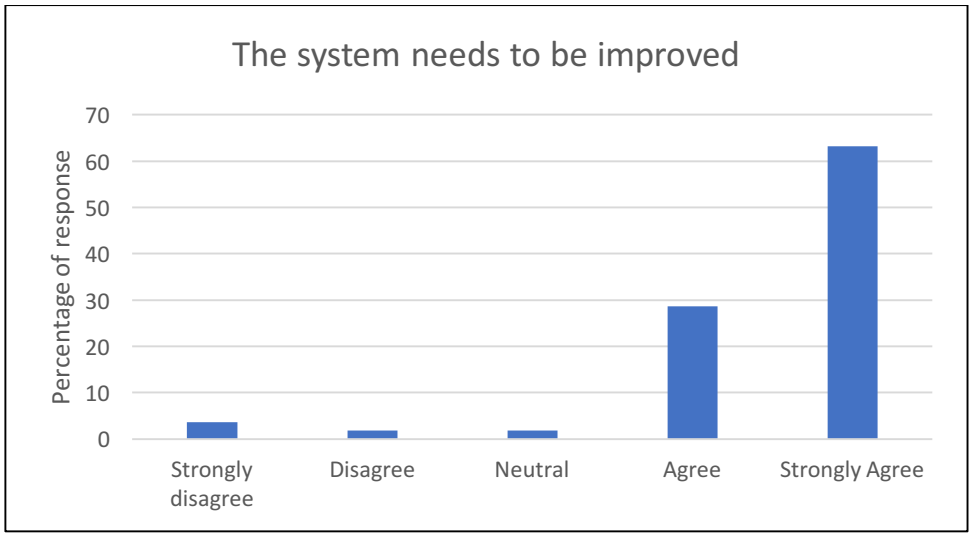

Figure 6.6: Percentage of number of responses to whether the system needs to be improved

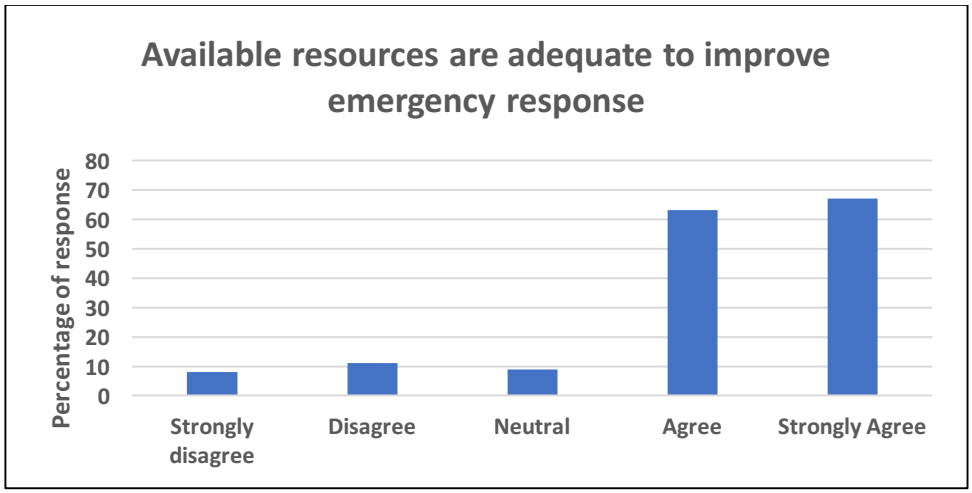

Figure 6.7: Percentage of number of responses to adequacy of available resources for emergency management in Nigeria

The above analysis was conducted with the aim of establishing whether the Nigerian EMS requires any form of improvement, in order to better prepare for future disasters, based on the opinions of the survey participants since they are mostly involved in emergency management activities within the country which can be matched to reality. As demonstrated in Figures 6.6 and 6.7, 63.2% of the entire responses indicated that the Nigerian EMS needs to be improved in order to enhance efficient disaster management in future, while 61.7% strongly agreed and 67.2% agreed that the resources available for managing and responding to emergencies in Nigeria are adequate for a better disaster management structure in the country. Concluding from the opinions of the participants which supposed

that resources are available for managing emergencies in the country, given the available resources, disaster management and emergency response activities in Nigeria ought to have been implemented effectively with minimal disaster impacts upon society, but the unanswered question is: “Why do the participants believe the EMS needs some improvements?”

6.4. Factors affecting vulnerability to building collapses, stampedes and blackouts in Nigeria

Vulnerability was considered in terms of issues related to social patterns and institutional structures, as well as political and economic systems that are pertinent to the disaster management and vulnerability context especially in the Nigerian perspective. Such vulnerability factors were grouped into five main categories: poor housing, infrastructural failures, political issues, lack of disaster education and socio-economic challenges, which include class, gender, ethnicity and institutional support. Then, on a scale of one to five (1= Not important and 5 = Most important), participants were asked to grade their perceptions and opinions on the most important factors that are affecting people’s vulnerability in Nigeria to those building collapses, stampedes and blackouts that are considered in this study. In order to improve mitigation and prevention of disaster occurrences as well as to improve preparedness for rapid response should disasters eventually occur, the target was to determine the major factors that affect vulnerability and the most important factor that needs to be dealt with. The specific causal factors affecting vulnerability to building collapses, stampedes and electrical power failures were identified and placed in to five different groups, as stated above. Then respondents were asked to choose from among them the factor they considered to have commonly affected collapses of buildings, stampedes and electrical power failures in Nigeria. The purposes were to identify the factor that commonly influenced occurrences of the hazards and to know the area that needs to be given more attention when preparing and planning for disastrous events in the country. The total numbers of responses gathered from the survey participants when asked; what is the most important factor do they think affect vulnerability to building collapses, stampedes and electrical power failures in Nigeria? is shown in Table 6.6 and the information is used to enable identification of specific areas for improvement based on the opinions of the participants in order to enhance emergency preparedness in Nigeria.

Table 6.6: The participants' opinions and perceptions on factors affecting vulnerability to hazards in Nigeria

Vulnerability Factors	**Hazards**		
	Building Collapses	**Human Stampedes**	**Power Failures**
Poor Housing Infrastructure	150	21	25
% of Respondents	94.9%	12.6%	19.6%
Institutional Failure	83	116	130
% of Respondents	52.5%	73.4%	82.3%
Political Issues	12	101	70
% of Respondents	7.6%	63.9%	44.3%
Lack of Disaster Education	118	107	83
% of Respondents	74.6%	67.7%	52.5%
Socio-economic Challenges	105	121	56
% of Respondents	66.5%	76.5%	35.4%

Considering the percentage of responses presented in the above table, some 94.9% of the participants generally believed that poor housing infrastructure is the most common factor that affects vulnerability to building collapses in Nigeria but not human stampedes and electrical power failures, with only 12.6% and 19.6% respectively. However, the participants generally believed that institutional failures have more impacts on the three kinds of hazards. About 82.3% stated that institutional failures influence the degree of power failures in Nigeria, 63.9% believed that most stampedes are due to this factor and 52.5% stated that the factor affects vulnerability to building collapses in the country. Nevertheless, only about 7.6% of the entire responses considered that political issues affect vulnerability to building collapses; however, some 63.9% of the responses argued that political issues mostly affect vulnerability to human stampedes and 44.3% thought they have an effect on electrical power failures. At the same time, the majority of the participants contended that lack of disaster education affects vulnerability to building collapses (74.6%), human stampedes (67.7%) and

electrical power failures (52.5%). For socio-economic challenges, about 66.5% of the overall responses demonstrated that these affect vulnerabilities to building collapses, while the percentages for human stampedes was 76.5% and for power failures was 35.4%. Better to interpret the result for a clearer understanding, the information is presented graphically in Figure 6.8 below. In terms of broad effect, institutional failure poses very high vulnerability to all the three forms of hazards examined. This is useful in the development of a strategic framework for vulnerability reduction and disaster management as it indicates that an increase in the quality of institutions in Nigeria will help reduce vulnerability to building collapses, human stampedes and power failures. Such results are used to identify the targets for planning in order to improve and increase capacity towards mitigating, preventing and responding rapidly to curtail the impacts of disasters among the populations affected should disasters eventually occur.

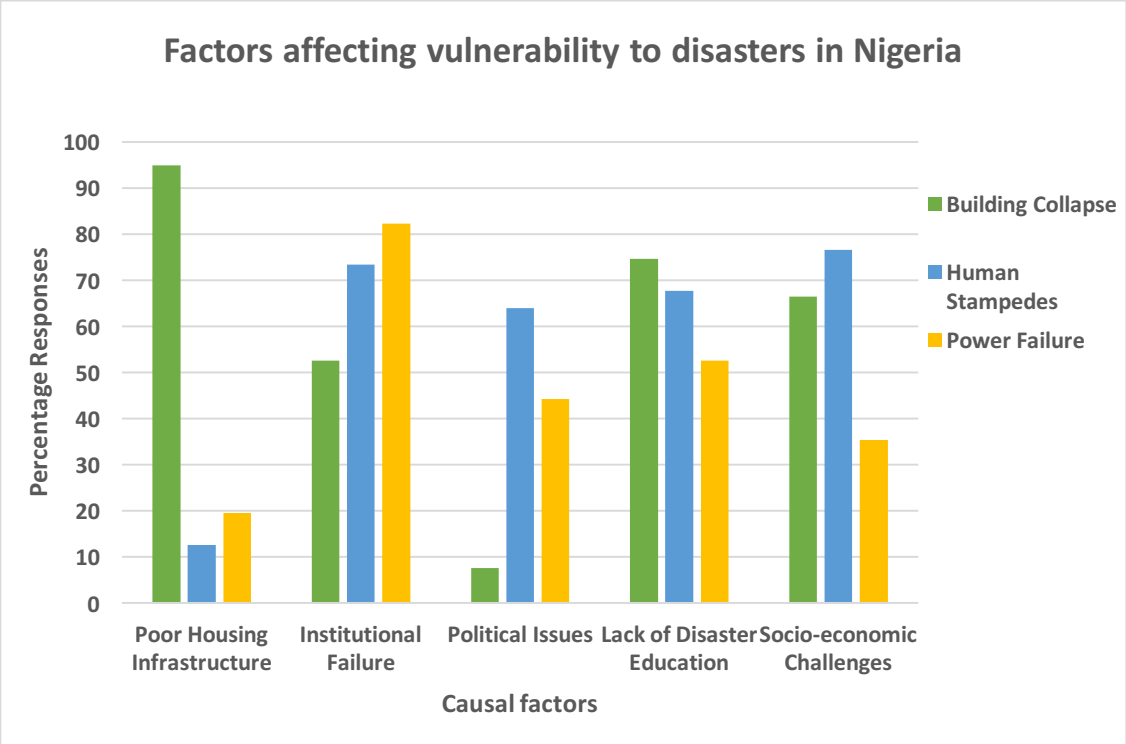

Figure 6.8: Percentage of numbers of responses regarding factors affecting vulnerability to disasters in Nigeria

6.5. The causes of building collapses

The need for research to understand the causes of building collapses becomes relevant in Nigeria considering the rising toll of building failures in the country in recent times, which has highlighted its importance especially when dealing with emergency management issues. The causes of building collapses and the way emergency response is being conducted around these collapses in Nigeria were investigated and the outcome is presented in Table 6.7. Factors leading to building collapses were generally identified and grouped as following: substandard building materials, loose enforcement of building regulations, natural causes, construction and design error, and poor maintenance culture. Then, participants were required to choose from them which factors they perceive to mostly cause the collapse of buildings in the country, based on their experience. The total percentage of the numbers of responses obtained from the survey, using a simple percentage analysis, is presented in Table 6.7 below, and the result is used to determine which of these factors predominantly contribute to the collapse of buildings in Nigeria. It is descriptively analysed with the aim of identifying the common factor that usually cause building collapses in Nigeria. The target was to establish specific areas within the building industry that may need more attention in order to improve building quality and reduce the mishaps of building failures.

Table 6.7: Perception of the major factors causing building collapses in Nigeria

Causal factors	Frequency	Percentage (%) of respondents
Substandard bulding materials	112	70.1
Loose enforcement of building regulations	143	90.5
Natural causes	65	41.1
Construction and design error	118	74.7
Poor maintenance culture	77	48.7

As shown in the above table, the results indicate that loose enforcement of building regulations by the relevant government agencies (90.5%) is the primary cause of building collapses in Nigeria, followed by construction and design error (74.7%) and the use of substandard building materials (70.1%). However, a poor maintenance culture accounts for 48.7% of the total responses while 41.1% maintained that natural causes also affect the collapse of building in Nigeria. Whilst the result simply provides percentage of responses based on people's opinion, but it also gives an insight to the main factor that leads to the collapse of buildings in

Nigeria and suggest areas to focus on in order to improve building quality and reduce both building vulnerability and the effects of collapse on society. To give a clearer understanding of this result, the data shown in Table 6.7 above is represented in a graphical form for easy interpretation in Figure 6.9 below.

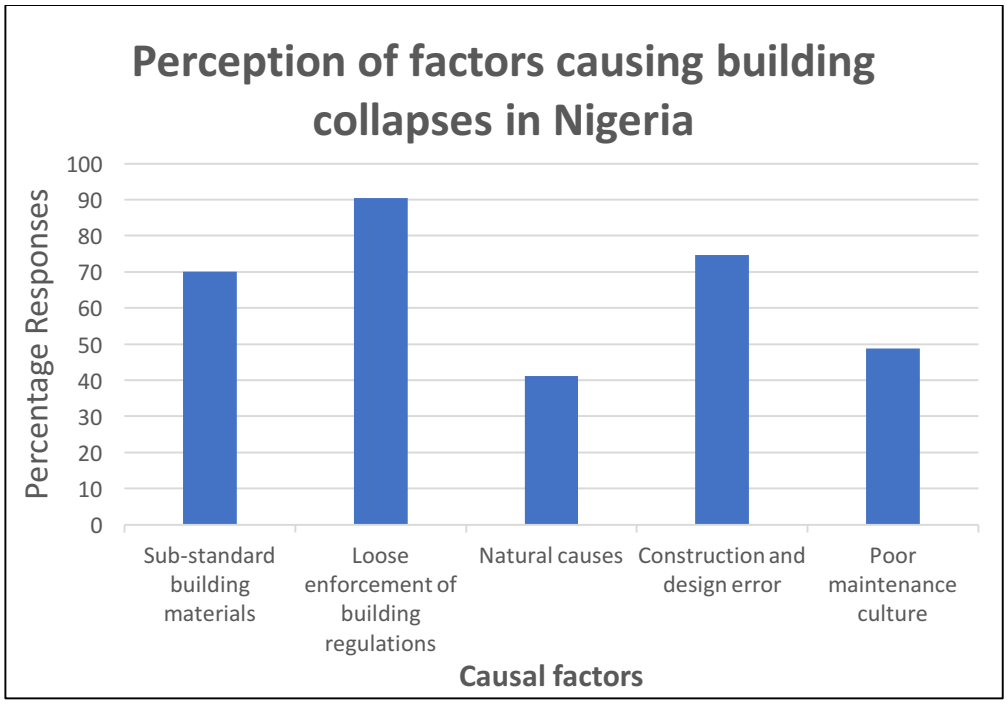

Figure 6.9: Percentage of number of responses regarding perception of major factors causing building collapses in Nigeria

Also, further investigation was conducted to determine the frequency of building collapses in Nigeria as participants were given a scale of 1 to 5 (1= very infrequently [i.e. once in every ten years] and 5 = very frequently [i.e. once a month]), to provide their judgement on the regularity of building collapses in the country. The percentage outcomes of the responses obtained from this survey are presented in Figure 6.10 to provide a better interpretation and understanding of the analysis.

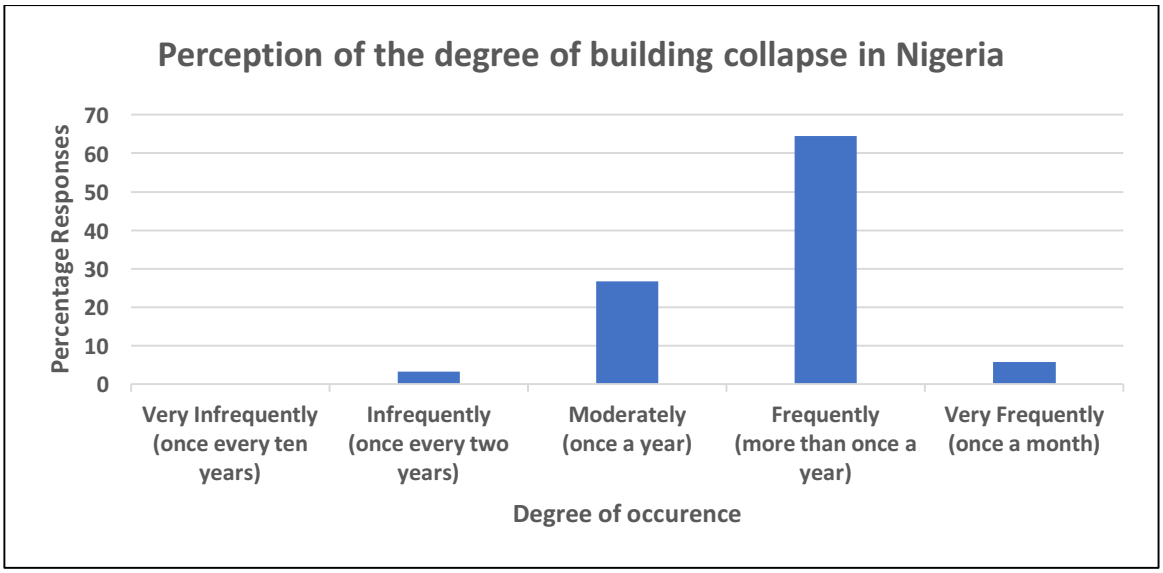

Figure 6.10: Percentage of number of responses concerning the occurrence of building collapses in Nigeria

Based on the above figure, the results indicate that building collapses occur more than once a year in Nigeria, shown by 64.5% of the whole response. This implies that building collapse is a frequent event in Nigeria and it is relevant in preparing an effective disaster management framework for the country.

The season in which building collapses mostly occur in Nigeria was also investigated. Considering that there are two main seasons in Nigeria unlike some other places which may have four, participants were given the option to choose between whether they thought building collapses in Nigeria are mostly experienced in dry or rainy season. The outcome of participants' opinions is presented in Figure 6.11.

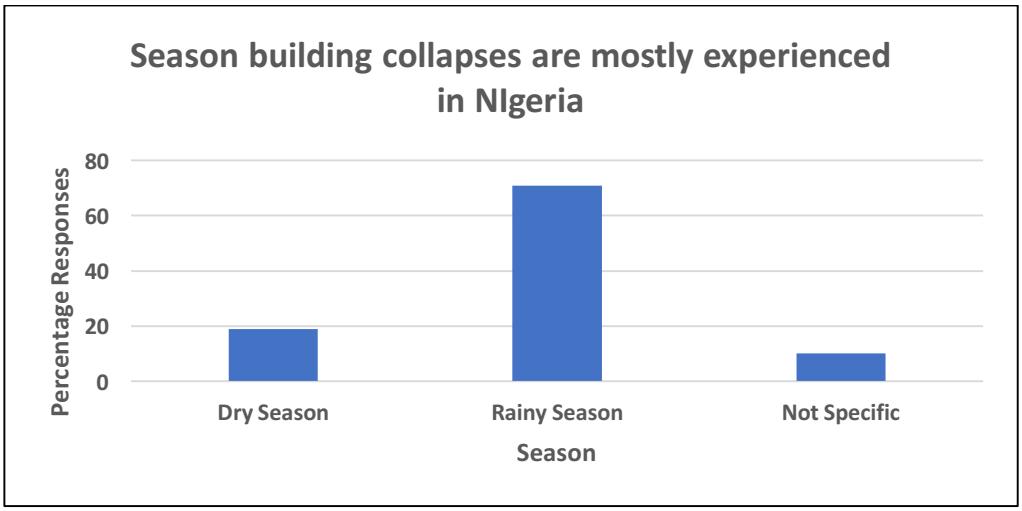

Figure 6.11: Percentage of number of responses on the season in which building collapses mostly occur in Nigeria

As indicated in the figure above, building collapses in Nigeria occur mostly during the rainy season, demonstrated by 70.9% of the responses, which implies that natural causes such as climate change may also have impact on the collapse of buildings and should be considered in terms of planning to improve building quality.

6.6. Electrical power failures in Nigeria

The capacity and efficiency of back-up power supply systems among various emergency response organisations in Nigeria (NEMA, FMOH, NPF, FRSC, NSCDC and the National Hospital) to ensure continuous supply of power especially during disasters and emergencies was investigated. The aim was to determine the ability of each organisation to carry out operations, and their power reliability, during emergencies while ensuring continuous operations even if electricity is turned off by PHCN. Using a Likert scale of 1 to 5 (1= Strongly disagree and 5=Strongly agree), participants were asked via a questionnaire to provide their views about the frequency of power failures and the reliability of their back-up power supplies in relation to contingency plans among various emergency response organisations in the country. Further questions targeted towards identifying the time it takes for power to be restored when there is a blackout in the country were included, as well as whether back-up power supply systems are commonly available across various agencies responsible for implementing disaster management and emergency response activities to sustain their activities until power is restored. The aim was to understand the participants' beliefs around how power is being managed during emergencies to ensure continuous operations when there is a blackout. The outcome of the survey is presented in Table 6.8. indicating the opinion of people towards electricity supply and power management during emergencies. This is important, as most disaster-related information is often shared via channels such as radios, televisions and mobile telephones, which require power to keep them on and so as to maintain their operations and provide the required services.

A further interview was conducted among some groups of people within the organisations that took part in the survey, aimed at determining the participants' views on the interoperability of back-up power and electrical power supply between organisations. This is to serve as a means of demonstrating the relationship between their response efforts and the reliability of back-up power supply to sustain emergency management functions. In terms of the frequency of blackouts and time

it takes for power to be restored, some 91.2% of the participants gave the opinion that the frequency of power interruptions in Nigeria is increasing which suggest the need to improve efforts in dealing with their challenges.

Table 6.8: Participants' opinions of power failures and back-up power supply among emergency response organisations in Nigeria

Variable		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Power failure is a frequent occurrence in Nigeria	Frequency	4	6	4	53	91	158
	% of Respondents	2.5%	3.8%	2.5%	33.6%	57.6%	100.0 %
EOC has adequate back-up power and contingency plans	Frequency	8	6	2	26	18	60
	% of Respondents	13.4%	10.0%	3.3%	43.3%	30.0%	100.0 %
NEMA has adequate back-up power and contingency plans	Frequency	3	1	0	6	8	18
	% of Respondents	16.7%	5.6%	0.0%	33.3%	44.4%	100.0 %
F/SMOH has adequate back-up power and contingency plans	Frequency	6	11	1	1	2	21
	% of Respondents	28.5%	52.3%	4.8%	4.8%	9.6%	100.0 %
NPF has adequate back-up power and contingency plans	Frequency	11	13	3	6	3	36
	% of Respondents	30.6%	36.2%	8.3%	16.6%	8.3%	100.0 %
FRSC has adequate back-up power and contingency plans	Frequency	3	12	3	5	4	27
	% of Respondents	11.1%	44.4%	11.1%	18.6%	14.8%	100.0 %
NSCDC has adequate back-up power and contingency plans	Frequency	1	20	1	5	1	28
	% of Respondents	3.6%	71.4%	3.6%	17.8%	3.6%	100.0 %
N/HOSP has adequate back-up power and contingency plans	Frequency	0	3	0	9	16	28
	% of Respondents	0.0%	10.7%	0.0%	32.1%	57.2%	100.0 %

As indicated in the above table, people believed that power failure is a frequent event that occurs in Nigeria, as some 33.6% and 57.6% of the entire responses agreed with this. But in terms of back-up power supply systems among the various agencies involved in emergency management in the country and their

contingency plans to provide power and maintain their operations in emergencies, the majority of responses (43.3% and 30% respectively) indicated that the EOC has adequate back-up power supply to ensure continuous operation even when electrical power is interrupted. It is indicated by 33.3% and 44.4% respectively that NEMA has adequate back-up power supply to enhance its operations, as does the National Hospital, with 32.1% and 57.2% agreeing to this idea. However, the results argue that the FMOH, the NPF and the NSCDC lack adequate back-up power supply and contingency plans to ensure continuous operations in case of power outage during an emergency. The majority of responses 28.5% and 52.3% respectively believed that the FMOH does not have adequate back-up power supply to promote its operations when power is interrupted and it is a problem that needs exigent action to make sure that emergency response activities are continuous. Likewise, 30.6% and 36.2% of responses disagreed that the NPF has adequate back-up power supply, while some 44.4% disagreed that the FRSC have adequate back-up power to support continuous operation in the event of power outage and 71.4% also disagreed that NSCDC have adequate back-up power to support continuous operation in disasters and emergencies. As this result provides an insight into the agencies with adequate capacity to deal with power challenges in an emergency and enables a better understanding of what needs to be in place in order to improve power supply among all agencies involved in emergency management in Nigeria, but it indicate that more effort is needed to improve power supply among various organisations to ensure that emergency services are not interrupted during this process.

6.7. Common mass gathering events leading to stampedes in Nigeria

Mass gathering events that often result in stampedes in Nigeria have been identified and grouped as, among other categories, religious gatherings, recruitment exercises, political rallies, sports activities, and festivals or traditional feasts/celebrations. These groups of events were presented to the participants in a questionnaire format, with them being asked to select which of the events they think commonly end in stampedes, given their knowledge of such events in the country. The percentage of the numbers of respondents who voted for each group of events is used to define the common events that are likely to result in stampedes because participants have fair knowledge of the system. The target is to develop

measures that would improve the level of disaster preparedness when organising such events, with the aim of mitigating stampedes or preventing them from occurring. The number of responses obtained from the survey in a simple percentage analysis is presented in Figure 6.12 below, and descriptive analysis follows.

Figure 6.12: Percentage of the number of responses concerning the common events involving mass gatherings in Nigeria

As indicated in Figure 6.12, the majority of responses, approximately 40.1% show that religious gatherings are the most common and frequent mass gathering events organised in Nigeria that often lead to stampedes. This is followed by political meetings (27.4%), even though political meetings are not held regularly in the country, and recruitment exercises (21.8%), while sports activities only gained a value of 6.7% according to the views of the participants. It shows that religious gatherings are the most common events leading to stampedes in Nigeria as perceived by people, this is relevant for development of measures to mitigate or prevent against them. Base on the analysis, the results obviously provides an insight to the top events that often result in stampede in Nigeria in order to develop measures to improve preparedness when planning for such events. But not only developing measures to improve preparedness, it also serves as an avenue for emergency planners and disaster managers to improve their knowledge of existing and emerging issues concerning organisation and management of mass gathering events in the country.

6.8. Operations of EOC

The capacity of the operations of the EOC in Nigeria was examined, taking into consideration the way it functions, its location and accessibility, communications ability, resources available within the centre for emergency management purposes, and its activation scale to meet the needs of people in emergencies. Emphasis was placed on communication in this research, to show how information is shared between the various agencies involved in emergency response during disasters and emergencies in order to aid effective allocation and utilisation of resources. The level of resources, such as personnel and their acquired skills (including training and funding availability), within the EOC was considered to determine the adequacy of resources available for carrying out emergency management activities. Attention was further given to its activation scale with the aim of determining how the EOC is been activated in responding to and managing emergencies in the country. Using a Likert scale of 1-5 (1 = strongly disagree and 5 = strongly agree), participants were requested to provide their views about the operations of EOC by choosing from the above indicators identified in the opening statement of this section using a questionnaire and an interview. The outcome of their responses is presented in Table 6.9 and the information is used to evaluate the functions of the EOC in Nigeria in terms of its contribution to disaster management and emergency response.

Specific enquiries were further made as to whether the operations of the EOC play a significant role in the overall effective implementation of emergency management activities in Nigeria and whether the indicators identified above are helpful in facilitating the efficiency of the operations of EOC in promoting an effective response. The target was to determine its ability and level of efficiency in ensuring rapid response to emergencies as well as enhancing the quick recovery of disaster-affected areas and populations by effectively utilising resources. This aimed to develop an understanding of the functions of the national EOC and its capacity as this would help emergency planners and disaster managers to identify which aspect of the EMS requires more attention for strengthening preparedness. It will also help in identifying areas of collaboration among various agencies in ensuring emergency services are provided for adequately during disasters.

Table 6.9: Participants' views about the operations of the EOC in Nigeria

Indicator		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Proper functionality of the EOC	Frequency	9	31	0	16	4	60
	% of Respondents	15.0%	51.6%	0.0%	26.7%	6.7%	100.0%
Proper location and accessibility of the EOC	Frequency	6	38	6	9	1	60
	% of Respondents	10.0%	63.3%	10.0%	15.0%	1.7%	100.0%
Adequate communication ability of the EOC	Frequency	9	29	2	12	18	60
	% of Respondents	15.0%	48.4%	3.3%	20.0%	13.3%	100.0%
Adequate resources for the EOC	Frequency	12	33	0	12	3	60
	% of Respondents	20.0%	55.0%	0.0%	20.0%	5.0%	100.0%
Effective activation scale of the EOC	Frequency	10	33	5	9	3	60
	% of Respondents	16.7%	55.0%	8.3%	15.0%	5.0%	100.0%
Disaster and disaster management are frequent In Nigeria	Frequency	2	16	0	28	14	60
	% of Respondents	3.3%	26.7%	0.0%	46.7%	23.3%	100.0%

As indicated in Table 6.9., the majority of the people (15% and 51.6% respectively) maintain that the EOC in Nigeria does not function properly while 10% and 63.3% respectively, of the responses contended that the EOC is not located in an area that it can easily be accessible to the general public in an emergency. About 15% and 48.4% respectively, of responses indicated that the communication ability of the EOC is not adequate to share information that would help to improve actions during an emergency, and 20% and 55% respectively, of the entire responses also show that the EOC lacks adequate resources to support its operation. Additionally, 16.7% and 55% respectively, indicated that the EOC is not always activated based on the scale of the disaster even though about 46.7% and

23.3% respectively of the people maintained that disasters are frequent events in Nigeria. As the majority of people believed that disasters are frequent events in the country, it indicates that further action is required both by law and individually, including emergency responders and disaster managers to reduce the numbers of disasters and their impacts in the country. Nevertheless, the results reveal specific aspects of the EOC that need to be improved in order to enhance its efficiency in dealing with emerging disaster issues and suggest that operations of the EOC would be more effective, and emergency management activities can adequately be coordinated, when the EOC is located in a place where it can easily be accessible to both the public and officials in an emergency. Likewise, improving communication capacity and the level of resource availability within the centre would go a long way in boosting the operations of the centre and ensuring effective response.

6.9. Assessment of the level of resources

The importance of providing adequate resources to support disaster management and emergency response operations cannot be neglected, especially when preparing for emergencies at the planning stage. As such, a high level and quality of resources available for emergency management would facilitate rapid response and enhance a reduction of disaster impacts especially on affected populations. In regards to the usefulness and quality of resources in enhancing emergency response, resources available to carry out emergency operations within the Nigerian EMS were considered with particular focus on staffing, ample training for existing staff to increase their skills, technological facilities, equipment (such as emergency response vehicles, ambulances and communication tools, among others) and funding. The study seeks participants' thoughts concerning the level of resources that are available for carrying out emergency response functions in Nigeria. And using a scale of 1 to 5 (1 = strongly disagree and 5 = strongly agree), participants were requested to give their opinion on availability of resources to support emergency management operations in the country (See Figure 6.17); the outcome of their opinion regarding availability of personnel is shown in Figure 6.13 below. The information is used to establish the level and quality of resources available within the Nigerian EMS to understand, based on the opinions of the people who took part in the survey, whether the resources are adequate to ensure effective conduct of emergency management activities or if they would need some

kind of improvement to boost up effective disaster management and emergency response in the country.

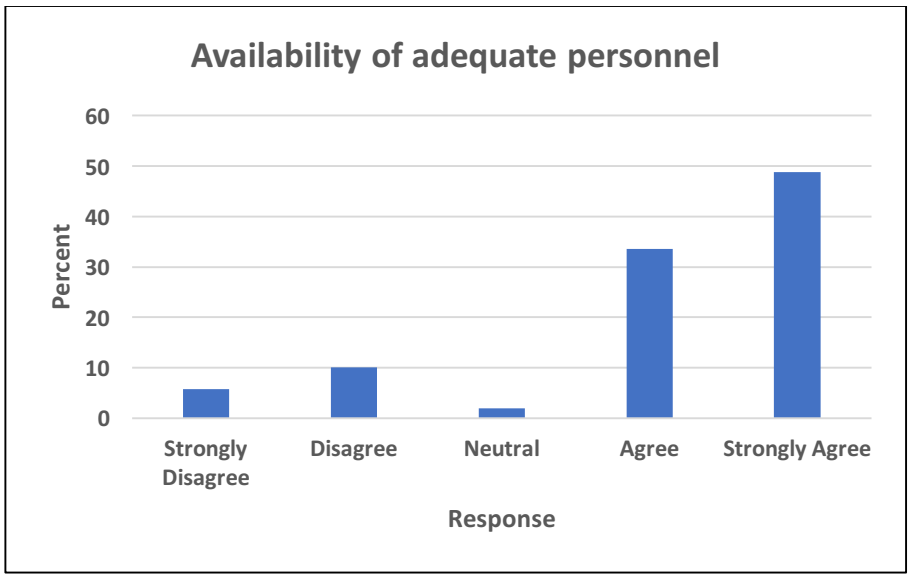

Figure 6.13: Percentage of number of responses on the availability of adequate numbers personnel

As shown in Figure 6.13 above, the majority of responses (33.5% and 48.8% respectively) indicated that there is availability of adequate staff to carry out emergency response functions in Nigeria. But it is not clear whether the available staff are well trained and have adequate skills to effectively perform their roles in the country. As a result, specific enquiry into whether available staff are adequately trained with the required skills to implement emergency response activities was further investigated and the outcome is presented in Figure 6.14.

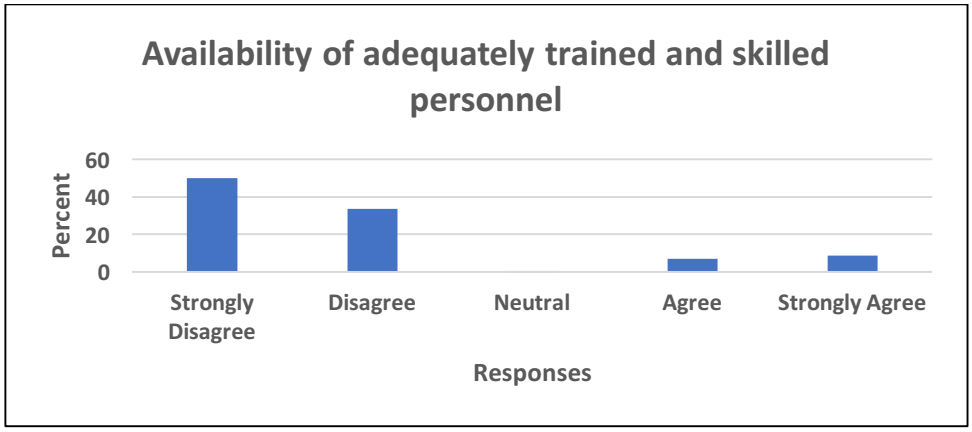

Figure 6.14: Number of response on availability of adequately trained and skilled personnel

As shown in the above figure, about 50% of the responses strongly disagreed that there is availability of adequately trained and skilled personnel to carry out emergency management functions in Nigeria and 33.5% also, disagreed to that and argued that available staff that are responsible for implementing emergency management activities in Nigeria are not adequately trained and do not have the required skills to deal with emerging disaster management issues in the country. Hence, this calls for, and suggests the need for, improved training for available staff in order to develop their capacity and skills towards effective implementation of emergency management activities.

In terms of the availability of technological facilities and funding, the total number of responses obtained from participants is presented in Figures 6.15 and 6.16 respectively.

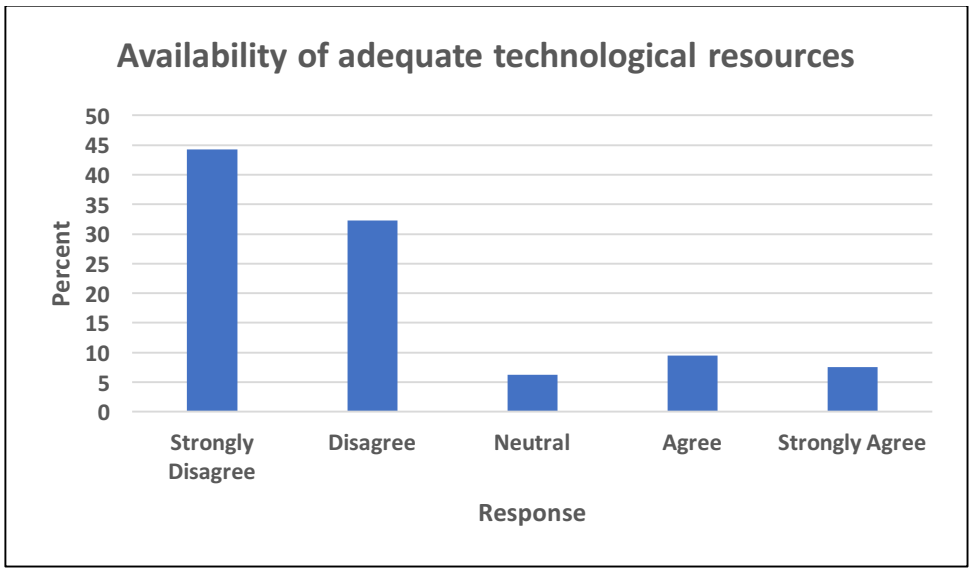

Figure 6.15: Number of responses concerning availability of technological facilities

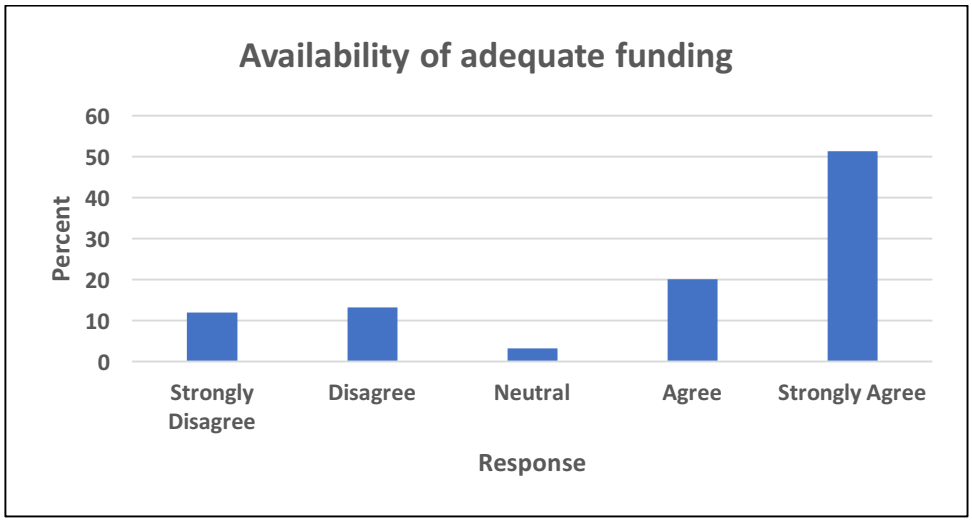

Figure 6.16: Number of responses concerning availability of adequate funding

The above analysis shows the absence of technological facilities and equipment indicated by the opinion of the people as 44.3% and 32.3% of the responses respectively strongly disagree and disagree when asked whether there are adequate technological resources available to support implementation of emergency response activities in Nigeria. At the same time, the majority of the people (20.1% and 51.3% respectively) agreed and strongly agreed that there is adequate funding for emergency management in the country (see Figure 6.16) which made it difficult to determine the actual problem.

However, the above information is essential to this work and it has helped to provide substantial knowledge of the system and identify specific areas of improvement base on the opinions of people provided during the survey in order to effectively utilise resources, better prepare for unforeseen situations and respond rapidly to disasters in future. The overall opinion of the participants concerning the availability of resources as identified in this work is shown in Figure 6.17 below.

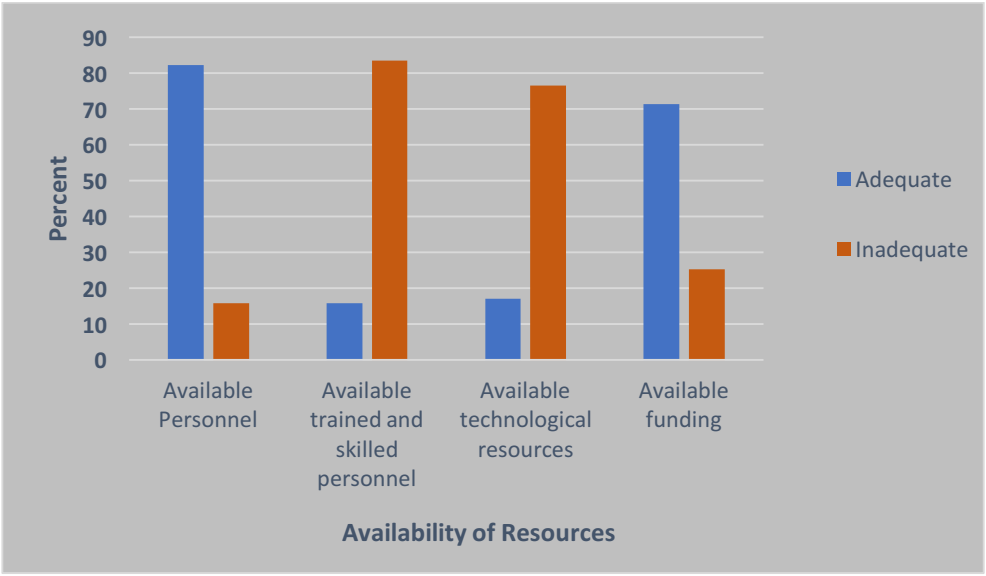

Figure 6.17: Representation of participants' opinion on resource availability

As indicated in Figure 6.17, the conclusions argue that there is absence or lack of trained personnel with adequate skills, and of facilities and equipment, to promote effective emergency management in Nigeria. This suggests the need to improve in these areas in order to improve emergency management in the country. However, it demonstrates availability of adequate personnel and funding, to increase performance if resources are prudently utilised.

6.9.1. Intergovernmental efforts and networks for sharing of resources

Intergovernmental efforts were investigated; in this context, these include integration and cooperation among federal, state and local governments as well as community participation and establishment of good networks for sharing and allocating resources among the various stakeholders involved. These factors are essential in providing wider opportunities for understanding the capacity and needs of different stakeholders in emergencies since disasters normally affect local populations. The federal, state and local governments in Nigeria are required to contribute their efforts into providing the necessary support for effective response and minimising disaster impacts on the affected society. However, the manner in which efforts are provided and resources distributed among different emergency management entities is not well understood. By means of questionnaire and interview techniques, the participants were requested to respond to specific questions such as whether federal, state and local governments have an established pattern of sharing resources between themselves and whether they collaboratively organise their efforts in a way that meets the challenge of resource shortage in emergencies. The number of responses gathered from the survey relating to the adequacy of resource sharing between federal and state governments is presented in Figure 6.18 and the total number of responses regarding the effectiveness of resource sharing between federal and state governments is indicated in Figure 6.19. Also, the total number of responses considering the adequacy of the resource-sharing pattern between local government and communities, and its effectiveness, are indicated in Figures 6.20 and 6.21 respectively. The purpose of the analysis was to demonstrate an understanding of the pattern of cooperation and integration between federal, state and local governments, and communities in carrying out emergency response operations in the country. The aim was to show whether there is any existing relationship between the different levels of government when it comes to the sharing of limited resources while managing and responding to emergencies. In this analysis, a significant relationship between one level of government and the other would then imply that efforts from that particular level of government can be used to complement efforts at the other level in order to boost emergency management and disaster response within the country.

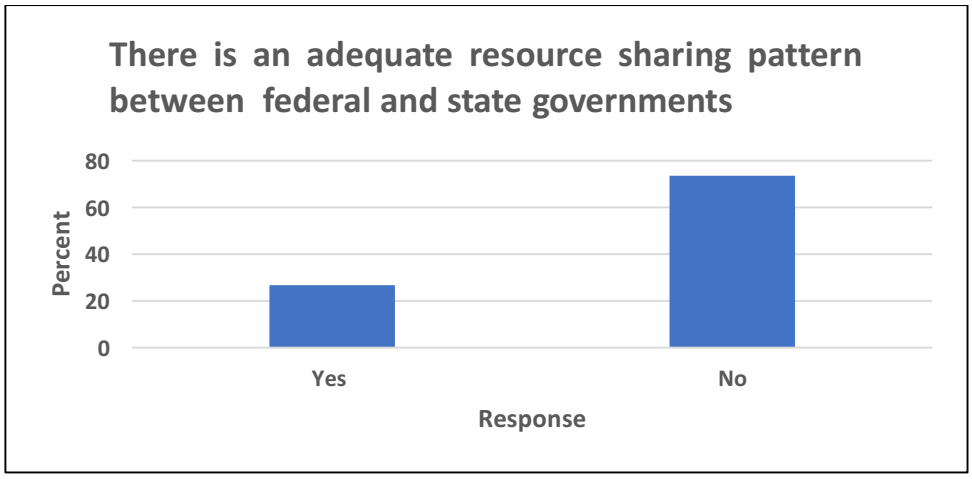

Figure 6.18: Number of responses regarding the adequacy of the resource-sharing pattern between federal and state governments in Nigeria

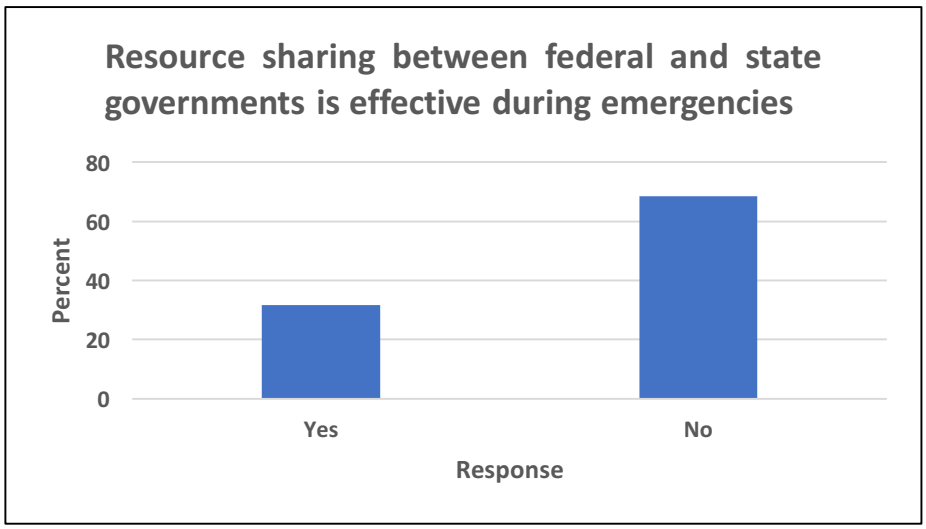

Figure 6.19: Number of responses concerning the effectiveness of the resource-sharing pattern between federal and state governments

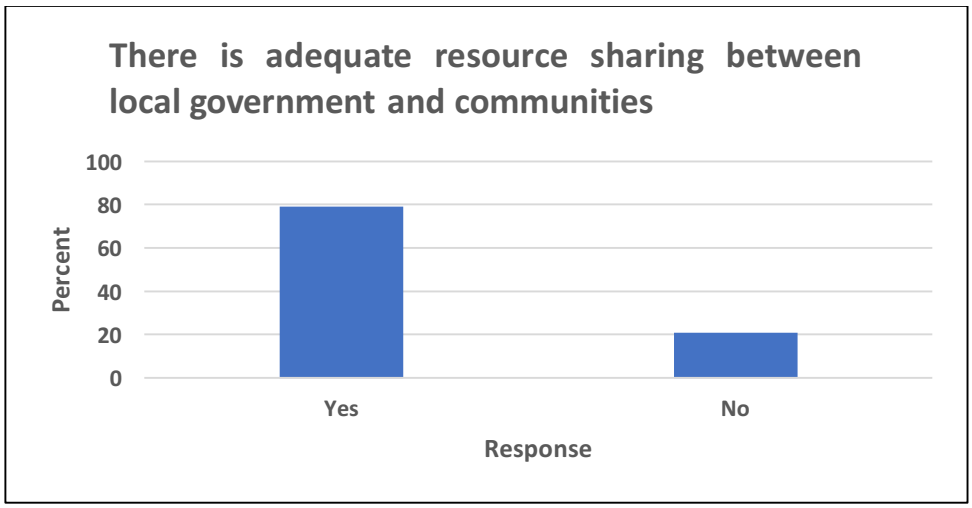

Figure 6.20: Number of responses concerning resource sharing between local government and communities

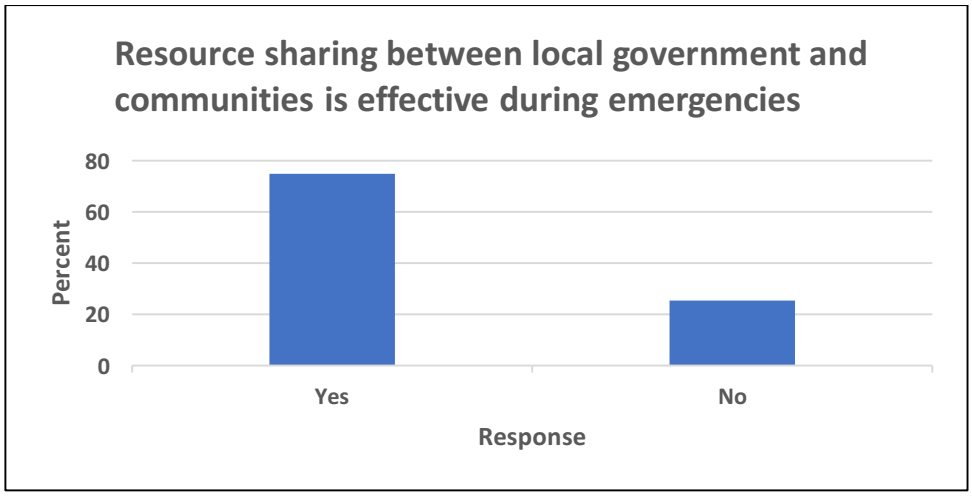

Figure 6.21: Number of responses concerning the effectiveness of resource sharing between local government and communities

As shown in the Figure 6.18, the majority of responses (73.4%) maintained that resources are not shared adequately between federal and state government in Nigeria, while as indicated in Figure 6.19, about 68.4% of the responses argued that the resource-sharing pattern between federal and state government is not effective in ensuring sufficient utilisation of resources among the two levels of government to sustain effective emergency management in the country. However, the majority of the respondents believed that resources are adequately shared between local government and communities (see Figure 6.20) and that this resource sharing is more effective to sustain and reduce disaster impacts (see Figure 6.21) during emergencies, as indicated by 74.5% of the entire response. But, there is no evidence of resource sharing between state and local government, indicated by the survey participants, which demonstrate the need to expand the resource-sharing pattern to include all levels of government in order to improve resource utilisation and encourage effective disaster management operations.

6.9.2. Inter-agency dependency for disaster management in Nigeria

A combination of efforts and cooperative use of resources between different agencies seems helpful in promoting effective response and minimising impacts during disasters, for it appears that no single entity can completely deal with the challenges created by any disaster of substantial magnitude. In Nigeria, several agencies such as NEMA, FMOH, NPF, FRSC, NSCDC and the National Hospital, among others, have been identified as primary responsible agencies for implementing the overall emergency management and response activities in the country, although NEMA is acknowledged as the lead agency. Considering the

importance of combining efforts from multiple agencies in curbing disaster impacts within society, this study investigates the level of dependency between various agencies that are involved in carrying out emergency response and disaster management activities, taking into consideration the response efforts for each agency involved. Participants were confronted to assess their knowledge and opinions on whether contributions from different agencies can be used to support and promote efforts of other agencies in ensuring effective emergency management in Nigeria. The aim was to obtain detailed knowledge of how combined efforts and capacity of each agency can be used to boost activities of other agencies in a way that improves effective disaster management across the country. Using a five Likert scale (1=Strongly disagree and 5=Strongly agree), participants were asked to specifically judge whether different agencies ordinarily depend on aids from other agencies to improve their activity and operations during emergencies although, targeted towards achieving a common goal of minimising disasters impacts. The conclusion of the responses gathered during the survey are summarised in Table 6.10.

Table 6.10: Opinions about inter-agency dependency in disaster management in Nigeria

Variable		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Dependency between NEMA and other agencies	Frequency	23	9	2	43	81	158
	% of Respondents	14.6%	5.7%	1.3%	27.1%	51.3%	100.0%
Dependency between F/SMOH and other agencies	Frequency	16	15	5	37	85	158
	% of Respondents	10.2%	9.5%	3.1%	23.4%	53.8%	100.0%
Dependency between NPF and other agencies	Frequency	96	24	5	18	15	158
	% of Respondents	60.8%	15.2%	3.1%	11.4%	9.5%	100.0%
Dependency between FRSC and other agencies	Frequency	45	39	8	37	29	158
	% of Respondents	28.5%	24.7%	5.1%	23.4%	18.3%	100.0%
Dependency between NSCDC and other agencies	Frequency	105	27	2	13	11	158
	% of Respondents	66.5%	17.1%	1.3%	8.2%	6.9%	100.0%
Dependency between N/HOSP and other agencies	Frequency	7	30	0	19	102	158
	% of Respondents	4.4%	19.0%	0.0%	12.0%	64.6%	100.0%

The results presented in Table 6.10. above indicate that NEMA, the FMOH and the National Hospital all have some good relationships with other agencies to share resources for improving emergency response. According to the analysis, 27.1% and 51.3% respectively, agreed and strongly agreed that there is a relationship between NEMA and other agencies in their resources sharing pattern.

Similarly, about 23.4% and 53.8% respectively considered that FMOF has a good relationship with other agencies in sharing of resources in emergency, with another 12% and 64.6% respectively of the entire responses who agreed and strongly agreed that N/Hospital also have a good relationship with other agencies to support effective emergency response and disaster management in the country. However, the majority of the responses maintained that NPF, FRSC and NSCDC do not have any good relationships with other organisations in sharing resources and this contributes to the way they react during an emergency. Approximately, 60.8% and 15.2% respectively of the entire responses strongly disagreed and disagreed that NPF has a good relationship with other agencies in sharing of resources. Likewise, 28.5% and 24.4% considered that the FRSC lack the relationship to share resources with other organisations to support effective emergency management. As such, the way they cooperate and collaborate with other organisations affects implementation of disaster management activities in the country. About 66.5% and 17.1% respectively strongly disagreed and disagreed that NSCDC have an effective resource sharing pattern with other organisations to support effective management of disasters. These results have identified agencies in Nigeria that combine efforts and cooperate towards achieving a common goal of disaster management and suggest the need to improve the relationships between other agencies that lack cooperation and integration in order to strengthen the capacity of the EMS towards effective emergency management.

6.10. Reflection of the level of preparedness for emergency management in Nigeria

The level of preparedness among various agencies responsible for disaster management and emergency response in Nigeria was evaluated with particular focus on the level of resource availability, which in this context includes personnel, funding and the quality of training provided to build and strengthen staff capacity in preparing them for emergencies, as highlighted in Section 6. Also, attention was given to communication tools - the aim was to test whether available facilities used in disseminating disaster information are adequate to sustain effective communication between various emergency management stakeholders. And we considered the operations of EOC – aiming at ensuring effective coordination, cooperation and integration and allocation of resources among different agencies to curtail the challenge of resource shortage in an emergency. The aim was to

identify areas of improvement, in order to refine the overall level of disaster preparedness and to show how adequate and efficient resources together with the response approaches provided by various different organisations can help in promoting effective disaster management and minimising impacts of disasters upon affected populations.

To this end, the specific question “Is Nigeria adequately prepared for emergency?” was asked, taking into account resource availability, communication ability and the operation of the national EOC - with particular interest of understanding the opinions of people from each organisation about the level of preparedness of their own organisation in responding to and managing emergencies. The outcome of the survey is presented in Figure 6.22, which shows the total number of responses gathered from each organisation about their level of preparedness. The information is further used to compare opinions of the people from each organisation involved with the aim of defining the capacity of the Nigerian EMS given the efforts from various actors.

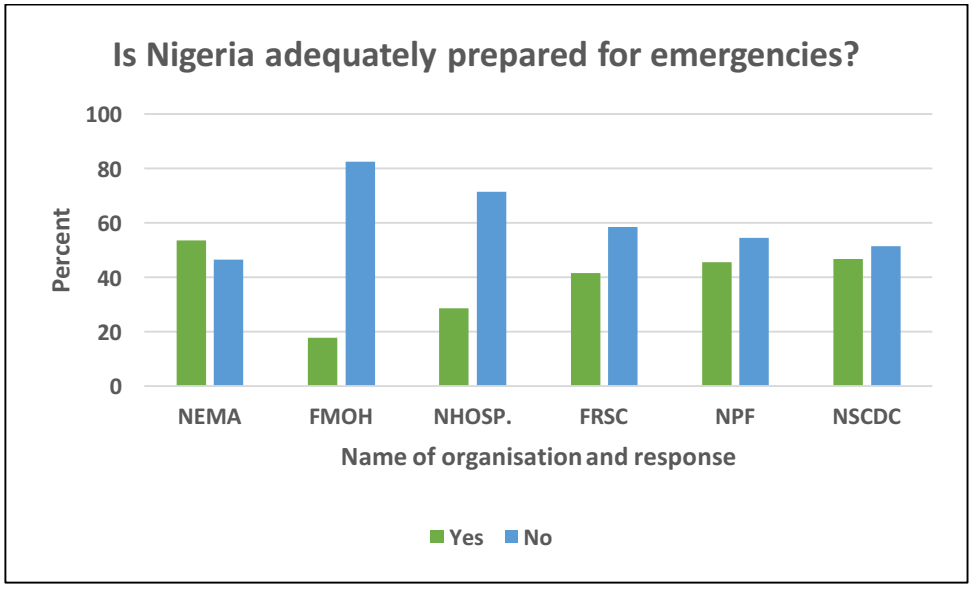

Figure 6.22: Number of responses by organisation on whether Nigeria is adequately prepared for emergencies

As indicated in the figure above, the majority of respondents (82.4% from FMOH, 71.4% from NHOSP, 58.5% from FRSC, 54.5% from NPF and 51.4% from NSCDC) answered that Nigeria is not adequately prepared for emergencies, while 53.6% of the overall response from NEMA was that Nigeria is prepared for emergency. However, the overall result suggests that Nigeria is not adequately prepared for responding to emergencies and managing disasters in a way that minimises their impacts, as stated by the majority of response (60.4%) of combined

responses from the different organisations, while only 39.6% of the combined response believed that Nigeria is adequately prepared for emergency. Even though NEMA has argued that Nigeria is adequately prepared for emergencies, given the high percentage of responses obtained from the other organisations, the conclusion appears to be that Nigeria is not adequately prepared for emergencies by the opinion of the people presented herein. The discrepancy in opinions of the people from different organisations demonstrates lack of coordination, cooperation and integration, particularly when it comes to coordination and allocation of resources to support each other in emergency response.

6.11. Communication and information-sharing pattern during emergencies in Nigeria

Effective communication is achieved by providing adequate communication tools and facilities as well as networks to enhance sharing and dissemination of information, especially between government and its agencies, NGOs, CSOs and affected communities (Twigg, 2004). Such facilities and tools are helpful in promoting the rapid sharing of information that would enable adequate allocation and distribution of resources among different entities participating in emergency response, and reducing the numbers of victims that may be affected by disasters. Aside from fostering the good allocation of resources and a rapid response, effective communication also encourages early evacuation; creates disaster awareness; facilitates disaster education, especially with respect to disaster mitigation and prevention; and also enables the establishment of a disaster management structure that would urge people to evacuate willingly without any delay, according to Hiroki et al. (2016).

To this end, this section considers the communication ability of Nigeria's emergency management organisations, taking into account adequacy of communication tools and efficiency of communication networks available for sharing information among the different groups of people participating during emergencies. It also considers the various means of communication that are commonly used in disseminating disaster-related information, as well as their levels of accessibility and efficiency. The various networks for intergovernmental and inter-agency communication in sharing information in emergencies – especially between different levels of government such as federal, state and local governments, different organisations and the general public – have been

investigated with the aim of establishing the pattern used in communicating and disseminating information during emergencies in Nigeria. In addition, questions regarding the degree of joint communication training and exercises conducted between different organisations and different levels of government to enable an understanding of their communication confronts and to develop ways of improving them was further explored (see Appendixes 1 and 2). Further details regarding the outcome of the survey is highlighted in the subsection below.

6.11.1. Communication tools and networks for sharing information

In as much as provision of adequate communication tools and networks to share information during an emergency cannot be neglected in managing and responding to emergencies, the present research gave attention to the capacity of communication tools and efficiency of operational networks employed in sharing information between different levels of government and the general public during emergencies in Nigeria. It focused on finding out whether existing communication tools such as radio, mobile telephones and landline telephones, and networks such as Local Area Networks (LANs) and Wide Area Networks (WANs), among others, are sufficient and usefully impact the way information is being disseminated and communicated during emergencies especially in Nigeria. Information was sought by using a questionnaire that was distributed among members of staff of the following agencies: NEMA, FRSC, FMOH, NSCDC, NPF and the National Hospital. Also, some interviews were conducted to complement responses obtained through the questionnaire with the aim of gaining detailed knowledge of what is actually happening in the EMS. Given a scale of 1 to 5 (1 = strongly disagree and 5 = strongly agree), participants were prompted in the questionnaire to react to specific questions such as

- Are existing operational networks efficient in sharing information between federal, state and local governments and other key emergency response bodies in Nigeria?
- Are the networks very helpful in sharing information to aid response?”
- Are available communication tools such as mobile phones, landline telephones and radios adequate to enhance effective communication in emergency?”

The total number of responses gathered from the survey with respect to the availability and efficiency of the various means of communication is presented in Table 6.11 which is used to evaluate the communication efficiency with respect to the Nigerian emergency management setting.

Table 6.11: Distribution of responses on efficiency and availability of communication media in Nigeria

Variables	Efficiency of Communication Medium					Total
Availability of Communication Medium	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Landline Telephones	21	32	10	53	42	158
Mobile Phones	16	12	7	60	63	158
Local Area Network (LAN)	35	54	14	30	25	158
Wide Area Network (WAN)	41	40	11	27	39	158
Radio Communication	18	11	10	58	61	158

From the above table 6.11., the majority of response indicate availability and efficiency of landline telephones, mobile phones and radio communication, but not LANs and WANs. This implies that landline telephones, mobile phones and radio communication are the commonly used means of sharing information during emergencies in Nigeria. To simplify this analysis, the three channels of communication have been presented graphically in Figure 6.23 to provide a better interpretation and understanding of the result. The results show that mobile phones are the most efficient medium of communication, followed by radio communications then landline telephones. “Efficiency” here includes their adequacy in satisfying communication requirements and protection against cyber-attack and unauthorised access. In terms of availability, radio communication is the most available, but less efficient than mobile phones. These results suggest that Nigeria’s disaster management agencies need to increase mobile phones usage to improve response efforts since information is communicated through the use of mobile phones more than other means of communication. Also, the results further suggest the need to increase awareness of the use of LANs and WANs since multiple means of communication can easily spread information across different places and to many people without delay but it is revealed according to people’s thoughts that LANs and WANs are not commonly used in Nigeria.

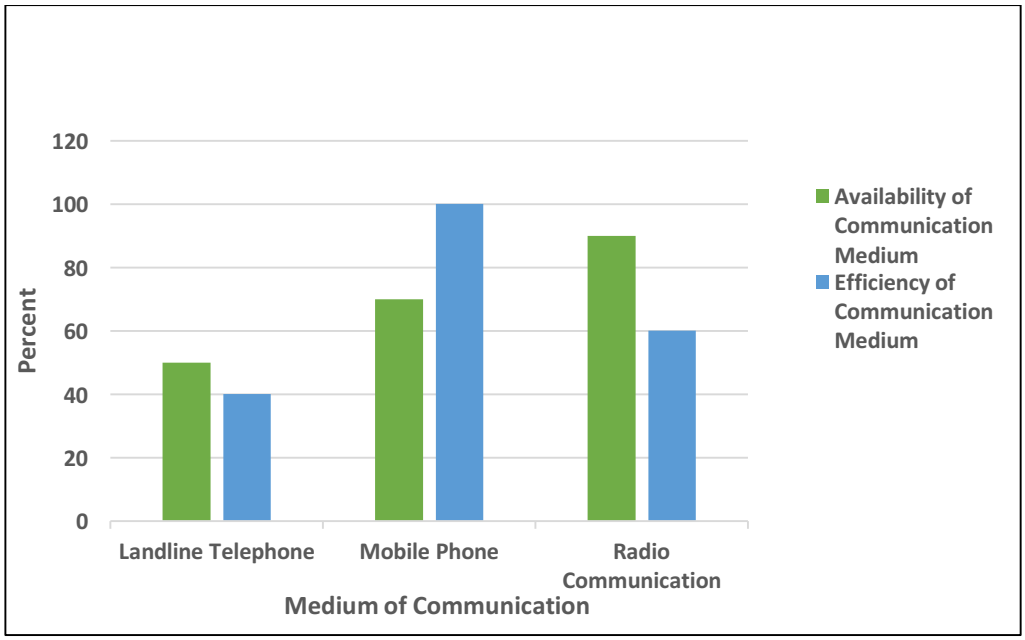

Figure 6.23: Availability and efficiency of landline telephones, mobile phones and radio communication

Further attempts were made to find out from the people whether information is normally communicated clearly between federal, state and local governments officials and other related disaster management bodies in ensuring emergency management activities are implemented in good time, and to establish whether the messages are received explicitly by the public for prompt actions. Based upon the opinions of those who took part in the survey and using a simple percentage analysis, the majority across the various agencies believed that, in disasters and emergencies, information is often clearly communicated between federal and state governments as (41.7% of the entire respondents) indicated, state and local governments (45%) and local government and communities (44%).

Specific enquiries, such as “Do federal, state and local governments conduct regular joint communication training and exercises to test their communication ability in order to keep staff knowledge and skills up-to-date as part of the preparation process for emergencies?” were made and the outcome of the analysis is presented in Figure 6.24, indicating the number of responses from survey participants. Also, further investigation was carried out to find out whether the participants believed it is necessary to have joint communication training exercise between various stakeholders involved in emergency management in Nigeria in order to test their communication ability and improve their communication preparedness for effective dissemination of information when

emergency arise. The number of response evaluated in a simple percentage analysis is presented in Figure 6:25 below.

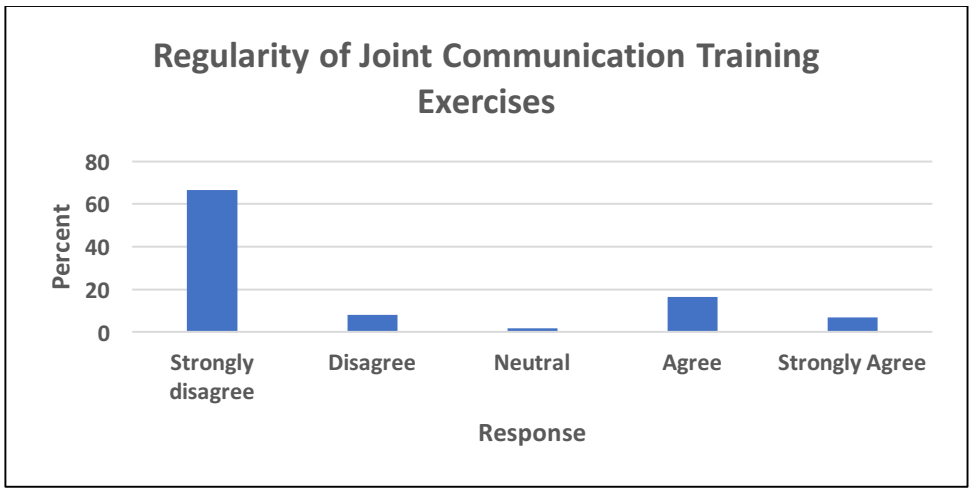

Figure 6.24: Number of responses with respect to regularity of joint communication training exercises

To ensure that available information can be used to improve planning and preparedness, specific enquiries about whether organisations normally conduct debriefings after response activities (to learn and document lessons that can be used in identifying communication deficiencies in order to develop solutions to correct them), and whether organisations normally adopt a procedure checklist (to facilitate exchange of information between government, emergency service providers and the public during emergencies in order to improve their communication ability) were also made via interviews.

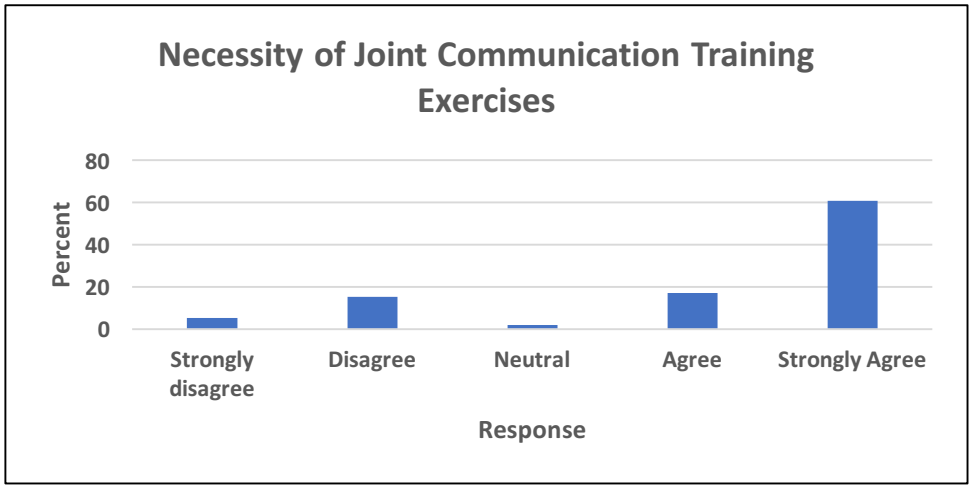

Figure 6.25: Number of responses with respect to necessity of joint communication training exercises in Nigeria

As indicated in Figure 6.24 above, the majority of responses (66.5%) strongly disagree that joint communication training and exercises are conducted regularly between federal, state and local governments in Nigeria in order to understand their communication challenges, improve their communication ability and effectively disseminate information when emergencies arise. However, 60.8% of responses (see Figure 6.25) strongly agreed that joint communication training and exercise activities are important and necessary to test and improve communication capacity of different agencies in order to prepare them better for effective information sharing when the need arises. Thus, the results provide an insight into the communication challenges faced by the Nigerian EMS and suggest the need for improvement in order to better prepare and be ready to share information effectively during emergencies, so as to enhance adequate allocation and utilisation of resources.

6.12. Conclusion

The importance of emergency preparedness in ensuring rapid response for reducing disasters has been discussed and presented in this chapter. The institutional capacity of emergency response organizations in Nigeria has been assessed and presented herein with strong emphasis on the operations of EOCs and the level of resource availability for carrying out emergency response operations together with the communication ability of the Nigerian EMS. The various networks adopted in sharing and allocating resources between federal, state and local government as well as community engagement targeted towards reducing the difficulties of resource shortage during disasters and emergencies in Nigeria have been considered, with detailed examination of how resources are being utilised to minimise disaster impacts. It is obvious that the Nigerian EMS requires substantial improvement, in the provision of resources, and communication tools as well as providing facilities to support operations of EOC aiming at improving coordination, cooperation and integration. In as much as they remain relevant in dealing with emerging disaster issues, the lack or absence of these elements may lead to poor response during disasters leaving affected communities with rigorous impacts. Hence, the implication of the outcome of the research analysis is discussed in the following chapter to provide a better interpretation and understanding of the results.

Chapter 7: Discussion and recommendations

7.1. Introduction

The institution of, and framework for, disaster management in Nigeria was reviewed earlier. It is centred on the principle of shared responsibility, involving federal, state and local governments, as well as participation by NGOs and private sector organisations (Sadiq 2012, Okon, 2018; Mashi et al., 2019; Nnadi et al., 2020). This chapter therefore focuses on discussing the implication of the findings from this research, as presented in Chapter 6. The chapter considers how the availability of resources; communication tools and networks for sharing information and other essential resources, between different levels of government and other agencies involved affect emergency response and disaster management in Nigeria. It also looked at how operations and capacity of EOC support coordination, integratiob and allocation of resources in line with the expectations of the public based on the needs created by any given disaster as indicated by the opinion of people during the investigation. Evaluating the capacity and ability of emergency response organisations in Nigeria provides a comprehensive understanding of the strength and weaknesses of emergency management organisation in the country and defines its level of preparedness base on the strengths and weaknesses of the organisations involved as perceived by the people. This chapter further offers knowledge and interpretation of the results about the level of resources available for emergency response, including communication tools and networks as well as the information-sharing pattern in disseminating disaster information during emergencies in Nigeria connected to improving preparedness, and provides details on the operations of EOC by identifying all response activities that are implemented towards reducing disaster risk within the society while aiming at making recommendations to improve the EMS in Nigeria.

To provide adequate knowledge and clear understanding of disaster management and the level of preparedness for emergency response in Nigeria as seen in the outcome of the present research, this chapter is divided into different sections to clearly provide detailed interpretations of the results base on the objectives of the study and in relation to effective emergency management in the country even as it proposes recommendations towards improving disaster management and emergency preparedness. The present section introduces the chapter. Section 7.2 gives an account of the institutional capacity for disaster

management in Nigeria, by considering the operations of EOCs, and focuses particularly on capacity assessment in terms of resource availability, which in the context of this study (as mentioned earlier) refers to funding, staffing, training and skills acquired by available staff to improve their knowledge and level of competence for effective implementation of emergency response activities. Section 7.3 discusses the implications of the findings concerning the relationship between federal, state and local governments in their sharing and allocating of resources during emergencies as they seek to reduce the difficulties of resource shortage. This section aims to clearly show how effectively the Nigerian EMS works in terms of coordination, cooperation and integration among various levels of government and other organisations involved in ensuring rapid response is achieved during emergencies. Section 7.4 discusses the findings related to inter-agency needs for supporting each other to enhance adequate utilisation of resources. Section 7.5 reflects on the participants' opinions and perceptions concerning the level of preparedness of the Nigerian emergency management institutions, and takes into account emergency preparedness activities, stakeholders' engagement and community participation, and collaboration as well as factors that are affecting implementation of emergency management activities in the country. Section 7.6 gives account of the implication of analysis vis-à-vis emergency communication and the information-sharing pattern in Nigeria. It considers effective communication and networks for sharing information between the various agencies responsible for emergency response and disaster management, communication tools, availability and efficiency of communication tools and networks, and the influence of the various communication media that have been identified in this research on supporting adequate sharing of information for effective implementation of response activities. Section 7.7 outlines details about intergovernmental communication ability, taking into account joint communication exercises and training programmes between different levels of government to improve their communication skills and abilities in preparation for emergencies. Section 7.8 looks at factors affecting emergency communication and information sharing in Nigeria, while Section 7.9 considers factors affecting people's attitudes towards emergency messages.

7.2. Institutional capacity and capability for emergency management in Nigeria

The institutional capacity for emergency management in Nigeria was examined as indicated in Chapter 6 with a strong emphasis on the operations of the national EOC, resource availability, and communication ability geared towards supporting both the rapid sharing of information and the clear implementation of response activities. The pattern adopted in sharing and allocating resources between federal, state and local governments remains essential, and the manner in which information about any given disaster is disseminated is paramount in ensuring that resources are appropriately distributed and utilised in line with the needs created by disasters (Amaratunga *et al.*, 2015; Amaratunga et *al.,* 2018). The findings confirmed that Nigeria has a functioning and operational national EOC to facilitate coordination and integration of efforts and the sharing of resources across different levels of government, including other entities involved. However, possession of adequate resources such as skilled staff, equipment and facilities appears to be lacking but this would improve the level of preparedness and enhance effective emergency management operations if adequately provided and well-trained. Hence, conclusions concerning the capacity of emergency management organisations in Nigeria is detailed in the following subsections below to provide a better interpretation of the results and clearer understanding of their ability in dealing with emerging disaster management issues and reducing disaster impacts upon society.

7.2.1. Capacity of EOC: Nigeria's perspective

The importance of an EOC in an emergency remains very high in the area of emergency management as its operation enhances coordination, cooperation and integration between various disaster management stakeholders and fosters adequate utilisation of resources (Coppola 2006; Waugh and Streib, 2006; Kapucu, 2012). The operations of the national EOC in Nigeria have had a massive influence on the success or failure of disaster management and the majority of the participants believed that the efficiency of emergency management activities in the country largely depends on the efficacy of the operations of EOC (see Table 6.9). Through its ability to coordinate resources and integrate the activities of multiple stakeholders towards achieving a common goal, the EOC has been recognised as an essential component of planning for, and management during and after,

disasters and emergencies (Waugh and Streib, 2006; Kapucu *et al.*, 2013). Its operations facilitate quick response and help in reducing disaster impacts, and enhances proper coordination, integration and allocation of resources based on the needs of affected populations using available information gathered. The participants' judgment contended that the function of the EOC in Nigeria enormously depends on the level of resources available within it, its accessibility and the communication ability within it. Despite this, it is clear that EOCs in Nigeria lack full capacity as the elements that enable its operations seem to be inadequate. This suggests the need for improvement by increasing the level of resources available to the centre, creating easy access routes to the EOC and providing adequate communication tools to aid effective communication and information sharing so that resources can be obtained and distributed according to people's needs. Doing so will go a long way in improving preparedness as emergencies often create the need for different organisations and personnel to commit additional efforts outside their normal routine activities. Considering the strength of an EOC, especially at the national level, its function should not be completely neglected, particularly during planning since it is the pillar that aids coordination of resources and response activities of different stakeholders. By considering parameters such as the function of the EOC, its location and accessibility, its communications ability, the availability of resources and its activation scale, the results provide ample knowledge and enables a better understanding of the EOC's performance capacity in promoting and boosting emergency management in the country. Despite the influence of the EOC in coordinating activities, evidence from the present analysis shown in Table 6.9 indicate that the EOC in Nigeria needs some improvement in areas such as resources, equipment and facilities, and staff training, among others, in order to heighten preparedness. A significant number of people who participated during the research survey contended that the location and accessibility of the EOC, its communication ability and the resources available to it all have meaningful impacts towards its operations and functions. However, nearly 52% of responses argued that the EOC does not function as intended because it is not located centrally to allow easy access by the general public, and because of its communication challenges and the limited resources available to the centre. This contributes to the increasing brutality of disaster impacts during emergencies in the country. For instance, in an interview with some participants at the National Hospital, when asked whether they think location of the EOC, resources available

to the EOC, activation scale of the EOC and effective communication within the EOC are helpful in coordinating emergency management activities, resources and response during an emergency, in a way that would improve effective response, one of the participants stated:

> "*during disasters, aids are often collected, coordinated and distributed through the EOC especially at the federal level; however, most times, it is very difficult to get access to the centre due to its location, and information is not often provided adequately about the kind of support that is available while staff of the EOC very often tend to politicise every situation as it is a norm in the country. This seems to delay dissemination of information and getting essential materials across to affected areas which in a way would always increase disasters impacts upon society. It would be better for the EOC to be situated in locations with easy access routes and staff of the centre should also make themselves accessible, while information about the kind of support provided within the centre should be communicated explicitly to the public so that essential materials and resources can easily be accessed and relocated promptly to the people affected by any given event."*

Such evidence upholds the need to constantly consider the location of an EOC, communication ability within the EOC, level of resources available to the centre and its activation scale, especially when preparing or planning for activities involving emergency response and disaster management, as they prominently influence the operations of the EOC. Bearing in mind that disasters are sudden events and coordination of resources and efforts by different stakeholders is often very difficult, as is sharing, allocating and utilising such equivalent resources meritoriously, giving attention to the functions of EOC by considering such parameters during the planning phase would aid in boosting preparedness in order to curtail the stress of ineffective response and to reduce disasters' impacts on affected communities. Not only will it boost preparedness, it will also lead to the establishment of a well-coordinated disaster management structure by which resources can be organised, coordinated and distributed accordingly to meet the needs created by disasters.

Considering that the operations of the EOC in Nigeria is influenced by the level of resources available to the centre, its communication ability and its location

and accessibility, it has become fundamentally necessary to consider these three elements as the route to improving the function of the EOC. Disaster managers and emergency planners are, by this inference, encouraged to consider locating the EOC in areas that they can easily be reached. They need to create adequate access routes to broadly allow easy movement in and out of the centre. This would guarantee effective coordination and transfer of essential materials sufficiently in a way that provides prompt support and minimises the impacts of disasters in society. It will also allow disaster managers and emergency planners the chance to allocate limited available resources to suit the strengths and weaknesses of different organisations and stakeholders involved, which would further help in reducing the challenge of resource shortage and fostering rapid response according to the needs and expectations of the people affected by disasters.

According to Ryan (2013), when disasters occur, a variety of public, private, non-profit and volunteer organisations gather resources together to provide necessary supports such as shelter, food and non-food items, clothing, and other essential needs that are required in affected communities to ensure continuity after disasters. It is important to coordinate and distribute these materials so they serve the purpose for which they were donated. Multi-agency coordination during this period becomes extremely essential, and this is within the remit of the EOC since different actors are often involved. While it is generally maintained that the EOC plays an important role in this aspect and in accomplishing disaster management actions, its operations have also gained more attention such that, even in public health emergency management, the EOC is now used to improve multi-agency collaboration (Perry, 2003; Annelli, 2006; Doyle *et al.*, 2015; Ma *et al.*, 2020). As effective implementation of disaster management and response activities are tremendously influenced by its operations in coordinating and allocating resources between different participants, improving its performance, especially at the national level particularly in Nigeria, would go far in improving disaster management and enormously contribute towards minimising disasters impacts. According to the views of the participants, the confront in the operation of the EOC in Nigeria is due to lack of trust among different stakeholders and self-interest, in that some people attempt to gain favour from responsible authorities. For example, in a recorded interview with some participants, one of them clearly stated that:

> "*because people do not trust each other's activities and they always aim to benefit individually from any available aid provided to*

support disaster victims, and very often, the majority of the people are always loyal to some responsible authorities which they will not like to breach their loyalty, so they often fail to take the right actions instead thereby neglecting some important deeds to better plan for and respond to emergencies."

As a result, the research encourages the government to strengthen the capacity of the EOC by making responsible authorities more accountable in its place in order to appropriately utilise resources for the purpose they are budgeted for.

Aside from coordination, resource allocation and information sharing, a well-equipped and functional EOC also facilitates gathering of useful information to support policy decision-making after any given disaster to improve preparedness (Green III, 2001; World Health Organization, 2017; Olatunji, 2018). In as much as the functions and importance of the EOC cannot be disregarded in emergency management, as it helps to gather and disseminate vital information that aids allocation and utilisation of resources between different relevant agencies involved, it is also important to consider training staff and to introduce activities that will bring different people together to practice and test their skills in order to prepare them better for unforeseen incidents. Hence, in order to strengthen preparedness towards improving response to future events, the outcome of the research encourages the EOC to coordinate and command response activities or plan events in such a way as to include information management, staff deployment and resource allocation, while taking into consideration all relevant actors and their capabilities.

7.2.2. Resource availability and emergency management in Nigeria

As suggested by Comfort *et al.* (2004), Kapucu *et al.* (2010) and Curnin *et al.* (2015), the efficiency of emergency response is influenced conventionally by the kind and quality of resources that are available to support response operations, the pattern of sharing information, the allocation of available resources and the complexity of emergency response strategies adopted by the authorities involved. As resources, in the context of this research, include not only numbers of staff and funding, but also quality of training acquired by such existing staff, their skill levels, and their equipment and facilities, considering the quality of training acquired by such existing staff, their skill levels, and their equipment and facilities has helped in identifying aspects of the Nigerian EMS that need improvements to increase its

level of preparedness. Looking at the level of resource availability and the manner in which they are being distributed, it indicates that more effort is needed to coordinate and integrate resources among various agencies that are involve in emergency response in Nigeria to improve response and reduce disaster impacts. Such information is relevant in enhancing planning for emergencies in the country as it has provided an insight to the capacity of Nigeria's EMS in terms of resource availability and sharing. While it is argued that appropriate allocation and distribution of resources among federal, state and local governments is helpful (especially in reducing the challenge of resource shortage in emergencies), the adequate availability of such resources and acquisition of emergency response facilities and equipment would also help to put in place damage mitigation strategies and reduce impacts when disasters occur. Nevertheless, the research outcome shows some gaps in the resource sharing formula between the different levels of government in Nigeria which makes it difficult for response to be effective and efficient during disasters.

In terms of facilities and equipment, the survey took into account emergency response vehicles, ambulances and communication tools that are provided or available to support emergency operations in Nigeria. As indicated in Figure 6.15 above, the fact that the majority of the survey participants are often involved in response activities indicates they have sufficient knowledge concerning staffing, their skills, facilities and equipment within the EMS - the result has brought to the fore a better understanding of the ability of the Nigerian EMS vis-à-vis the availability of resources to support emergency management operations. While the participants demonstrated the availability of adequate staffing (see Figure 6.17), about half of the responses yet argued that the skills of such existing staff are not sufficient enough for effective implementation of emergency management activities and programmes in the country. This is as a result of lack of training and exercise programmes, which suggests the need to increase the number and quality of training sessions as well as exercise programmes for existing staff in order to develop their skills and keep their knowledge of disaster management up-to-date. The way in which available resources are distributed and allocated during emergencies significantly contribute to how response is conducted and achieved (Comfort *et al.*, 2004; Perry and Lindell, 2003; Kapucu, 2006). However, there seem to be inconsistencies in the way resources are allocated and distributed

among disaster management actors in Nigeria, including different levels of government involved which in turn affects disaster impacts upon society.

It was further argued that the facilities and equipment available for emergency management use in Nigeria are not adequate to support prompt response and sustain disaster management in the country. While the majority of responses perceived that there is adequate funding, the participants perceived a lack of or inadequate availability of technological facilities, even with the supposed sufficient funding, which demonstrates disparities in the opinions of the participants concerning the operations of the Nigerian EMS. Such an outcome speaks of the need to improve the acquisition of facilities and equipment using available funding while also providing staff with adequate training to develop their skills and keep their knowledge updated. The absence of skill-development training and exercise programmes additionally demonstrates some level of inadequate management strategies and suggests that, to boost preparedness, more training should be provided to aid development of staff skills and improve their level of awareness.

When disasters occur, they usually create the need for additional staff to maintain operations. While it is argued that identification of surge staff in advance and providing them with adequate training to perform all emergency functions is useful and helpful in improving response (Kapucu, 2008; Alexander 2015; McEntire, 2015), in Nigeria, due to limited resources or poor resource management, this approach seems to be very difficult, thereby increasing the likelihood of increased disaster impacts. Possibly, government and its disaster management bodies have failed to appreciate the importance of staff training and do not make satisfactory provision for training programmes to encourage staff capacity development. Likewise, they do not acknowledge the role of volunteers during emergencies, and do not provide them with the training and exercise programmes that are needed to build their capacity in order to establish cooperation and integration, especially among non-government officials and people in the community. For example, according to one of the interviewees:

> "*Even when trainings are organised, they are not regular, and only limited slots are often available thereby allowing only a few staff members the chance to take part. This is a major problem as most times, staff are being chosen on the ground of who know who to join in the training, leaving others in a competitive disadvantage*."

Thus, it is essential to continually provide training for existing staff, and all members of staff should be given the opportunity to participate in the training in order to keep their knowledge updated about the emerging issues around emergency management. But this seems to be uncommon in Nigeria as approximately 50% of the participants (see Figure 6.14) argued that available staff are not well trained and they lack sufficient skills to perform their functions. They acknowledged that training is not organised regularly and not all staff are able to participate in the limited available training slots, which is not a good practice in improving emergency management.

The irregularity of training may be due to organisational factors such as negligence, greed, opposition and lack of accountability. Thus, increasing accountability for those in higher positions can enhance prudent use of available resources and increase the provision of more regular training programmes to allow staff the opportunity to develop their skills and improve their capacity. More preparedness measures need to be developed and staff knowledge of disaster management reinforced. The outcomes of this analysis encourage emergency managers and disaster planners to prioritise skill development for existing staff through the development of programmes and the introduction of activities that would lead to staff training and acquisition of skills, thereby building their capacity and ability to contribute to the success of emergency response.

The lack of technological resources may be due to poor attitudes and behaviours of staff, particularly those in higher positions. For instance, an interviewee at the FMOH pointed out:

> "*staff, mostly those occupying higher positions, are not always concerned about acquiring equipment for emergency response as they are not adequately being monitored or supervised by responsible authorities*. *They divert majority of the resources meant for emergency situations towards their own personal interest without minding what the impact would be on the entire system and they are not being held accountable due to lack of commitment by the responsible authorities*."

Adequate facilities, such as emergency vehicles and ambulances, are essential for moving disaster victims out of disaster areas to hospitals for medical services, and for transporting other disaster relief essentials to affected areas (der Heide, 2006; Laditka et *al*., 2008; Catlett *et al.*, 2011). It is important to increase the availability of equipment and facilities. This has become very necessary in

order better to prepare, maximise operational efficiency and minimise disaster impacts. Perhaps there is inadequate utilisation of the available funding or, in reality, the available funding may not be adequate to support acquisition of equipment and facilities or utilise prudently, even though the majority of the responses pointed to the availability of adequate funding. However, in ensuring proper coordination, allocation, distribution and utilisation of available resources to meet the target of effective response, it is important to develop appropriate measures for this purpose. Emergency planners and disaster managers are therefore required to consider this element especially in the planning process to build their capacity and improve preparedness by ensuring that available resources are prudently utilised.

In addition, some other factors that are recognised as possibly leading to the insufficient availability of technological resources are a lack of equitable distribution of resources. Although there appears to be adequate funding, the funds seem to be inappropriately utilised due to organisational cultures and operational practices, where organisations fail to support doing the right thing of ensuring that funds are used for the purposes they are budgeted for. It is expected that appropriate funding would ensure acquisition of a sufficient level of material resources. However, the available funding in Nigeria is not utilised appropriately and has contributed to poor disaster management operations.

Consequently, this research suggests that Nigerian disaster managers and emergency planners should develop activities that would facilitate an understanding and identification of roles as well as build capacity for organising the response to emergencies. Acquisition of appropriate equipment and effective utilisation of available funding would foster the development of such activities that could bring together staff from across different organisations to test and develop their skills of emergency management. By doing so, disaster management personnel and the various organisations involved in emergency response would be given the opportunity to test their skills and increase their ability better to prepare for unforeseen events.

7.3. Resource-sharing pattern between federal, state and local governments in Nigeria

Collective efforts by different actors enormously enhance effective disaster management and aid the reduction of disaster impacts upon society (Pelling, 2003;

Perry, 2007; Kapucu, 2008; Kapucu *et al.*, 2010). Contributions from different organisations involved are used to fortify efforts of other stakeholders in order to bridge the gap of resource shortage and respond to emerging disaster issues rapidly and according to the expectations of the public. Bearing in mind the complexity of emergency management issues in Nigeria (where disaster management is centred on shared responsibility between federal, state and local governments) and the frequency of disaster occurrences in the country, this research has revealed a serious need for more and better collaboration, cooperation and integration across the different levels of government to ensure efforts are geared towards effective and efficient utilisation of limited available resources to meet the needs of disasters in society. As such, joint efforts between federal, state and local governments in Nigeria have become highly imperative in order to deal significantly with the increasing disaster issues in the country. As indicated in Table 6.10, it is believed by the participants that combining efforts from different organisations influences the degree of impact upon society triggered by any given disaster. Some agencies depend on support and contributions from other agencies to boost their performance, although all are targeted towards achieving a common goal of reducing disaster impacts. This implies that sufficient consideration should be given to the relationship between different levels of government and other agencies in the sharing of resources in disaster management because one single entity cannot completely and effectively deal with the confronts of disasters. Hence, an efficient response normally involves contributions from different participants such as government and non-government and private sector organisations. In this regard, to ensure efficient and appropriate use of resources among different entities, it is invaluable to establish adequate resource-sharing networks that would enhance distribution and allocation of resources among federal, state and local governments in Nigeria. Such networks would not only support distribution of resources but also help in coordinating and integrating efforts of different groups towards accomplishing a common goal (Musiolik *et al.*, 2012): improving effective implementation of response and overall emergency management activities.

Hence, the importance of establishing adequate networks for sharing resources among different actors in emergencies remains indisputable and is essential for reducing the challenge of resource shortage as well as promoting effective response. Results from this research have confirmed this fact by

demonstrating that resources and efforts provided at federal level are used to a great extent to support response efforts and resources coordination across state and local governments in Nigeria. Likewise, communities need to obtain a greater level of shared resources. As indicated in Figure 6.19, there is a lack of effective resource-sharing patterns between federal and state governments, and between state and local governments, thereby constituting a challenge in their resources utilisation. But the situation is different between local government and communities as there is a more effective resource-sharing network designed to complement their efforts towards reducing disaster impacts, according to the survey participants (Figure 6.20). This implies that establishing adequate networks to jointly share resources and combining efforts between federal, state and local governments, and communities would significantly promote efficiency in utilising resources and improve disaster management in Nigeria. This means that efforts and resources provided at the federal level are used to strengthen efforts and reduce resource limitations at the state level. Likewise, efforts and resources provided at the local government level can be used to strengthen communities to ensure they meet the needs created by disasters. However, the absence of association between state and local governments indicates that state governments do not provide support to local government, thereby creating a gap leading to resource shortage, especially at the local level, which in return may affect response and increase disaster impacts. This may be due to conflict of interests, where state officials are not willing to incorporate local officials into their emergency management plans and activities. They rather prefer to work alone and acquire more benefits to themselves, not minding the impact of their actions upon the entire society. Consequently, this has severely reduced effectiveness of implementing response actions, with stronger effects at the local and community levels in Nigeria.

In line with Act 50 of the 1999 Constitution of the Federal Republic of Nigeria, the federal government coordinates emergency management activities through NEMA for all federal agencies and provides grants and support to states to ensure successful and well-coordinated responses during emergencies (Adefisoye, 2015; Mashi *et al.*, 2019; Umunna, 2020). However, the state lacks the ability and finds it difficult to provide technical as well as financial and material support to local governments, as concluded by the outcome of this work. According to one of the interviewees at the FRSC: -

> "*factors such as poor coordination, uncertainty and conflicts among different levels of government have unpleasantly hindered good relationship between them especially among state and local government. State officials finds it very difficult to integrate well with local officials may be due to the quest for more gain over the available resources including funds even though the federal government always try to incorporate all levels of government in its plan. But notwithstanding, the complex disaster management system in Nigeria requires all levels of government to cooperate and collaborate effectively in order to share resources adequately and provide the kind of support that may be needed in an event of a disaster, but this is not obtainable as no one sincerely cares about the impact disasters can cause in the society but focus more on what goes into their pockets*.

As such, government and its agencies need to increase coordination, cooperation and integration, especially between federal and state levels, and state and local governments, in order to ensure adequate collaboration among them in an emergency. Doing so would strengthen their capacities, improve their level of preparedness for rapid response and curtail disaster impacts.

Even though there appear to be appropriate efforts and networks for sharing resources between local governments and communities, the resource-sharing ability between federal and state government (which appears to be lesser than between local government and communities), remains a concern. Due to conflicts of interests at federal and state levels emerging from lack of accountability, as suggested by the participants, disaster management in Nigeria has been demonstrated to be ineffective even with the increasing efforts made so far. And the outcome of the present research suggests that more effort may be needed to improve coordination, cooperation and integration so as to enhance effective emergency management. For effective implementation of disaster management and emergency response activities, and to adequately coordinate and utilise resources, the government and its agencies need to improve accountability and appropriately monitor overall operations of all disaster management organisations in the country. Federal policies and executive orders should focus on coordination and integration of emergency management efforts and activities across all government levels, while government officials and decision makers are also invited to make appropriate policy decisions that will support sharing of resources as well

as cooperation and integration between federal, state and local governments. It is also important and necessary to assist emergency programme managers in implementing such policy initiatives to improve emergency management.

Judging from the conclusion of this research, satisfactory cooperation and integration among all levels of government are required to ensure the establishment of an effective resource-sharing pattern and also to maintain such existing relationships so that available resources are distributed adequately and evenly. But this is lacking in the Nigerian EMS which may be due to conflict of interest and lack of accountability. The disparity in efforts and resource-sharing arrangements between some levels of government, particularly state and local government, alters the effectiveness of response, especially at the local level. This may be due to lack of cooperation and local inexperience. This research encourages the state government to provide local government with the required advice and support by always including them in their disaster management plans to ensure satisfactory cooperation and integration. Also, local government needs to identify the limitations of both individual and public assistance beforehand in order to seek support from state government as and when it is needed. Through this, local governments can obtain the required support on time and without difficulty when the actual disaster occurs.

Improving the efforts of and networks for sharing resources among different levels of government would not only help bridge the gap of resource shortage but also increase preparedness and facilitate the creation of advance plans that help provide the necessary support that may be required at each level of government (National Research Council, 2007). However, due to disputes arising between one level of government and another, the conception of different ideologies from various levels of government and political interest, it is difficult to achieve adequate sharing of resources between different levels of government in Nigeria. This suggests the need to improve resource-sharing patterns by developing measures to harmonise each level of government in order that they can support each other and strengthen their capacities. This would in return improve the entire EMS by reducing the challenge of resource shortage. This is achievable through the establishment of a well-coordinated capacity-building structure and the introduction of some training and learning programmes for all levels of government. Doing so would enable an understanding of the ability of each level of government and the available resources, helping to facilitate the planning of what need to be done,

where to do it and who is to do it, so as to meet the exact demands generated by emergencies.

7.4. Disaster management and inter-agency needs

For emergency management operations to be effective and efficient, they depend on additional staff (surge help) from different agencies and organisations that come together and contribute support in meeting the needs of affected populations (Coppola, 2006; Etats-Unis' 2006; Doyle *et al.*, 2015; Ray-Bennett et *al.*, 2020). This means that the manner in which such agencies or participants collaborate, cooperate and coordinate together influences the way they tackle the needs created by a disaster of any given magnitude. According to Hardy *et al.*, 2005; Nowell, 2009; Gulati *et al.*, 2012; and Jiang and Ritchie(2017), such collaboration and cooperation leads to effective coordination of the activities of the various stakeholders involved and help to improve performance. As indicated in Section 6.9.1, which considers the combine efforts between federal, state and local governments and communities in sharing and utilising resources in emergencies in Nigeria, it is established that shared efforts across federal, state and local governments is helpful for improving emergency response. As such, the manner in which different agencies, groups and individuals provide the required support that is needed for rapid response needs to be well thought out, especially in the planning phase, given the complex nature of emergency management and that different agencies are involved. This is because the efficiency of response normally relies on the combined efforts from different actors (Doyle *et al.*, 2015; Ray-Bennett et *al.*, 2020), such as government agencies, NGOs and private sector organisations (Coppola, 2006; Etats-Unis, 2006; Jiang and Ritchie, 2017). Hence, well-coordinated efforts across different agencies and organisations can be used to intensify the efforts of each other through the sharing of responsibilities, depending on the ability of an organisation to share resources with other organisations. For instance, evidence from the present research has confirmed this phenomenon as it demonstrates how response efforts of agencies such as NEMA, FMOH, FRSC and the National Hospital are combined and used to improve response and overall emergency management in Nigeria (see Table 6.10).

Considering the value of collaboration in disaster management, which cannot be completely neglected, and given that no single entity may be able to respond effectively to disaster issues with limited resources, when dealing with such issues it is essential to take in to account the strength of each agency or

organisation involved (Bryson, 2018), especially at the initial stage of planning. The conclusion from this work therefore suggest that any improvement made in the capacity of one agency with some level of dependency with another can affect the efficiency of operations or response efforts of the agency in question. For example, the relationship between the response efforts of agencies such as the National Hospital and FMOH, the National Hospital and NEMA, and the National Hospital and FRSC, means that improving the capacity of any of these agencies would have positive impact on the performance of the others. This would enable the identification and location of the right agency for developing and implementing disaster management plans and operations by ensuring that resources and responsibilities are shared and distributed in a way that meets the expectations of people in emergencies. The relationship between the response efforts of NEMA and FMOH shows collaborative efforts between these agencies, leading to development of a unified and coordinated set of actions to enhance effective response. For example, following the 2011 bomb blast at the United Nations' building in Abuja where several people were killed and many injured, NEMA rescue teams worked closely with the FMOH staff in the evacuation and transportation of casualties to hospital. While NEMA was responsible for search and rescue operations, the FMOH, through the National Hospital and other federal medical centres, was responsible for providing first aid services and treatment of causalities. Such coordinated and integrated efforts contributed immensely to reducing the impact of this event among those affected.

The absence or lack of an organised and coordinated arrangement of cooperation between other agencies such as NSCDC and NEMA, and NSCDC and FRSC indicates possible lapses in the overall performance of the system, and this may be due to some elements of organisational failure, especially at NEMA level. The results suggest that NEMA is not sufficiently organised, perhaps due to the challenges it faces with respect to policy implementation, especially regarding inter-agency collaboration. Nevertheless, it is important to know that the lack of organised and coordinated arrangement for disaster management in Nigeria does not solely depend on the efforts of the agencies involved but also on the characteristics of their organisational relationships and the political structure within the context of their operations. The characteristics of the political structure within which NEMA organises and carries out its functions contributes hugely to the way the agency relates to other agencies to provide the required support that is needed

to reduce disaster impacts. However, probably due to lack of a political willingness in supporting emergency management activities and poor monitoring and supervision of those who are responsible for executing disaster management projects, the implementation of emergency management actions remains an issue of concern. Furthermore, the functional diversity of agencies has made it difficult for a federal agency to attempt to coordinate the efforts of other agencies in order to achieve its target (Wondolleck and Yaffee, 2000). Hence it contributes to the ineffectiveness of response during emergencies creating the need for it to be tackled.

7.5. The level of preparedness for disaster management in Nigeria

A considerable level of preparedness is required for effective implementation of disaster management and emergency response activities, especially among different organisations that are involved in carrying out such functions (Perry and Lindell, 2003; Kapucu, 2006; Perry, 2007). Considering the level of preparedness of the Nigerian emergency management institutions according to survey participants indicated in Figure 6.22, it is contended that the level of preparedness in the Nigerian EMS is not sufficient enough to improve disaster management and emergency response in the country. There is a need for further improvement of the EMS to increase its level of preparedness as stated by the majority (60.4%) of the entire response. The discrepancy in opinions of the participants from different organisations demonstrates a lack of cooperation and integration among agencies, which in return hinders the coordination of activities and resource allocation in a way that they adequately support each other in reducing disaster impacts. This shows that there is no unity and harmony between the different organisations towards a common goal. The general result therefore advocates that Nigeria's EMS needs more improvement to be adequately prepared for responding to emergencies and managing disasters in a way that minimises their impacts, even though NEMA, has argued that Nigeria is adequately prepared for emergencies. This can be accomplished by sufficiently harmonising activities of all stakeholders targeted towards a common goal. Thus, all emergency management actors need to collectively work together by involving all relevant stakeholders, especially in key decision-making processes that affect the implementation of emergency management activities. Achieving such cooperation and integration would enable a more coordinated and effective emergency management approach so that actions can be implemented according to the expectations of the people. Also,

NEMA staff during the survey were reluctant and unwilling to provide accurate information about their organisation in order to protect their organisation's interest and for fear of bridging organisations' rules. Accordingly, to improve preparedness and better strengthen the capacity of the system towards effective disaster management, this research encourages all agencies to be open minded and be ready to provide exact information that would help researchers and practitioners in developing adequate measures to enhance mitigation of, prevention of and response to disasters and emergencies. To improve preparedness and make disaster management effective, actions required include constant investigation of hazards, high-quality maintenance of existing disaster management facilities and the development of measures to increase the capacity of disaster management organisations, along with the control of resources, acquisition of communication tools to ease information sharing and dissemination, and the establishment of networks for sharing and distributing resources (Turner, 1997; Alexander, 2003; Kapucu, 2006; Lindell and Perry, 2006). Thus, with the complex nature of emergency management in Nigeria, sufficient cooperation and integration would be helpful to properly investigate the capacity of different stakeholders and increase coordination of resources and response activities between them since they would always contribute differently and their various contributions can be used to augment different efforts.

On the one hand, it is expected that the availability of adequate resources, sufficient staffing and adequate training aids increase preparedness towards emergency response, and that the promotion of response efficiency through the development of knowledge and skills of existing staff prepares them for effective response (Baker and Refsgaard, 2007; National Research Council, 2007). However, on the other hand, it is argued that this can only be accomplished through effective utilisation of such available resources, particularly available funding, to provide such important mechanisms within affected areas (Perry, 2007; Carter, 2008; Kusumasari, 2012). Although the present research showed a supposed increased in the level of funding as perceived by the survey participants (see Figures 6.16 and 6.17 respectively), it appears that the available funding may not have been distributed and utilised in a way that fosters improved preparedness, which may be due to lack of commitment by the relevant agencies and authorities involved. As highlighted in Section 6.9, even though there appear to be sufficient numbers of staff to perform disaster management functions, the staff are not given

the opportunity to regularly participate in training programmes in order to improve their knowledge and develop their skills, as well as to build their capacity and keep their knowledge up-to-date. So, more effort should be focused on building capacity for existing staff by providing them with sufficient regular training programmes, and acquiring essential facilities and equipment given the available funding.

The absence of cooperation among response organisations and the lack of political willingness to support emergency management activities also affects the level of preparedness and performance of disaster management institutions in Nigeria. Political leaders do not consider the importance of emergency response issues from a general perspective; rather emergency management has been politicised, and those involved use it to gain political recognition. Although the legal and constitutional structure of disaster management mandated NEMA to coordinate the activities of all other agencies participating in disaster management, and it gives individuals the responsibility to take initial action in emergencies, NEMA has failed in its responsibility to integrate and strengthen collaborations among other actors and to identify who is responsible for what beforehand for quicker action. The lack of adequate preparedness in response to emergencies results in severe socio-economic impacts with a massive effect on response efficiency. NEMA needs to improve coordination and increase cooperation with the various actors responsible for implementing emergency management activities and enhance community involvement. This can be accomplished through development of programmes to facilitate inter-agency collaborations and community participation (Richardson and Asthana, 2006; Horwath and Morrison, 2011; Menya and K'Akumu, 2016). Doing so will create an EMS in which roles and responsibilities are shared based on a common understanding of the capacity of each actor. Also, the political leadership in Nigeria has failed to implement policies that support disaster management due to greed and selfish interest. Disaster management has been politicised and given less priority, resulting in a failure to monitor the activities of responsible agencies properly, and leading to the misuse of resources.

Local-level planning increases public awareness and their access to information and related resources (Ridder and Pahl-Wostl, 2005; Dolan and Walker, 2006). This has had substantial consequences for the way individuals cope with and recover from disasters. The lack of disaster awareness and disaster education demonstrated by the participants, as shown in Figure 6.8 contribute

massively to reducing the level of preparedness at the local level. Insufficient training programmes and inappropriate utilisation of resources, as well as poor monitoring and supervision of projects, result in this difficulty, which presents grave concern for the effective implementation of emergency management activities in the country. Available funding needs to be judiciously utilised, and officials should prioritise public interest when appropriating funds in order to reduce disasters impacts in society, as well as to enhance rapid response when disasters eventually occur rather than dubiously taking advantage of available opportunities for personal contentment. Those who allocate resources in support of emergency management also lack the capacity to properly monitor and supervise the activities of the various stakeholders involved. As such, actors are encouraged to act in their own ways given the available public funding meant for disaster management. This raises the need for emergency management activities to be considered as part of the issues affecting the society, so as to raise awareness and develop policies that will support operations.

Other factors, such as lack of good communication tools, poor access roads to an EOC, lack of equipment and facilities, scarce collaboration, lack of capacity building and slow staffing development also affect the level of preparedness for emergency response in Nigeria. Available funding should be channelled towards building the capacity of existing personnel through provision of adequate training and retraining programmes, and conducting recurrent exercises to test and develop their skills and increase their level of awareness of current approaches to emergency response. Adequate utilisation of available resources can also enhance the acquisition of adequate communication equipment to improve communication ability and the acquisition of other facilities that are needed to boost rapid response. As pointed out by one of the respondents in an interview, "*staffs are not allowed the opportunity to perform their roles and develop their skills while government has also failed in prioritising disaster management by developing and implementing policies that support disaster management programmes*". The conclusion here maintains that the level of preparedness of Nigeria's disaster management organisations, considering such factors highlighted above, is not adequate to mitigate, prevent and rapidly respond to emergencies and there is a need for further development to improve and strengthen the system for future events.

7.5.1. Emergency preparedness activities in Nigeria

Prior to 1960, disaster management and emergency response in Nigeria were exclusively the responsibility of private individuals and groups of affected populations. In the 1960s and 1970s emergency management activities became ad hoc under the offices of the Head of State and state governors (Sadiq, 2012; Anthony et al., 2019; Mashi et al., 2019; Okon 2018; Nnadi et al., 2020; Umunna, 2020). Emergency response activities became a primary function of the government when the federal government created the National Emergency Relief Agency (NERA) in 1976 and bestowed on the agency the duty to respond to the devastating drought that occurred between 1972 and 1973 (Sadiq, 2012; Mashi *et al.*, 2019). As part of government efforts to conform with the United Nations International Decade for Natural Disaster Reduction (IDNDR), in 1990 the federal government set up an inter-ministerial body and mandated it to develop ways of reducing natural disaster risk, and to address the limited scope of NERA (Nweke, 2004; Sadiq, 2012; Adefisoye, 2015). In March 1999, according to Act no. 12 as amended by Act no. 50 of the 1999 Constitution of the Federal Republic of Nigeria, the federal government created NEMA and charged it with the responsibility to coordinate responses to all types of disaster (NDMF, 2010; Fagbemi, 2011; Mashi et al., 2019). Notwithstanding, these activities still remain the function of shared responsibility among private individuals, groups of affected populations, government efforts, NGOs and CSOs.

Since then, NEMA has developed the National Disaster Management Framework (NDMF), which offers a holistic approach to managing disasters, with participation from a wide array of participants, including the federal, state and local governments, as well as CSOs and private sector organisations (Sadiq, 2012; Okon, 2018; Mashi et al., 2019). The framework provides a regulatory mechanism that ensures efficient and effective emergency management activities by government officials, community leaders, private organisations, CSOs and practitioners, and further defines the roles and responsibilities of disaster management stakeholders in the country. NEMA is responsible for the procurement and distribution of relief materials in the form of food items, non-food items and bedding materials given to disaster victims. Also, the Federal Environmental Protection Agency has been strengthened by the federal government to provide such functions that support effective management (Twigg, 2004; Obeta, 2014). It serves as a technical mitigation committee to undertake

disaster impact assessments and develop structural and non-structural measures to respond to emergencies (Obeta, 2014). The National Commission for Refugees (NCFR) is responsible for preparing emergency shelters or finding suitable accommodations for internally displaced persons (IDPs), whereas non-governmental organisations provide cash and relief materials to support affected persons during emergencies.

Since the establishment of the NDMF by NEMA, emergency management in Nigeria and its activities have undergone remarkable changes, including a better organisational structure, more funding, curriculum development for emergency management education programmes, increased training for emergency personnel, and more collaboration with other countries and development partners on emergency management (NEMA; 2012), among other issues which are elaborated in the following subsections.

7.5.2. Stakeholders' engagement and community participation

Stakeholder involvement and community participation contribute immensely to the efficiency and effectiveness of emergency response (Hossain, 2012; Fetterman et al., 2017; Sadiqi et al., 2017). However, identifying stakeholders and understanding their expectations seems to remain a difficult task to effective implementation of disaster management and emergency response activities in Nigeria. Nonetheless, this study recognised several stakeholders – such as government and its agencies, NGOs, private sector organisations, CSOs, communities, volunteer groups and private individuals – as being relevant in the Nigerian EMS. All these stakeholders play compassionate roles by providing the support needed to reduce disaster impacts and build back the society in the event of any disaster.

When one of the participants at the NEMA office was asked whether the government provide relief materials and offer support to victims during disasters to ensure quick recovery, the participant said "*government, international donors, NGOs, and volunteer groups normally provide support in terms of relief materials such as food and non-food items, rebuilding of infrastructure, and rapid redeployment of relevant personnel to disaster sites to manage the situation but sometimes the people at the top do not allow such items to get to the victims*." Even though Nigeria has adopted a disaster management approach in which the federal government, through NEMA, coordinates activities of other government levels

(including NGOs and the CSOs), and provides the support needed at other levels of government when emergency needs exceed their capacity, governmental efforts seem to be inefficient in terms of providing local support due to its inability to understand and meet the needs of local communities, affected by disasters – inefficiency which is often the result of bad leadership.

The inability of government to meet the needs of affected communities demands the progressive engagement of various stakeholders and the need to enhance community participation in order to foster rapid response and enhance quick recovery. It suggests how important it is for government to establish a good relationship with communities and other relevant stakeholders in order to bridge the gap between state/national policies and local planning decisions. As indicated in Chapter 3, the Act that establish NEMA mandated the agency to develop disaster management policies and plans and collate disaster-related information across the nation to improve preparedness and response (NEMA Act 1999). As part of the efforts to improve stakeholders' involvements, NEMA has developed the NDMF, which mandates states and local governments to establish their own State Emergency Management Agency (SEMA) and Local Emergency Management Agency (LEMA) respectively (Adefisoye, 2015; Adefisoye and Agagu, 2020; Olaniyan *et al.*, 2020).

The various levels of government are responsible for developing disaster management policies and plans aimed at improving disaster management and emergency response at that level (Adefisoye, 2015). They coordinate the activities of other stakeholders, such as NGOs, volunteer groups, and private sector organisations, as well as seeking support from the federal level when their capacity is exceeded. Adequate community involvement is helpful for a successful disaster management and emergency response. By adopting a community-based decision-making approach, it will enhance an understanding of the community's needs, to help in making plan to meet these needs and to support communities to build back better after disasters. This approach enables communities to determine their own recovery strategies while working with relevant stakeholders. In a similar way, disaster studies conducted in countries such as Australia, China and Indonesia showed that the success of solving concerns around resources during an emergency depends on collaborative efforts among various stakeholders and on the development of policies, plans and tools that allow flexibility so that donors can

manage their resources, and the way government intervene in emergencies (Chang et al., 2010; Chen et al., 2013; Jiang and Ritchie, 2017). In Nigeria, support in the form of relief materials from various stakeholders is also coordinated and distributed by NEMA to disaster-affected areas, while feedback obtained from state and local governments is used to improve planning and preparedness.

Although efforts are in place to coordinate activities of various stakeholders and community involvement, the results suggest that NGOs find it difficult to liaise with other stakeholders such as government agencies in order to implement their tasks effectively. This is due to the undesirable attitudes of government officials, and the absence of an interest in the common good and of a commitment to ensure minimal impact when disasters occur. According to one of the participants, "*officials do not have the people's interest at heart, they are not willing to utilise available resources for the purpose at which they are meant for; rather, they are concern about what they would benefit from it.*"

The above difficulty is assumed to be due to poverty, hardship, insincerity and corruption, where personnel who are responsible for managing resources and ensuring disaster impacts are minimised seem to use public funds to meet their personal needs rather than considering the resilience of society. As a result, this may have negative impacts on the effectiveness of disaster management and emergency response in the country. This argument calls for the introduction of new policies and best practices that will encourage all stakeholders to manage their resources and develop approaches that would combine the fields of disaster management, strategic management and project management in order to ensure adequate utilisation of available resources. Also, government is frequently under pressure to make rapid responses that may have negative long-term impacts on the development of the community. It has become necessary for the Nigerian EMS to balance its short- and long-term needs relating to community vulnerability reduction in this context. This requires negotiation with various stakeholders, while practitioners need to consider potential conflicts between stakeholder's interests and improve stakeholder management to avoid any negative impacts that may affect the success of response. As the ability to build back better in disaster-affected areas depends on stakeholders' cooperation and integration (Chang et al., 2010), which requires stakeholders to be managed with a clear definition of roles and responsibilities, better information exchange and proper training of

emergency managers (Warner, 2006; McEntire, 2007; Choi, 2008; Kapucu, Garayev and Wang, 2013.).

As noted above in Chapter 6, the various communication media and tools (such as mobile telephones, radios and communication networks) available for sharing disaster-related information among actors (such as government and its agencies, other stakeholders involved, and the communities affected by disasters) are inadequate to sustain and promote the dissemination of information during emergencies. This seems to be an important factor that affects stakeholders' engagement and community participation. This means that, to effectively improve emergency response, a three-way communication between government, relevant stakeholders and communities is required in order to foster adequate sharing of information and promote effective collaboration. Considering the difficulties faced by government in managing stakeholder's expectations, stakeholders and communities need to be aware and understand government concerns and priorities in emergencies. Hence, the concern for coordination and harmonisation of all stakeholders towards achieving a common goal arises in the Nigerian emergency management context. Likewise, community members should be allowed to attend meetings with government officials alongside other stakeholders to ensure support for their activities and to discuss circumstances that may result in crises. Thus, it has become very necessary to ensure that stakeholders are fully engaged, and communities are fully involved in decision-making processes in order to ensure that everyone is pulling in the same direction and embracing the same objective of improving preparedness and disaster management as a whole.

7.5.3. Collaboration in disaster management

As is well known, collaboration involves complex interactions among multiple agencies and NGOs as well as the private sector (Prater and Lindell, 2000; Lindell and Prater, 2003; Zhang et al., 2009; Lindell, 2013). It requires dealing with different people who have different skills and beliefs. Nevertheless, collaboration remains a fundamental element for effective disaster response and management. In Nigeria, the federal government is the lead government for managing disasters of any kind, although the principal legal and political responsibility of dealing with most disasters usually rests with state and local governments. When there is an emergency, the critical task imposed by the event requires multi-organisational, intergovernmental and inter-sectoral responses in order to curtail the impact of

such an event (Picou et al., 2004; Jaeger et al., 2007; Kapucu et al., 2010). For effective response to be achieved, collaboration becomes very necessary and important in dealing with the disaster, as it involves a combination of efforts by different organisations towards a particular goal. And so, emergency managers or disaster planners should not simply assume that emergency response can be completely effective given the available resources within their organisation without collaborating and cooperating with other organisations. Although conflicts cannot be completely avoided, it is clear that some organisations are simply unable or unwilling to work with other organisations, while cultural sensitivity as well as lack of a common language also remain barriers to effective collaboration and disaster management.

The research findings further show that in large-scale emergency operations, state and local governments, with other actors, have limited access to or are absent from decision-making processes due to lack of cooperation among government officials. Perhaps, federal officials believe that involving state and local officials will result in the sharing of available resources and this being detrimental to their position. However, by not involving all relevant actors in the decision-making process has increased the task of sorting out responsibility during emergencies and was confirmed to be one of the problems that influence the effectiveness of emergency response and disaster management in Nigeria. When quick decisions are needed to ensure rapid response during a particular event, through NEMA, the federal government takes the decisions without considering or involving state and local officials, not to mention non-governmental actors. They fail to consider major stakeholders that may be affected by such decisions as well. Aside from the federal government taking rapid decisions during emergencies, cultural and conventional issues also significantly limit participation of several organisations in decision-making processes, which imposes difficulties and long-lasting issues that need to be dealt with in order to improve preparedness in the Nigerian disaster management context.

Although Nigeria is a centralised nation and adopts the principle of shared responsibility in its disaster management, but in most emergency situations, delays easily occur in decision-making processes due to lack of unity between actors. This significantly alters the effectiveness of response and the implementation of emergency management activities at large. The source of delay is the inability of

federal, state and local government officials to adequately share information between themselves. In most disaster areas, federal decision makers and emergency management personnel are not well connected, and this leads to inadequate communication as well as the slow sharing of information and perhaps sometimes the information rather goes in the wrong destination. Generally, when disasters events become larger, more participants are involved. Hence, it increases the need for more information sharing, as well as coordination of different efforts and resources (Dawes 1996; Datta and Christopher, 2011; Liu et al., 2015). Thus, it has become necessary to create a unified command that will facilitate coordination of all activities of each participating organisation and ensure information is shared appropriately, in good time and to the right persons. NEMA's inability to provide adequate information to other organisations – for example, the Federal Ministry of Health, National Hospital, and military organisations – would remain a problem to the effectiveness of emergency response in Nigeria.

The absence or lack of collaboration with non-governmental emergency response organisations and the difficulty of people to listen to and accept government orders are factors that substantially influence the effectiveness of disaster management in Nigeria. It is argued that emergency managers lack interpersonal skills and are not adequately trained to improve their capability in coordinating the activities of other participating organisations, which has resulted in poor responses with increased impacts. While emergency managers need adequate interpersonal skills, in addition to technical skills, to discharge their duties, it has become indispensable for government to improve its funding in order to ensure emergency managers are well equipped through the provision of adequate training, since these managers may become involved in the coordination and facilitation of emergency operations of both first and second responders when disasters occur (Lindell, 2000; World Health Organization, 2006; National Research Council, 2007).

The lack of collaboration and intergovernmental cooperation identified in this research pinpoints a huge barrier in terms of both human and material resources which leads to severe impacts when disasters occur. Emergency managers responsible for maintaining a central emergency operation and ensuring adequate communication between and among responders, as well as providing essential links to decision makers, need to expand their understanding of the

importance of collaboration so that all actors involved in emergency response will be included in both planning and execution phases. Therefore, it has become essentially needed to develop a collaborative network among federal, state and local governments – as well as among all other organisations involved in emergency response and disaster management – to ensure effective implementation of emergency management programmes. This can be achieved through funding workshops that will include all disaster management stakeholders and developing exercises and training programmes to enable them to test and practice together disaster drills in order to understand their capacities (Sutton and Tierney, 2006; National Research Council, 2007; Perry, 2007; Ritchie, 2008; Twigg, 2009).

7.6. Emergency communication and information-sharing pattern in Nigeria

Communication is fundamental in disseminating disaster-related information to the right sources so that they can be prepared to coordinate and allocate resources and response activities (Perry et al., 2001; Sutton and Tierney, 2006; National Research Council, 2007; Carter, 2008; Kusumasari et al., 2010). This section presents and discusses results concerning the communication ability of Nigeria's emergency management organisations. It considers the various means of communication that are commonly used in disseminating disaster-related information, as well as their accessibility and efficiency in promoting effective communication. Again, outcomes are presented herein concerning the various networks for sharing information, especially between different levels of government such as federal, state and local governments, different organisations and the general public in emergencies. Section 7.6.1 considers effective communication and networks for sharing disaster-related information in Nigeria. Section 7.6.2 takes into account communication tools and network for sharing information, section 7.6.3 focusses on availability and efficiency of communication tools and networks, and section 7.6.4 considers the influence of various means of communication in enhancing emergency response.

In addition, the degree of joint communication training between different organisations and different levels of government to enable an understanding of their communication challenges and develop ways to improve their communication skills towards effective communication is presented in the next section. This has

been accomplished through a reflection of the frequency and regularity of communication training and exercise programmes organised jointly between different levels of government and other organisations that participate in emergency response in Nigeria. The aim is to identify the various communication needs within the EMS that may require improvement in order to aid rapid distribution of information in emergencies. Finally, the last section concludes by highlighting factors affecting emergency communication and distribution of disaster-related information as well as factors affecting people's attitudes towards responding to disaster-related messages in Nigeria.

7.6.1. Effective communication and networks for sharing disaster-related information

According to Quarantelli (1997), Twigg (2009) and Olsson (2014), effective communication is achieved through provision and availability of adequate communication tools and networks that are used in sharing and disseminating disaster-related information. This is relevant to improve the sharing of information among government agencies, NGOs, CSOs and affected communities, including other such organisations that participate in emergency response and disaster management functions. Such facilities and tools are helpful in promoting the rapid sharing of information to enable adequate allocation and distribution of resources in supporting effective response and reducing the numbers of victims affected by disasters. Aside from promoting allocation of resources and rapid response, effective communication also encourages early evacuation, creates disaster awareness, facilitates disaster education (especially with respect to disaster mitigation and prevention), and enables establishment of a disaster management structure that would encourage people to evacuate willingly without any delay (Perry et al., 2001; Coppola, 2006; Sutton and Tierney, 2006; Carter, 2008; Hiroki et al., 2016). While coordination of emergency management activities and integration of resources among various disaster management and emergency response bodies remains a setback to effective response, especially in countries with a complex top-down approach to managing emergencies, it is argued that such a challenge can be overcome with adequate information (Drabek, 1985; Bullock et al., 2017). This can be accomplished by providing adequate facilities that enhances sharing of information between all those involved in carrying out emergency response activities, such as government and its agencies, non-

government agencies and the populations affected by disasters. According to Maiers *et al.* (2005) and Coles and Zhuang (2011), sufficient information about any given disaster will help to increase cooperation and enhance effective resource allocation among different actors.

On these grounds, establishing adequate networks for effective sharing and dissemination of disaster information between disaster managers, emergency responders and the general public has become increasingly important in building and strengthening collaborations, coordination and integration among government and its agencies, non-government agencies and private sector organisations so as to ensure adequate allocation and utilisation of resources. This will facilitate pulling together resources and efforts across different organisations. It will help identify limitations within individual organisations and will promote an improvement in the level of communication preparedness, enhancing adequate sharing of information to aid mitigation of, prevention of and rapid response to disasters. It is argued that emergency response activities cannot be effectively implemented by any singular entity, although, depending on the scale of the event, different organisations come together and contribute efforts towards minimising impacts of the event. Local people must be fully involved, and according to Comfort, 2006 and Matthew, 2006, they upheld that it requires adequate sharing of information to ensure proper coordination and integration of efforts, activities and resources to meet the need created by the event.

It is well known that very often the impacts of disasters are felt to greater extent by vulnerable populations in society (Pelling, 2003; Wisner et al., 2004; Bonanno et al., 2010; Blaikie et al., 2014). In this situation, substantial support and additional efforts across different organisations and agencies are required to enhance rapid response and minimise the impact of events. Therefore, the importance of effective communication must not be undermined in ensuring that support is provided according to the needs of affected communities. However, to ensure effective coordination and adequate allocation of resources and activities, the quality and kind of information obtained about the disaster are also important. This will enable an understanding of the kind of support that is required by affected populations. Since different organisations, including government agencies, NGOs and private sector organisations, are usually involved in pulling resources together for rapid response in order to minimise the impacts of disasters, the non-existence or absence of effective communication due to lack of adequate communication

tools and networks to share and disseminate disaster-related information among different actors may result in difficulties in implementing short-term emergency management activities. Apparently, it hinders the overall performance of the entire system, thereby leading to severe impacts of disasters on society.

As disasters can create different needs and expectations among vulnerable individuals, groups and communities, there is a need for emergency responders and disaster managers to understand such matters in good time in order to allocate resources. However, understanding the needs created by any given disaster can only be accomplished through effective distribution and utilisation of available information. Even though effective dissemination of disaster-related information is considered very important for rapid response and improved planning, the various means of communicating and sharing such information remain vital in achieving the process of sending and receiving such messages (Bennett and Manheim, 2006; Wu et al., 2010). Hence, considering available communication means and various networks for sharing information would enable government and other related disaster management organisations to plan well and improve their communication ability to share information and coordinate responses in a way that meets the needs of the affected populations. Consequently, ensuring effective communication through the provision of adequate communication tools and the establishment of sufficient networks to share and disseminate information in emergencies is useful for enabling disaster planners and emergency managers to coordinate, collaborate, cooperate and integrate resources and efforts towards reducing disaster impacts. Effective communication and adequate information-sharing networks would not only ensure coordination and integration of resources but also, foster identification of the capacities and capabilities of each organisation involved in order to strengthen their weaknesses and improve preparedness. As all phases of disaster management are likely to require some suitable approaches in disseminating information that is responsive to the diverse needs of the target populations, establishing communication networks that are compatible among different government agencies, non-government agencies, and private sector organisations to enable them share information would help to create enabling conditions that would identify specific areas across each organisation or agency that may need to be improved, with the aim of strengthening their communication capacity and promoting rapid dissemination of information, in order to ensure coordination, cooperation and integration.

Aside from using various communication networks in sharing information, effective communication in disasters also involves various techniques by which information is formulated, delivered, interpreted and acted upon by both public and emergency response organisations, enabling them to prepare and respond when emergencies arise (Matthew, 2006; Kapucu et al., 2010). Such processes involve tools and facilities or equipment that are often employed to disseminate information. These include computers, televisions, mobile phones, telephones, radios, media, community organisations, and wireless and local area networks (Howard et al., 2017). Provision and availability of the necessary tools and equipment have become very important in improving the level of preparedness to enhance easy dissemination of information during and after emergencies. This is likely to be helpful in creating a better understanding of the kind of support that may be needed in any affected community and will harmonise government efforts towards prompt response. Effective and operational communication technologies that are easily accessible, especially within the reach of the general public, would enable them to explain the current status of the event, provide information about the possible risks and outcomes of the disaster, and promote the establishment of strategies to reduce harm, manage public perceptions and lessen uncertainty.

Considering the importance of effective communication and networks of sharing information in an emergency, the significance of putting in place adequate communication tools to aid rapid dissemination of information during disasters cannot be disregarded when planning for emergencies. As mentioned in Chapter 3, emergency management in Nigeria has shifted, as in many other countries, towards the principle of shared responsibility between federal, state and local governments, with participation from non-governmental and private sector organisations. This has increased the need for effective communication to be accomplished through providing adequate tools and networks for sharing information among different levels of government and the other actors taking part in emergency response activities. Doing this will ensure coordination, collaboration and integration of resources and efforts among government and its agencies, emergency service providers, NGOs, private sector organisations and the public. Communication and information-sharing networks enable recognition of community capacity and the building of relationships and support that make the various participants more open and flexible, and also create appropriate channels to disseminate information by locating and utilising key stakeholders and existing

communication networks and tools (Hu and Kapucu, 2016). As a result, emergency preparedness and disaster planning cannot be complete without taking into account the various means of communication and networks for sharing information among different agencies within any given EMS. However, in terms of information-sharing patterns between government, emergency response agencies and the public during disasters and emergencies in Nigeria, Table 6.5 indicates that the way information is being disseminated and shared among government and its agencies, emergency responders, the health sector and the general public during disasters and emergencies is not sufficient for enhancing the adequate sharing of information that would provide for the needs of the affected people in line with the degree of the event. While this remains a concern to the effectiveness of disaster response, it implies that the Nigerian EMS needs substantial improvement to increase its level of communication preparedness for when disasters occur.

7.6.2. Communication tools and networks for sharing information

According to Ram and Oliver (2015), effective networks for sharing disaster-related information between key emergency responders, government officials and local populations in an emergency are necessary in order to enable coordination and allocation of resources and provide basic support to the affected areas and its population. As the emergency response structure in Nigeria is comprised of a combination of efforts across federal, state and local governments with additional support from non-governmental and private sector organisations, adequate networks to share information between them would be helpful and remain very important for enhancing effective emergency operations and implementation of activities in a way that meets the expectations of people. According to the majority of the participants (69%) across agencies such as NEMA, FRSC, F/SMOH, NSCDC, NPF and the National Hospital that were involved in the research survey, Nigeria has operational networks for sharing information between federal, state and local governments and other key emergency response organisations which are very helpful in the distribution and allocation of resources during emergencies. For instance, as stated by one of the participants at the FMOH in an interview:

> "*adequate communication tools and sufficient networks for sharing and disseminating information during disasters do not only help in the allocation of resources but also facilitate coordination, cooperation and integration of efforts from different organisations as such, information*

normally enables an understanding of the kind of support that disaster victims need and also foster identification of the locations of victims to rescue them"

This suggests that the functions of emergency response would become more effective and efficient when adequate communication equipment and tools are provided, and good networks established to share and communicate information between federal, state and local governments, other non-government organisations that participate in the operations and implementation of emergency management activities and the general public. Even though having operational networks and adequate communication tools is found to be useful in sharing disaster information, due to the complexity of disaster management and the various communication systems, information needs to be communicated clearly to make sure that actions are implemented on time. As Kapucu et al. (2010) noted, communication speaks to how people understand each other and how information is disseminated between response organisations and communities during and after disasters. And so, information must be distributed and communicated clearly between the public, government, and its agencies and emergency service providers to ensure actions are implemented in a way that reduces the numbers of disaster victims, supports early evacuation and encourages residents to voluntarily evacuate before, during and after disasters without delays, as reiterated by Hiroki et al. (2016). This situation suggests that a well-defined communication pattern between different agencies would enhance effective implementation of emergency response activities and foster reduction of disaster impacts among affected populations.

Based upon the opinion of those who took part in the survey, the majority across the various agencies believed that in disasters and emergencies, information is often clearly communicated between federal and state governments in Nigeria (as indicated by 41.7% of the entire respondents), state and local governments (45%) and local government and communities (44%). However, the opinions of the participants further revealed the absence of clear communication links between government agencies and non-government actors that would enhance rapid dissemination of information and effective allocation of resources between them. Even though this outcome only represents participants' opinions, because they are regularly involved in emergency response activities, and given their level of experience and participation in emergency response, it is expected

that any information provided by them represent the real situation. Probably, this is due to lack of commitment from government officials to promote collaboration, cooperation and integration with external disaster management actors.

The lack of commitment from government officials may be due to their desire to make profit out of the available resources and because of the lack of accountability. Such officials may find it difficult to involve external participants and so they may not want to share vital information with them. This means that, for emergency response activities to be implemented successfully, the federal, state and local governments need to strengthen efforts towards enhancing collaboration and the sharing of information with external emergency response actors. This would promote effective utilisation of resources to meet the needs created by the disaster and, at the same time, the expectations of the people. To improve communication networks and increase the level of preparedness, government and its emergency response agencies need to extend plans and include all relevant entities, especially at the planning stage. By doing this, it would improve their level of communication preparedness and encourage adequate integration of efforts and allocation of resources in ensuring they meet the needs of populations affected by disasters.

Enhancing preparedness to mitigate, prevent and promptly respond to emergencies requires substantial information about the disaster and the capacity of emergency response organisations involved (Kendra and Wachtendorf, 2003; Perry and Lindell, 2003; Sutton and Tierney, 2006; Perry, 2007, National Research Council, 2007; WHO, 2007). Such information is used to promote establishment of techniques that would support emergency response team members to ensure that a given response is well organised and coordinated and that resources are allocated in line with the needs of the disaster. Regular joint communication training and exercises to test and maintain communication abilities, knowledge and skills of staff, and to identify areas within organisations with communication deficiencies that need to be improved remain a necessity to identify communication challenges and improve the communication capabilities of government and other organisations involved. According to Curnin and Heumüller (2016), conducting joint communication training and exercises among different organisations that are involved in emergency response has a significant role in improving the level of communication preparedness and enhancing organisational performance. However, this can only be achieved through testing the communication capability

of all organisations involved, and it requires regular joint exercises and training in order to enable an assessment of specific emergency management plans and evaluation of communication needs (Paton and Flin, 1999; Sutton and Tierney, 2006; Mendonca and Wallace, 2007).

Through a survey to investigate whether federal, state and local governments, including other disaster management organisations, do conduct regular joint communication training and exercise programmes to test their communication ability in order to keep staff knowledge and skills up-to-date, it was gathered from participants that even though they do conduct communication training and exercises at different levels of government, such training is not conducted regularly and jointly between federal, state and local governments to test, practice and refine their communication procedures in order to improve rapid sharing of information during actual disasters. This may be due to absence of commitment by the lead agency in harmonising activities and integrating with other emergency management entities towards a common goal of reducing disaster impacts. Over half of the responses (55.1%) established that a checklist is often adopted to test communication procedures of various organisations involved in emergencies, while 67.1% of the entire response set stated that debriefing exercises after response are often conducted. Some 43.7% observed that lessons learnt from previous events are normally documented and used to improve their communication capacity for future events, which is a very good habit in improving preparedness. This information is very useful for disaster planners and emergency responders, who learn lessons from past disasters and plan to improve communication in order to quickly disseminate disaster-related information among relevant agencies for rapid response when future disasters occur.

Adequate communication networks do not only enhance information sharing and resource allocation but also promote general operations such as search and rescue (searching for and locating the position of victims to provide rescue services and the necessary support that is needed for their survival) (Shen and Shaw, 2004; Maiers *et al.*, 2005; Yang *et al.*, 2009). As a result, available networks used in sharing and disseminating disaster-related information need to be protected and be reliable so as to provide useful information about the disaster and the location of victims. The present research confirmed that local area networks (LAN) (67.1%) and state-wide area networks (WAN) (70.9%) are the networks that are most used to support communication and dissemination of disaster information during

emergencies in Nigeria. However, due to government's inability to provide adequate support and the lack of political willingness to support emergency management activities, these networks were considered by the majority of the participants to be unprotected against cyber-attacks – 55% (LAN) and 56.3% (WAN) respectively.

This implies that information shared through these networks may not be secure and reliable, which has significant impacts on the effectiveness of disaster communication and the quality of information being shared. However, it is argued that effective communication networks would help disaster actors to plan, locate and provide team members with the necessary support to ensure effective response and minimise impacts (Perry et al., 2001; Coppola, 2006; Sutton and Tierney, 2006; Carter, 2008; Hiroki et al., 2016). Hence, to ensure protection and reliability of information quality during disasters, federal, state and local governments need to create more secure and well-protected networks, where disaster information such as location of victims, the kind of support required, and operations of the EOC can be monitored and managed by designated authorities, who can act upon it accordingly to ensure that rescue operations are accomplished in time.

Having operational communication devices for disseminating disaster information would facilitate emergency response operations and enable disaster survivors to report their locations where respond team members can be deployed in time for rescue operations. As noted by Ram and Oliver (2015), planning for disaster relief is a complex operation and involves the use of proven technologies to coordinate various agencies responsible for implementing emergency management activities. As opined by Stojmenovic, 2002; Liu and Chlamtac, 2004; and Akyildiz et al., 2006, during emergencies, technologies such as radio access and television are currently being used in cellular networks, wireless LANs, wireless mesh networks, geographical networks, and wireless personal networks. While it was revealed that disaster information is mostly communicated via radios and televisions in Nigeria, using available networks as shown in Figure 6.23, half of the responses (50%) argued that radio communication networks are not efficient enough to satisfy emergency communication needs and are not protected (49.4%) even though their frequencies appear to be compatible at all levels of government and the other various emergency response organisations that contribute towards emergency response in Nigeria. Radio communication networks lack privacy

features to protect communication among key actors and require improvement to ensure accuracy of any information provided during disasters. Hence, the network mechanism that is required for this process should be easy to learn and use, so that disaster team members and victims in any affected area can promptly understand how to operate the network. However, bearing in mind these requirements for communication networks, wireless networks appears to be the best choice for disaster relief operations as most of them do not require any pre-existing infrastructure to be established and are very easy to operate, both by disaster victims and team members. As a result, provision of adequate communication tools and networks for sharing disaster-related information would hugely contribute to coordination of responses at federal, state and local levels, enhance continuity of efforts and foster rapid restoration of essential services affected by disasters.

7.6.3. Availability and efficiency of communication tools and networks in Nigeria

As Sutton and Tierney (2006) and Kapucu et al. (2013) indicated, before, during and after disasters, communication remains very important for sharing vital information that enhances coordination of resources and continuity of efforts in restoring affected areas. In Nigeria, in as much as NEMA, works closely with all other federal agencies (including state and local governments as well as other non-government and private sector organisations) to unify efforts around a common communication goal and to ensure information is communicated and shared adequately during disasters and emergencies, in order to enhance decision-making and rapid response, effective communication between such entities must not be neglected or disregarded. Thus, building and strengthening existing capacities of emergency response agencies in ensuring effective and adequate dissemination of disaster-related information in emergencies remains crucial, especially at the planning stage. This will enable an understanding of how information is communicated during disasters and emergencies and will determine the aspects of communication that need to be improved in order to enhance preparedness within the EMS beforehand. However, to accomplish this, adequate communication facilities to support and facilitate tactical operable and interoperable voice, video and information-sharing systems are required (Ghafooret et al., 2014; Kapucu et al., 2018). Such tools would aid effective

communication and promote organisation and delivering of secured information as well as facilitate adequate allocation and utilisation of resources in a way that aids rapid response.

Importantly, the availability and efficiency of communications equipment remain instrumental in promoting communications interoperability among federal, state and local governments, emergency service providers and other supporting partners, as highlighted in Section 7.6.2. above. The Nigerian emergency management communication capability – in terms of availability and efficiency of communications networks and devices used in disseminating information in emergencies – remains central. “Availability” in the context of this research refers to adequacy or inadequacy in the quantity of communication equipment and tools, while “efficiency” refers to their quality and effectiveness in establishing communication channels and secured and non-secured information-sharing systems, and to their level of encryption and privacy features that protect information against unauthorised access and malicious code. In terms of communication tools and equipment, particular attention was focused on landline telephones, mobile phones and radio communications because they are the common means used in disseminating information, while, in terms of connection networks, local area networks (LAN) and wide area networks (WAN) were considered as they are the easily accessible networks available in Nigeria.

The efficiency of various means of communication according to survey participants’ perceptions are shown in Figure 7.1 and indicate the use of mobile phones and radio communication as the most popular and efficient means of communicating and sharing information between different groups of people in Nigeria. This implies that improvement in the provision and supply of mobile phones would go a long way to improve communication preparedness and enhance effective communication in emergencies, and to promote effective service delivery. Such equipment and networks would be deployed to provide secure and non-secure information services to aid emergency operations and provide logistic support for NEMA response teams, enhance response operations, facilitate search and rescue teams to carry out their operations and support other combined federal, state and local level response teams – as well as other related disaster management and emergency response agencies – in resource-constrained areas and situations to implement their activities in a way that reduces impacts. As a result, these facilities need to build up and support short-term emergency operation

services, joint field services between different actors, and also, support disaster recovery centres and other infrastructure - to bridge the gaps between communications systems, and integrate essential support functions between federal agencies and state and local partners.

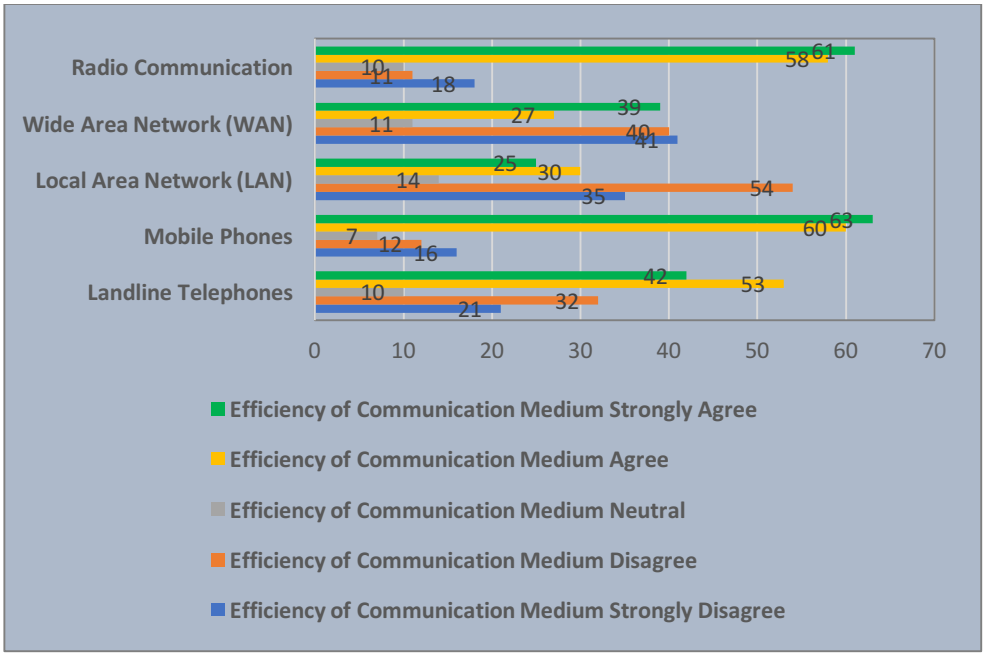

Figure 7.1: Efficiency of media of communication in Nigeria

As illustrated in Figure 7.1, in terms of network, WAN and LAN are often not commonly used to share information during emergencies even though they are the commonly available networks in Nigeria. This suggests that government and its emergency management agencies need to strengthen their emergency communication capacity by acquiring more mobile phones and improving existing radio signals to ensure as well as expanding attention to establish functional networks such as LAN and WAN so that people can easily have access to networks and share information to enhance effective response.

7.6.4. Influence of various communication medium

The section above highlighted the participants' perceptions about the means of communication that are commonly used in sharing information during disasters and their efficiency for promoting effective communication in Nigeria. While the participants spoke of using landline telephones, mobile phones and radio communications, there is no indication on the use of LANs and WANs. Majority of those who took part in the survey and provided the information often participate in implementing emergency response activities and have ample knowledge and suitable understanding of Nigeria's EMS. This means that mobile phones, radios

and landline telephones are often used in communicating and disseminating information in Nigeria and suggests the need to increase the numbers of telephones, mobile phones and radio communication networks. Doing so, would not only help to enhance effective communication in emergencies but would also promote rapid response to reduce the impacts of the disasters. It would enable information to be shared in good time and key decisions to be reached as soon as possible to facilitate rapid responses. Given there is no indication on the use of LANs and WANs, it is important for the nation to also consider the use of multiple communication systems as this would help to augment other sources of information and sustain communication to improve effective emergency management. This is because a more efficient use of communications systems and technologies – with additional capabilities such as videos and networks for data sharing between response agencies at federal, state and local government levels – would be the best way to significantly ensure the safety of citizens and response personnel.

LAN and WAN technologies involving the use of Wi-Fi designed to enable a wide range of applications and services have had a huge impact on both residential and public places and are useful for sharing information and facilitating quick action (Kuzlu et al., 2015; Mahmoud and Mohamad, 2016), particularly in emergencies, in minimising impacts. They often support high data-transfer rates, which is very useful for sharing information among local people and disseminating information easier and faster. Even though effective communication between affected communities, government and its agencies, and all emergency responders in extreme events plays a very important role in the success or failure of response, it is commonly believed that this success or failure is primarily dependent on the source, kind, quality, efficiency and reliability of the information received, as well as people's attitudes toward such information (Drabek, 2012). Even with the increasing use of mobile phones, telephones and radio communications indicated in Figure 7.2 and their efficiency, the unavailability and absence of the use of LAN and WAN networks in emergency communication leads to gaps in coverage of communication during emergencies.

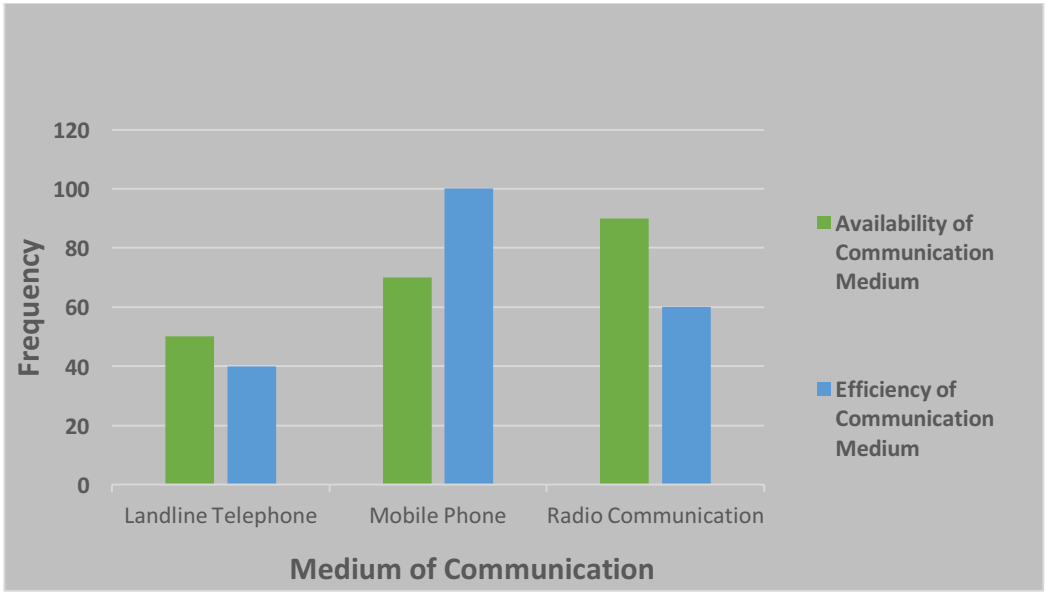

Figure 7.2: Perceptions of availability and efficiency of communication media in Nigeria

Wireless network technologies appear to be the most commonly deployed communication technologies worldwide, even in everyday life. As argued by Sebastien and Harivelo (2015) and Ram and Oliver (2012), the use of a combination of existing technologies – such as cellular networks, wireless LANs, wireless mesh networks, geographical area networks and wireless personal networks – can ease emergency communication and enhance rapid emergency response. This suggests that, for communication to be effective during disasters and emergencies, it is necessary to make use of wireless networks, together with other devices that can easily be accessible by both disaster victims and emergency service providers. But this has remained a problem in Nigeria as participants did not demonstrate the use of such networks services. However, employing such services would help to facilitate the quick sharing of information about any given disaster that would enable emergency service providers to gather resources and distribute them for prompt interventions, enhance rapid search and rescue operations, promote interoperability among different agencies, and allow disaster survivors to easily share information about their location so that rescue teams can be deployed in good time.

Providing communication networks such as LANs and WANs that can easily be accessed and used in sharing disaster-related information between federal, state and local governments and other disaster management actors, would help to expand communication preparedness and enhance adequate coordination and allocation of resources, as well as improving communication efficiency of the

various stakeholders involved in implementing emergency response activities. This can be accomplished by providing wireless network services such as Wi-Fi technologies that are simple, flexible and cost effective (Bruno *et al.*, 2005). The importance of using mobile devices such as smart phones, mobile phones, microphones and smart watches, and mobile networks such as Wi-Fi, for gathering information and communicating it between residents, emergency service providers and government agencies in an efficient way should not be neglected, especially when planning to improve communication preparedness for emergency purposes. The conclusions from these findings suggest that increasing the numbers of mobile phones and their pattern of distribution and providing adequate networks for sharing information among different entities would help to improve communication preparedness and perhaps improve the level of preparedness within the entire EMS.

Even though mobile phones, landline telephones and radio communications are commonly used in sharing information during emergencies in Nigeria, mobile phones are considered the most efficient medium of communication to share information. Therefore, providing adequate numbers of mobile phones and maintaining their sufficiency would foster effective communication during emergencies and aid in the allocation and utilisation of resources according to the expectations of those affected by any given disaster. Although the efficiency of mobile phones would strongly improve communication and share of disaster-related information, radio communications and landline telephones should not be neglected. This is because, the majority of the participants argued that, in terms of availability, radio communication is the most available even though it is less efficient compare to mobile phones. But this may be due to lack of access to operational signals, especially in rural areas.

Nevertheless, even though the use of mobile phones to an extent indicates a high level of efficiency, as power is needed to keep them charged, the unanswered question is what happens to mobile phones when electrical power is tripped off? This suggests that relying on the use of mobile phones alone in boosting emergency communication may result in communication failures, especially in circumstances where power supply fails. Thus, the outcome of this research suggests the need to extend preparedness towards improving the efficiency of communication beyond mobile phones to other means of communication such as radios, which can also function with the help of dry-cell

batteries. Globally, mobile telephones connected to adequate functional and operational network services are found to be very useful in disseminating disaster information (Patricelli et *al.,* 2009). For example, in the United States emergency services are reached from mobile cellular telephones by dialling 911 (Barnes and Rosen, 2014) and in European countries by dialling 112 (Yarpuzlu, 2013), yet there is no central emergency call number available in Nigeria for emergency calls – 112 is available only to call the Nigerian police when crime is detected. This suggests that for rapid response to be made during disasters and emergencies, there should be a direct and central emergency call line that will connect all emergency response services, including ambulance services, to provide prompt response.

While it is argued that an emergency call line should be centrally provided to aid emergency communication, the findings additionally suggest that the number of mobile phones used should also be increased and rooted in a central network service, where information can be sent and received to ease emergency planning and response activities across different organisations. Mobile phones should be made available and easily accessible to both response personnel and the general public to improve information sharing and coordination so that information can be gathered easily to aid decision-making processes for rapid response. This is confirmed by the respondents' strong belief that information is mostly shared through the use of mobile phones in Nigeria. It is also important to raise and increase awareness on the use of LAN and WAN. Government needs to make a strong commitment to provide such services in order to have multiple means of communication that will aid the sharing of disaster information during and after emergencies across different places, different organisations and varieties of people within the shortest possible time. This can be accomplished by implementing adequate policies and regulations that would hold organisations accountable.

7.7. Intergovernmental communication capability

Even though disasters create large-scale effects on society and require substantial efforts to curtail their impacts, organised, coordinated and cooperative efforts across multiple organisations and different levels of government are even more difficult to accomplish than managing the disaster itself (Smith et al., 1995; Kapucu, 2008; Martin et al., 2016). Coordination, cooperation and integration of efforts among various agencies towards ensuring adequate allocation and utilisation of resources for rapid response in emergencies are considered

invaluable for improving emergency management (Kapucu, 2008). As noted by Alexander (2003), Waugh and Streib (2006) and Kapucu (2009), emergency management is a complex procedure that involves participation from different organisations. It requires sharing and allocating resources to meet the expectations of affected communities. Also, the complex structure of the Nigerian EMS involves combined efforts between federal, state and local governments as well as other non-government and private sector organisations. It calls for a more efficient communications approach in order to ensure that information is shared and utilised in a way that promotes effective coordination and allocation of resources. Efforts from different levels of government and their agencies towards reducing disaster impacts need to be appropriately coordinated and targeted towards achieving a common goal.

For effective operations and implementation of emergency management activities within a complex structure, as is Nigeria's situation, information about disasters and emergencies needs to be shared and disseminated efficiently among different actors and levels of government. Due to the complexities of interactions involving different levels of government and different organisations in coordinating resources and integrating efforts towards a common goal of reducing disaster impacts, an understanding of the communication ability of each level of government becomes necessary to develop programmes that can help improve their communication abilities and skills and thus enhance effective information sharing and aid appropriate coordination and allocation of resources and efforts. To understand the communication abilities of various stakeholders, joint communication training and exercises remains very important as it would help them to build an adequate communication relationship where information can be adequately shared and utilised. This can be accomplished by testing their individual communication capacities and understanding their challenges to develop measures that can improve them.

Even as sharing information between federal, state and local governments and other related disaster management agencies helps to ensure adequate allocation of resources and enables prompt actions to reduce disaster impacts, communication capabilities among different levels of government still need to be tested in order to develop a robust communication plan that will enhance a more cooperative, collaborative and coordinated approach, and increase effective information sharing. All levels of government, including other related organisations

that participate in disaster management and emergency response, need to come together and test their communications capacity and ability in order to identify and strengthen areas that may need improvement, expanding the entire communication preparedness for effective information sharing in emergencies. This will enable a common understanding of their strengths and weaknesses and promote development of efficient communications procedures for rapid sharing and dissemination of information among all levels of government to aid decision-making. Understanding the communication capacity and capability of federal, state and local governments will foster the identification, within each level of government and other organisations, of specific areas with communication difficulties and deficiencies that need to be tackled to improve their communication preparedness.

To ensure efforts are coordinated across all stakeholders towards reducing disaster impacts, the federal, state and local governments and other government agencies responsible for disaster management and emergency response activities need to be committed to organising joint communication activities such as training and exercises programmes to test their individual communication capacities and capabilities and identify their various communication needs. In this case, a record of how information is disseminated and shared can be established based on the strength of each level of government and the necessary support that they required. This will help in tackling the defies of poor communication during disasters and emergencies. Joint communication exercises and training programmes would enable identification of gaps and facilitate development of measures to close such gaps and ensure information is communicated effectively during emergencies. This would also enhance coordination and allocation of resources in line with the needs of affected populations.

To coordinate such efforts adequate communication is required in order to share useful information (Jaeger et al., 2007). This can be accomplished by establishing communication networks among federal, state and local governments, as well as other NGOs involved (Waugh. and Streib, 2006; Kapucu, 2009), in order to enable them to prepare and plan for emergencies based on their capacity and abilities. Federal, state, local governments and all other agencies that play a role in emergency response need to learn how to resolve disaster communication problems using cultural, structural and political networks for communication, partnership and collaboration, leading to effective sharing and dissemination of information. The combination of efforts between federal, state, local government

and all other agencies and the persistent need for organised efforts from different agencies to support rapid response in emergencies leads to the establishment and application of communication networks, partnerships, and collaborations. The perception of the participants concerning joint communication exercises and training programmes in the Nigerian EMS to improve communication skills and the level of preparedness is considered in the next section.

7.7.1. Joint communication exercises and training programmes in Nigeria

In conducting routine and recurring joint communication training and exercise programmes, federal, state and local government capacity remains essential for testing and refining their communication procedures, and this has been considered in the present research. The aim is to determine their communication deficiencies and enable identification of certain areas that need improvement in order to improve communication networks for rapid distribution of information during emergencies. Figure 7.3 shows, using a simple percentage analysis of opinions of the participants, the regularity, frequency and adequacy of organisation between federal, state, and local governments concerning joint communication training and exercises, and whether these are considered necessary to strengthen their communication capacities for effective dissemination and sharing of disaster information. About 65.5% of the entire respondents noted that, even though communication exercises and training programmes are jointly organised between federal, state and local governments, they are not carried out regularly. This indicates that the level of joint communication training and exercise programmes within Nigeria's EMS is not sufficient to maintain a continuous understanding of the communication capacity of each level of government and build a network for easy sharing and dissemination of information in emergencies, given that disasters always create new challenges depending on their magnitude. However, this may be due to organisational attitudes among various levels of government that focus on compartmentalisation and specialisation of activities and administrative functions, and have created an increasing need for more cooperation and integration to strengthen communication capacity and improve the sharing of information during disasters.

Federal, state and local governments, including all other organisations, operate without adequate policies and regulations, which has an impact upon the interaction between their individual operations. But according to Waugh, 2003;

Dynes, 2006; World Health Organization, 2006; Jaeger et al., 2007, in providing the support that is needed for essential services, especially during disasters and emergencies, each level of government needs to be encouraged and motivated to support the others. While very often agencies do not have the resources and capability independently to attain their goals, and hence require additional support, this research argues that adequate information sharing between multiple intergovernmental and inter-organisational agencies would create adequate networks of partnership, coordination and cooperation that would provide opportunities for good public relations and harmonisation of resources. It would increase the chances of finding new funding sources and would enable the acquisition of adequate communication equipment to foster effective information sharing and promote the coordination and allocation of resources for rapid response in emergencies.

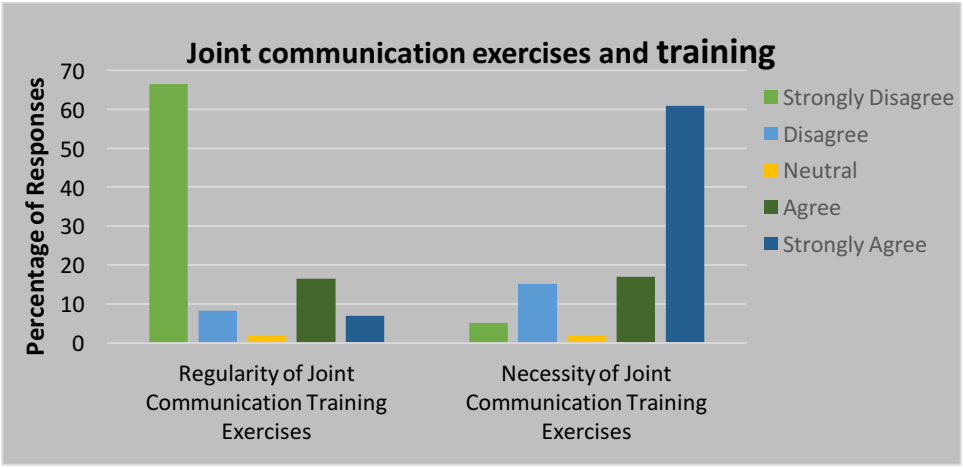

Figure 7.3: Respondents' opinions of joint communication exercises and training programmes

The majority of responses shown in Figure 7.3 indicate that joint communication exercises and training programmes organised to test communication capacity between federal, state and local governments are not regular enough to understand their communication deficiency in order to improve their ability for enhancing effective sharing of information in an emergency. However, as stated by 60.8% of respondents, the evidence demonstrates that communication training and exercises are necessary to identify communication strengths and weaknesses of each level of government and other agencies in promoting rapid information sharing during disasters and emergencies. This is due to legislative priority and the unavailability of adequate emergency management

policies and regulations that hold responsible authorities accountable. As a result, emergency managers do not have specific, clear and reliable policies regarding communication interoperability for personnel across federal, state and local governments. The existing legislations have failed in prioritising emergency management activities; this, along with a lack of government support, has led to a limited level of resource allocation that hinders both the acquisition of adequate communication equipment and the organisation of training programmes to improve communication skills and knowledge of those involved. While Kapucu et al., (2010) said, local communications are better, we can still improve things with more coordination across all levels, agencies respond faster to disasters and coordinate their activities more effectively, response and coordination can be improved with adequate collaboration and cooperation of efforts between federal, state and local governments through obtaining adequate information from the right source to aid capacity building among them.

Acquisition of adequate equipment and establishment of regular training programmes – whether through formal instructions or on-the-job training, particularly involving joint efforts – is essential in improving communication preparedness and planning (Bennell, 1999; Sutton and Tierney, 2006; World Health Organization, 2006). The shortfall in policies and regulations covering disaster management, especially in terms of communication for the adequate dissemination of information, remains a problem in the communication network between federal, state and local governments and contributes enormously to the absence of development of communication procedures, and the skills and knowledge of personnel, in disseminating disaster information. The results call for more attention to be focused on developing local communication capacity while federal- and state-level actors remain viable, especially given a top-down EMS like Nigeria. While joint communication exercises and training programmes among federal, state and local governments are considered useful to improve and strengthen the communication capacities of response agencies, aiming at ensuring effective dissemination and distribution of disaster information for rapid response, NEMA zonal offices should be able to coordinate these network relations with local and state emergency management agencies in a way that closes the communication gap between them. As part of preparedness and planning strategy, the government need to establish a dynamic and network-centred approach that is flexible enough to support movement of resources where and when they are

needed. Increased joint communication exercise and training programmes between federal, state and local governments, with other agencies that participate in implementing emergency management activities, would not only support communication preparedness but also enable identification of disaster management challenges among each level of government so that they could be planned ahead, towards improving effective response. In this regard, specific areas that need more attention would be identified and communication capabilities strengthened with the general goal of responding faster when emergencies occur.

7.8. Factors affecting emergency communication and information-sharing patterns in Nigeria

As communication before, during and after disasters and emergencies remains essential to provide immediate intervention and reduce disaster impacts, information needs to be provided and delivered in a clear and precise manner as quickly as possible so as to ensure that interventions from the necessary authorities are rapid and prompt (Quarantelli, 1997; Faulkner, 2001; Olshansky, 2005; Kapucu and Van Wart, 2006). However, the success of information transfer depends on the way people perceive and believe in the expertise of those sending the messages. Also important are the reliability of the information source and the way the information is presented and communicated, including consistency and how convincing the message is to people (Slater and Rouner, 1996; Li and Suh, 2015). Considering the increasing incidence of human-induced disasters in Nigeria and bearing in mind that approximately 70% of the Nigerian population lives in poverty in communities that do not have access to modern technological facilities and networks (electricity among others), dealing with issues around communication within such locations turns out to be exceedingly difficult, particularly in the process of allocating resources and coordinating response efforts to meet the needs of the people, especially during emergencies. To ensure effective preparedness for responding well when disasters occur and to facilitate adequate allocation of resources, it is very important to understand the factors that affect the distribution and sharing of disaster-related information among government and its agencies, emergency service providers and the general public, especially at the planning stage of emergency management. The success or failure of any emergency response depends on the kind of information provided about the event (Cannon, 1994; Kapucu, 2006; Wachinger et al., 2013). Although in the

global perspective, there has been a broad increase in the use of communication technologies such as radios, televisions, mobile phones, landline telephones, social network technology in disseminating and sharing disaster information (Chilimo, 2008; Qiu, 2009; Singh et al., 2015), several factors have been identified that hinder the operations of these services in Nigeria. This, in return, hinders the effective communication and adequate sharing of information in emergencies.

The lack of adequate communication among agencies, leading to poor operational procedures, is another factor that affects sharing and allocation of resources among different agencies in Nigeria. This may be due to lack of adequate information, the fear of sharing limited resources and the desire to make profit from competition. It is essential to share and disseminate exact information about any given disaster to enable recognition of where some particular agencies may need contribute their support and what they need to achieve. Nevertheless, all agencies need to be taken into consideration when planning for emergency and it is essential to figure out their individual responsibility to strengthen communication as this would promote adequate allocation of resources to deal with events in such a way that their impacts will become minimal. The way agencies depend on themselves for effective response is affected by weak planning, lack of communication training and exercise, and poor implementation of policies that failed to continually test existing plans in order to identify lapses at the planning stage. This indicates a tremendous diversity among different organisations and in return affects the functionality of disaster management. The present results should serve as an avenue to encourage more collaborations and integration between agencies through the formulation and implementation of policies and the proper monitoring of activities of all agencies involved. To accomplish this, it is important to appropriately develop some means of communication to enable them to share information that will help them plan, coordinate and cooperate among themselves during response.

Even though respondents noted that mobile phones and radios are more mostly used to share information during an emergency (as shown in Figure 7.2), due to economic distress and increasing cost of purchase, the majority of people, particularly those residing in rural areas, find it difficult to obtain mobile phones and connect them to operational and functional networks services, making the distribution and sharing of disaster-related information in emergencies more difficult, particularly between rural people and government officials. It was further

demonstrated that radio is the most available means of communication in Nigeria according to the respondents' perceptions. However, media services in Nigeria do not operate and function satisfactorily, while the general public also finds it difficult to access such services due to the economic difficulties that affect the nation, especially in recent years, leading to lack of funding to support the acquisition of facilities and equipment. As a result, organisations are unable to pay staff and acquire new equipment to support their operations, as well as to mobilise staff for media coverage during disasters. Due to difficulties in funding encountered within many media organisations, very often they resort to focusing on providing people with stories of celebrities, entertainment, human interest and gossip, rather than focusing on core issues that are threatening human lives such as disasters, their impacts and poverty.

As media organisations have decided to shift focus from public interest, their services have also become more expensive and very difficult to access by the general public, particularly people with limited resources. People then rather prefer to use their limited resources to solve their family needs than to pay for exorbitant media services, and so in emergencies they rely solely on information obtained from other sources such as neighbours, which has negative implications for the way they react. Even though the usefulness of radio communication in disseminating disaster information is well known (Kapucu, 2006; Kumar and Singh, 2015), the majority of Nigerians reside in rural areas where access to electricity, good networks and radio signal is extremely challenging, so poor network quality remains another factor that hinders effective communication to enhance coordination and allocation of resources in emergencies in Nigeria. This research argues that government, its agencies and organisations no longer prioritise disasters and environmentally related issues in order to consider public safety and societal development, and hence they fail to consider and strengthen processes for the development of networks to share and disseminate disaster information so that response can be rapid. Rather, they focus on the types of information that are not relevant to the safety and security of the general public.

Another important factor that hinders effective communication and information-sharing patterns between various emergency response entities in Nigeria is inadequate and irregular joint communication exercises and training, especially between federal, state, local governments. Government officials and disaster management personnel, particularly at federal and state government

levels, are not strongly committed to engaging the local population and communities through establishing effective networks for sharing information and building their capacity for rapid dissemination of information. They focus on making a profit from available funding and resources, thus subjecting the entire EMS to failures. Joint communication exercises and training programmes are valuable for identifying areas within each level of government and individual organisations that may require additional support and for promoting the development of strategies for timely and accurate distribution and sharing of emergency, life-saving information that could prevent disasters and minimise damages among vulnerable communities, through adequate allocation and utilisation of resources in line with the needs of the disaster. However, on most occasions, government officials and disaster management personnel fail to judiciously utilise available funding, as they may want to minimise costs and maximise returns from such monies. As a result, they fail to organise regular workshops in which personnel can be trained and be equipped to enact in emergencies the procedures for rapidly disseminating information. They also fail to organise regular debriefing exercises after response activities to learn and document lessons which can be used to improve their communication ability in future events.

The inconsistency in communication training programmes creates a system in which coordination of activities and cooperation between federal, state and local governments and other organisations involved remain porous and fail to harmonise resources to aid rapid responses. This is due to a lack of common understanding of the strengths and weaknesses of each level of government, which would help to identify where support may be needed. As no single entity can effectively respond to disasters and manage emergencies, a well-coordinated information-sharing system to distribute information across different entities is necessary to support collaboration, integration and cooperation and encourage community engagement to establish an effective network that ensures the delivery of effective disaster management services, averting disaster impacts and reducing damages.

Additionally, government administrative functions and artificial barriers often created by officials and disaster management personnel that are responsible for managing disaster information have been recognised as factors that affect communication during emergencies in Nigeria. In many incidences of disaster, government policies and programmes are usually conceived, planned and executed on media, especially at federal and state levels without involving local

levels, communities and the general public, particularly media agencies. This is because corruption is usually built into the process at every stage of executing such programmes, which is commonly attributed to bad leadership and lack of commitment by government officials to protect the public. This is due to the fear that bringing such information to the general public will, by forcing an official to carry out functions with transparency, limit their ability to cut corners and possibly wish to embezzle public funds. Hence, as part of the strategy to safeguard government and its officials against public criticism and embarrassment, officials prefer to keep information to themselves instead of sharing it with the public which will sensitise them and create greater awareness of the available support and their benefits. But as Newport and Jawahar, 2003; Kapucu, 2008; and Sagun et al., 2009 noted, sharing of information with general public will help to increase their level of awareness and improve the level of preparedness for effective disaster management and emergency response, minimising the impacts of disasters upon society.

7.9. Factors affecting people's attitudes towards emergency messages in Nigeria

In emergencies, people respond differently to warning messages depending on their perceptions and the nature of the message (Drabek, 1999; Mileti and Peek, 2000; Lindell and Perry, 2003; Lindell and Perry, 2012). People's attitudes towards warning messages often depend on the source of the information, the kind of message and level of trust they have in the sender (Lindell and Perry, 2003; Lindell and Perry, 2012). However, it is well known that factors such as individual characteristics, means of communication and the content of the message itself greatly influence the way people react to warning messages (Mileti and Peek, 2000; Lindell and Perry, 2003). For instance, in an interview to find out the common factor that affects the way people react to disaster warning messages in Nigeria, one of the interviewees said;

> "*due to economic challenges, people with low income find it very difficult to respond positively to warning messages especially on evacuation as they lack the capacity of being able to relocate and settle in new places and government very often fails to keep to promises that makes people to hardly believe in what they say.*"

People with low incomes also have difficulties in gaining access to communication systems such as computers, the internet, radios and televisions. In disaster situations, they depend on information shared from person to person, which limits their knowledge and ability to receive information from official sources to enable them act accordingly. Such information received from unofficial sources creates uncertainty in the manner they react to messages, as they do not have access to preparatory information and warning systems and lack the capacity to act promptly. It is important to note that the majority of the population in Nigeria reside in rural areas where access to communication technologies is difficult and they lack the capacity to acquire adequate communication equipment, not to mention the poor communication networks associated with such locations. As a result of bad roads and lack of financial motivation, even government officials find it difficult to get into such remote places and share information about disasters. So, these people continue to depend on messages from unofficial sources, and in many circumstances, they may not receive early warning messages as quickly as supposed, thereby reducing their level of awareness about contemporary disaster issues. Even when they do receive warning messages, due to economic distress and the government's inability to provide financial support to aid early evacuation of residents, these people reluctantly choose not to respond to such warning messages, leading to increased impacts when the event finally occurs.

The various strategies adopted by government officials to distribute disaster-related messages to people also contribute immensely to the way the public react to disaster warning messages, especially in an urban environment. Most of the strategies involve the use of media such as radio, television and newspaper communication that do not account for the numerous ways that people and groups process disaster-related information (Quarantelli, 1997; Houston et al., 2015; Howard et al., 2017). Due to publication of fake news, influenced by government inability in taking actions to reduce the challenge of resource shortage in the society, the majority of those who read the news simply assume it to be normal government propaganda and fail to act accordingly. This implies that the way people react to warning messages depends on government commitment, actions and inactions and the kind of trust they have in the government. As it is argued that the way people perceive, determine and act towards hazards depends on the affected environment and economic structure (Cannon, 1994), the economic situation in Nigeria has also significantly affected the way people

perceive information about hazards, risks and disasters and the way they respond to warning messages. Issues such as ambiguous information and trust in and influence of media and social networks affect people's attitudes towards warning messages. Trust in the kind of information being received and the sender is helpful in ensuring positive reactions to avoid severe disaster impacts (Cassar et al., 2017). As one of the interviewees stated:

> "*many people do not trust the sources and kind of the messages they receive, although some people in Nigeria believe in information provided through government official sources. However, because government do not adhere to promises, and due to political curiosity, the government tend to influence the media and other social networks, they determine the kind of information being shared which creates doubt in some people.*"

As a result, some people seem to stick to their beliefs and neglect messages from the media. They consider information from the media to be political propaganda and tend to seek information from other sources instead.

Also, the level of education and knowledge of the people about hazards and disasters contributes massively to the manner in which they react to disaster warning messages. As learned from one of the interviewees:

> "*the more educated people have increased understanding of hazards and the impacts of disasters compare to the less educated ones; they have increased level of awareness of hazards and their impacts and they understand and respond to warning messages differently compare to the less educated ones.*"

This suggests that for people to respond positively to disaster warning messages, an increased level of awareness among the entire population is needed through provision of adequate educational training programmes and promotion of disaster campaigns and exercises that increase public awareness and enhance positive responses to warning messages. Also, improving social networks and community involvement in key decision-making processes on disaster-related issues would be helpful in increasing such awareness (Zhang et al., 2002; Pearce, 2003; Pathirage et al., 2012; Weichselgartner and Pidgeon, 2015). Provision of more educational training programmes will help to educate and increase the public's understanding of the impacts of disasters and importance of warning messages. Doing so will go a long way towards improving emergency

management activities as very often people tend to interpret disaster-related information based on their previous awareness. Older people without access to disaster education simply ignore preparedness messages as they do not want to put their physical capacity to the test and have a fear of falling. They seem to be more confused by messages, particularly those that contain jargon and more technical terms, and they do not respond positively.

However, some people do not have access to first-hand information due to their location, level of resources and physical factors. They have difficulties in believing and accepting information provided by a third party. This increases their likelihood of getting involved in disasters with high impacts. Some elderly people find difficulties in accessing and using new communication technologies such as computers, mobile telephones, smart phones and other communication-related tools. For example, as people grow older, their visual and hearing abilities potentially decline, creating more difficulties in their ability to focus on close objects and a greater sensitivity to flashing (Burger, 1994; Curran et al., 2007). In this situation, they are less able to differentiate between colours and adapt to darkness and they might be less able to hear certain auditory frequencies or volumes, or to filter background noise, all of which would improve their response behaviours. Hence, people with communication disabilities, such as old and very young people with declining perception or short-term memory problems, find it difficult to comprehend the magnitude of an emergency or even express themselves in terms of their emergency needs, thereby making it difficult to respond positively to warning messages. As one of the interviewees pointed out:

> "*the complex safety procedure included in most safety messages makes it difficult for people with communication disabilities to understand the situation and make decisions. As a result, they create additional anxiety and confusion leading to neglect of warning messages*"

The conclusions of this are that people's backgrounds and expectations from government during disasters influence their attitudes towards responding to warning messages. Their previous experiences of government failure to keep to promises determine the way they react to information from government and respond to situations around them. Government should increase commitment and involve communities and the general public in its policies and decision-making processes to increase their level of awareness of disasters and to give a better understanding of the importance of warning messages in disasters to ensure positive responses to these.

Chapter 8: Conclusion and returning back to research questions and hypothesis

8.1. Conclusion

From the start, the study set out to address five specific questions with four key hypotheses that focus on the availability of resources, communications capacity and operations of the national EOC with the aim of understanding the capacity of the Nigerian EMS in terms of responding to emergencies, particularly those emerging from human-induced hazards, and identifying specific areas within the system that need to be improved, with the kind of support that may be needed to improve preparedness. Even though it is the primary responsibility of government to coordinate implementation of disaster management and emergency response activities in Nigeria, several individuals, groups, non-governmental and private sector organisations also contribute to emergency response, which requires shared responsibility and creates the need for effective coordination, collaboration, cooperation and integration to ensure that resources are allocated and utilised as per the needs of affected populations.

In addition to addressing the questions identified herein, the research further extends its knowledge and findings to the wider theoretical questions of emergency preparedness and disaster management in terms of building capacities for rapid response in disasters and emergencies. The knowledge extends to how the operations of EOCs support and enable coordination, cooperation and integration of efforts and activities between different actors; how adequate availability and allocation of resources encourages effective response and reduces the difficulties of resource shortage in emergencies; and how availability of adequate communication tools and networks for sharing information between various emergency response organisations and affected populations enhances effective allocation and utilisation of resources to improve response. Even though extensive literature seems to be available around these fields, the relative neglect of these views in recent years by many authorities that are responsible for implementing disaster management and emergency response activities, especially in developing nations such as Nigeria, and the varying nature of the relationship between different levels of government and other non-governmental organisations, suggest that the nature and processes of disaster management and emergency response remain uncertain and depend on the capacity of the organisations involved.

Accordingly, to address such questions on how organisations can respond to emergencies – predominantly those emerging from human-induced hazards – and minimise their impacts, it is necessary to explore such basic elements as communication ability, resource availability and the operations of the EOC, which aids the coordination of activities of different actors. Assessing the level of preparedness of the Nigerian EMS based on these factors provides sufficient knowledge and an understanding of the system's capability as well as enabling identification of areas requiring improvement and the kind of support that is needed for this. A framework for disaster management has further been proposed which incorporates capacity assessment, vulnerability assessment, risk assessment and hazard identification, as well as community participation and information and resource-sharing networks designed to improve preparedness and increase rapid response in emergencies. Nevertheless, how these findings and framework have advanced the extensive literature on emergency management and emergency response, and where the framework fits in with current thoughts on the future of emergency preparedness and disaster response, are not considered in this research. Finally, the research considers the possibilities for future research to develop the ideas proposed in this thesis.

To start with, the conclusions of the research reaffirmed evidence from other works, such as Perry and Lindell (2003), Comfort (2006), Kapucu (2008) and Alexander (2016), which suggested that poor planning and insufficient preparedness; lack of coordination, cooperation and integration; ineffective communication; and inadequate availability of resources all have significant impacts on effective management and response to disasters and emergencies. This research examined the capacity of the Nigerian emergency management institutions in terms of the availability of resources, which include human resources, technological resources and financial resources; communication tools and networks for sharing of information; and the operations of the national EOC in coordinating emergency response and emergency management activities within the nation. Notwithstanding the importance of these elements in promoting and enhancing effective emergency management and disaster response, the conclusions uncovered that, even though the numbers of personnel for performing emergency response functions seem to be adequate, the majority of the participants contended that the available staffs are not well trained and do not have adequate skills effectively to perform their duties when they have to respond to and

manage emergencies in a way that is expected by the public. This has a negative impact on the overall performance of the entire EMS. Aside from the lack of trained and skilled personnel, the inadequate availability of communication equipment and tools such as mobile phones, radios and communication networks such as LAN and WAN has also been found to have impacted the way emergencies are responded to and disasters managed in Nigeria.

Bearing in mind the importance of these elements and their contributions to emergency management and disaster response, the outcome of this research therefore calls for development of an EMS that would include all these measures to enhance resource availability and utilisation, effective communication and adequate coordination and allocation of resources by improving preparedness and supporting operations of the national EOC to effectively coordinate activities and resources in a way that mitigates and prevents disasters, and leads to rapid response when they eventually occur. While it has been suggested by questionnaire respondents that available funding for emergency management seems to be adequate in Nigeria to improve effective response in emergencies, the lack of adequate equipment and facilities nevertheless indicates that the funds may have not been utilised appropriately or possibly the funding is also inadequate and needs to be improved. However, it is essential for more effort to be made by responsible authorities to ensure adequate monitoring and supervision of their employees so that they can be held accountable. Doing so will encourage emergency managers and disaster management personnel to utilise resources and funding effectively for the purposes they are donated.

8.2. Returning to the research questions and hypothesis

This section returns to the research questions and aims to provide a detailed account of the implications of the research findings starting with the question of resource availability.

a. Are existing resources shared and allocated between different levels of government and civil protection agencies in a way that will overcome the challenge of resource shortage in emergencies in Nigeria?

The complexity of emergency management has triggered a combined effort across federal, state and local governments to contribute towards reducing disasters' impacts in Nigeria. Such efforts are promoted through coordination,

collaboration, cooperation and integration, so that efforts contributed at one level of government can be used to strengthen efforts at another level and aid the even distribution, as well as prudent utilisation, of available resources. The research established that efforts and support provided at a higher level of government (such as federal or state) can be used to strengthen efforts at lower levels of government to reduce the difficulties of resource shortage during emergencies. However, there is no clear pattern of sharing resources between some levels of government, such as between state and local government, which remains a concern to effective emergency management in Nigeria because the local government and communities often struggle in dealing with disaster issues given their limited capacities. Resources provided at the federal level are intended to be used to support states, state resources are supposed to be further used to support local governments, and resources available at the local government level are to be used to support the efforts of communities to ensure effective implementation of emergency response and disaster management activities towards minimising disasters impacts during emergencies – however, it is contended that state officials lack commitment in involving local officials in their disaster management plan and decision-making processes which in a way affects their operations and contributes to the increasing impacts of disasters in the society.

Disaster management in Nigeria is centred on the principle of shared responsibility; therefore, coordination, collaboration, cooperation and integration remain necessary to share and allocate resources in a way that meets the confronts created by disasters. The research confirmed that resources are often coordinated and shared between federal and state governments in a way that supports each other in bridging the gap of resource shortage in emergencies. This demonstrates the level of collaboration, cooperation and integration between federal and state government efforts towards managing and responding to emergencies. However, there is not a good relationship between state and local governments for sharing resources. This implies that states may have failed in their responsibilities in working closely with local officials to ensure even distribution and prudent use of resources. As such, this contributes to poor response, especially at a local level due to the lack or limited availability of resources and absence of support from a higher authority to meet the emergency needs.

Given that Nigeria is a federated nation in which the government is primarily responsible for coordinating emergency management activities, and that the

majority of resources are provided from the federal government level down to the state, local and community levels, the lack or absence of a structured approach to sharing and allocating available resources between federal, state and local governments results in poor implementation of disaster management and response activities. Effective collaboration and cooperation between state and local governments, in particular, would promote allocation and utilisation of resources to reduce the challenge of resource shortage (Wondolleck and Yaffee, 2000; Kapucu et al., 2010; Davies and White, 2012). The lack or absence of collaboration, cooperation, integration and sharing of resources between different levels of government maybe be due to lack of accountability and trust especially between state and local officials. Accordingly, this research's conclusions argued that responsible authorities should ensure proper monitoring and strict compliance by those involved, while disaster managers and emergency planners should be held accountable when they fail in their duties. To improve resource-sharing patterns, it is important to build trust among all levels of government in order to reduce the challenge of conflict of interest and to increase the willingness of officials, especially at state level, to incorporate local officials in their disaster management plans and activities. Doing so will aid adequate utilisation of available resources and provide equal support for each level of government to respond to emergencies according to the expectations of the people who are affected by any given disaster.

This study further buttresses the understanding that one singular agency cannot completely satisfy the needs of the affected population in disasters as indicated by Bankoff (2015). Efforts and resources must be combined across different actors, which requires coordination and collaboration to enhance adequate sharing of resources and roles in meeting the needs created by the disaster. In Nigeria, federal government is responsible for coordinating emergency management and disaster response operations, although each level of government including federal, state and local government have their own resources and can only seek external support when their capacity is exceeded. However, it is generally understood that support from the federal government enhances emergency management activities at the state level, and support from the state level enhances activities at the local level, while local level support enhances activities at the community level. Even though NEMA is responsible for coordinating overall emergency management activities at the federal level, it is

recognised that its relationship in sharing resources between different levels of government is not organised well enough to promote effective response. It requires substantial improvement to ensure coordination and adequate allocation and utilisation of resources to support an improved response.

Aside from federal, state and local government, other agencies also contribute to disaster management and emergency response activities in Nigeria. Again, this has increased the need to seek more collaboration and coordination in determining the strength and capacity of each agency involved. Such an approach would create an understanding of how resources should be allocated to promote effective action. While some agencies proved to have bilateral arrangements for coordinating, sharing, allocating and utilising their resources to support each other and ensure effective response (such as the National Hospital and the FMOH, National Hospital and NEMA, and National Hospital and FRSC), other agencies do not show any relationship between themselves (such as NSCDC and NEMA, NSCDC and FRSC) as well as other organisations. The consequences of the latter's inability to coordinate, share and utilise resources leads to a collaboration deficiency that is affecting the efficiency and effectiveness of disaster management in Nigeria.

The outcome of the research therefore serves as a wake-up call for NEMA to improve its ability to organise and coordinate responses in such a way that includes all relevant agencies and ensures that resources are allocated evenly, roles are identified appropriately and emergency management programmes are implemented with enough resources. While NEMA is charged to uphold its responsibility, the Nigerian political structure also should strengthen its target towards overseeing the overall activities of all organisations involved in emergency management and ensure proper monitoring of the entire process. However, the government through its political leadership has again failed to appreciate and develop policies that encourage inter-agency collaboration, which makes it very difficult for different levels of government and its agencies to collaborate, cooperate and coordinate their activities and resources, and to achieve the common goal of enhancing effective emergency management and reducing disaster impacts. Thus, the diverse difference in the opinion and activities among different organisations and levels of government makes it difficult to coordinate resources, to sustain emergency management operations and to achieve an integrated management approach.

b. Are there adequate communication tools and efficient networks to enhance communication and dissemination of information between government, emergency services providers and vulnerable people in emergencies, to promote adequate allocation of resources?

Undoubtedly, the availability of adequate information about a given disaster fosters coordination, cooperation and integration in order for a response to be based on the need of the people (Perry et al., 2001; McEntire et al., 2002; National Research Council, 2007; Drabek, 2012). Obtaining adequate information is feasible thanks to effective communication between different agencies and organisations involved in promoting the allocation and utilisation of resources and the integration of efforts. However, communication can only be effective with adequate tools and information-sharing networks (Kapucu, 2006; Jaeger et al., 2007). Availability and adequacy of communication tools and networks for sharing information enable disaster managers, emergency responders and affected populations to disseminate information about a disaster in a way that will aid them to coordinate and allocate resources, and minimising disaster impacts. Even with the complex structure of disaster management in Nigeria where various organisations and different levels of government are involved, the findings of the research contended that available communication tools and networks for sharing and disseminating information in disasters and emergencies are inadequate for satisfying the communications needs of the people who are affected by disasters. As such, communication during emergencies appears not to facilitate response operations to be in line with the needs created by the events. With adequate communication tools and effective networks for sharing information, communication can be more effective. And through effective communication, federal, state and local governments and other organisations involved in emergency response can understand their individual capacity, the level of preparedness and the needs of affected populations, along with the kind of support that is required in emergencies. This will enable them to coordinate, cooperate and allocate available resources according to their capacity and the needs of the disasters.

Even though the results indicated that, compared to other means of communication such as landline telephones and radios, mobile phones are the commonly used and more efficient medium for sharing and disseminating

information during disasters and emergencies in Nigeria, the conclusions argued that availability of mobile phones are not sufficient to sustain communication requirements. In many cases, available mobile phones are not even connected to a central operational network to enhance information sharing between different levels of government such as federal, state and local governments, other non-governmental organisations and the general public. Given that mobile phones are recognised as the most efficient means of communication, inadequacy in their availability suggests a gap in the communication efficiency of the Nigerian EMS that hinders coordination, cooperation and integration among different actors. There is the need to provide a functional central emergency call number to enable people make direct calls from their mobile phones during emergencies to report disaster situations for prompt actions. It was further recognised that radio communication is the most available means of communication with compatible signals across different all levels of government, emergency service providers and the public. However, the conclusions suggested that, especially in rural areas, poor signal makes radio communication less efficient. Also, radio communications are not protected against malicious access which makes them more vulnerable and less dependable for effective sharing of information in emergencies.

The results serve as a call for government and its agencies to increase in the numbers of mobile phones available for emergency use and to provide operational networks to support radio signals with adequate protection of the network against malicious attacks. By doing so, information can be shared in good time and through reliable and secured sources. Again, it will enable key decisions to be made about events by disaster managers and emergency responders within a reasonable time frame and response accomplished in a way that is expected by the people.

Again, the results revealed that LAN and WAN are not often being used in sharing disaster information in Nigeria. It is surprising to know that, even though wireless network technologies have become globally accepted and used in most cases to aid communication even in everyday life, such technologies still appear to be lacking or underused in Nigeria's EMS. This constitutes a huge barrier to information being shared during disasters and emergencies. Even where LAN and WAN networks are available the networks are not protected against cyber-attacks, leading to irregularity of information obtained through these sources. So, this research's outcomes encourage government and its agencies to create more

secured network systems between federal, state and local governments by which disaster information can be monitored and managed only by designated authorities to ensure its authenticity and reliability. Having such networks, the EMS will improve the level of preparedness and enhance effective communication, promoting rapid response in emergencies.

To ensure protection and reliability of the quality of information, this research invites the government and its agencies to increase the provision of communication facilities and develop policies that protect social networks from malicious attacks. The findings reaffirm the views of Sebastien and Harivelo (2015) and Ram and Oliver (2012), which argue that a combination of existing technologies such as cellular networks, wireless LANs, wireless personal networks alongside mobile phones, radios, landline telephones and others ease emergency communication, promote coordination and enhance allocation of resources and rapid response. The research indicates that, for Nigerian emergency management to improve its communication ability and preparedness, it should make available adequate numbers of mobile phones, telephones and radios, and provide operational networks that can connect such services. The government and its agencies, together with non-government organisations, need to establish an interoperable network system that connects them and enables the easy dissemination of information for the adequate allocation of resources according to the expectations of those affected by the disaster.

Joint communication training and exercises are considered necessary for testing and refining communication capacities and abilities, especially between different levels of government and/or different organisations; this would establish communication networks that promote an information-sharing pattern between them that enhances coordination, collaboration, cooperation and adequate allocation of resources (Kapucu, 2006). However, while it was found that federal, state and local governments in Nigeria do organise and hold joint communication training and exercises to test, practice and identify their communication challenges, these were found to be conducted irregularly. Regular joint communication training and exercise programmes will enable the different levels of government and other organisations to understand their communication needs and redefine new approaches to sharing information for effective resource allocation. However, due to the irregularity of joint communication training and exercise programmes, they are not able to sustain and maintain a detailed understanding of the communication

ability of each level of government in order to identify their communication needs so as to strengthen and improve the system.

While the need to provide adequate communication tools and equipment remains crucial as a means of improving preparedness, it is also pertinent to provide regular joint communication training and exercises involving all emergency management actors in order to train personnel in the use of such equipment, build their communication capacity and keep their knowledge up-to-date. The government needs to develop policies that support the organisation and implementation of regular joint communication programmes across federal, state and local governments, including participation from non-government and private sector organisations, to exercise their communication abilities and skills in preparation for rapid disseminating information in the event of an emergency. Such policies and regulations must consider emergency communication and establish an organised communication structure between federal, state and local governments. Very often, some agencies do not have the resources and capability to independently attain their goals during emergencies and require additional support. The research maintained that with adequate information across multiple, intergovernmental and inter-organisational agencies, adequate networks of partnerships can be established which would aid coordination, cooperation, and allocation and utilisation of resources. As such, having adequate communication network to share information between different emergency response participants would provide opportunities for good public relations and the harmonisation of resources, and enable acquisition of adequate communication equipment in order to foster effective communication and improve communication preparedness for rapid sharing of information during disasters and emergencies, thereby enhancing response.

c. Is the national emergency operations centre (EOC) easily physically accessible during emergencies? Does it have adequate capacity in terms of resources and communication ability to enable coordination, cooperation and integration of efforts between different levels of government and other disaster management entities?

The operation of the EOC is essential in understanding the ability of an EMS to coordinate resources and allocate them according to the needs of the affected populations (Myers, 1994; Kapucu et al., 2009). The operations of EOC can not

only be achieved by looking at existing social networks between federal, state and local governments but also by considering the underlying shared responsibilities and various networks by which resources are shared and information disseminated among other various actors. The availability of adequate networks to share information and distribute resources promotes coordination, cooperation and integration of efforts among different government levels and other disaster management actors. However, according to Ryan (2013), the operations of the EOC depend on its accessibility, available resources, communication ability and available networks for sharing resources. Based on this idea, the research examined the operations of the national EOC in Nigeria and recognised that its level of available resources, its communication ability and its accessibility have huge influences upon the success or failure of emergency management activities. Yet, the EOC's resources, access routes and communication tools are found to be inadequate in sustaining effective coordination and need to be improved in order to expand preparedness. As a result, more efforts need to be targeted towards improving activities of the EOC, and access routes should be provided to allow easy access and enhance movement of resources to and from the EOC in emergencies.

Even though it is well known that information plays a very important role in enhancing the coordination of activities, promoting the sharing of resources, but coordinating activities within the EOC have remained a difficulty in Nigeria, due to inadequate availability of communication tools and networks for sharing and disseminating information between government, its agencies and other NGOs involved. Even where the social networks exist, their usage is influence by the nature of available resources, how well responsibility is being shared, people's attitudes and the relationship between different actors. As the organisational structure of the EOC involves staff from different organisations, the lack of effective communication due to lack of adequate communication tools and networks leads to poor coordination, collaboration and cooperation, which constitutes a setback to the effectiveness of disaster management and response to emergencies in Nigeria. Despite the fact that the operation of the EOC depends on available resources, this research has shown that resources – which include personnel, funding, equipment and facilities, training, and skill development to build staff capacity within the EOC – are limited and insufficient to deal with emerging disaster issues. Although there are indications that a good number of personnel are available to

support emergency management operations, the conclusions contended that the personnel are not well trained and do not have adequate knowledge and skills to carry out their operations. This serves as a call for government and those involved to develop new training programmes in order to train and build staff capacity as well as to keep their knowledge of the emerging disaster issues up-to-date.

The research revealed that coordination of the activities of different organisations within the EOC has remained ineffective, perhaps due to lack of trust and a glut of self-interest. While the EOC is meant to coordinate activities, promote information sharing and enhance the allocation of resources to respond rapidly and minimise disaster impacts, it is recognised that the activation of the EOC in Nigeria is not usually activated based on the scale of disaster. Such a discrepancy usually stems from poor communication and coordination. Accordingly, it is difficult to understand the needs of those affected by disasters, their ability to cope with the event, the kind of support they require and the capacity of each organisation that is involved in providing support. This is due to lack of adequate communication tools and information-sharing networks to connect federal, state and local governments, together with other participating non-government and private sector organisations. As a result, there is a lack of multi-agency, multi-organisational and intergovernmental collaboration, cooperation and integration within the EOC, which has strict effects on the way activities and resources are coordinated and in turn hinders effective response.

d. What are the main causes of building collapses, stampedes and blackouts in Nigeria, and how do government and its agencies respond to emergencies resulting from these incidents?

Building collapses, stampedes and electrical power failures may affect different people at different locations in different ways, depending on their level of vulnerability and exposure. Likewise, response to such incidents can also be different, depending on the incidents' impacts and the capacity of those involved in managing and responding to such circumstances. The impacts of building collapses have in recent years affected so many people in Nigeria due to lack of investment, property damage and the human displacement caused by the sudden collapse of buildings (Olorunfemi, 2008; Olorunfemi and Adebimpe, 2008; Dimuna, 2010; Olajuyigbe et al., 2012). In the same way, the frequency of electrical power interruptions has remained a setback, leading to poor quality of life, absence of

business investments and negative effects on social systems such as transportation, health, education and water supply (Ogbuagu et al., 2014; Abdullahi *et al.*, 2016). Similarly, in recent years, stampedes have claimed lives, and caused a great deal of tragic bereavement (Okoli and Nnorom, 2007; Olorunfemi, 2008; Adekola et al., 2016).

Factors affecting the vulnerability of the Nigerian population to these kinds of hazards have been investigated and the results demonstrated that vulnerability of Nigerians to building collapses, stampedes and power failures is often triggered by issues such as poor housing, infrastructure failure, political considerations, lack of disaster education and socio-economic challenges, including those of class, gender, ethnicity and institutional support. However, the research found that each hazard has factors by which vulnerability is particularly affected. This research has shown that poor housing infrastructure, lack of disaster education, socio-economic challenges and institutional failures are the main factors that affect vulnerability to building collapses in Nigeria. However, in terms of electrical power failures, institutional failures, political issues and lack of disaster education have been identified as the main factors affecting vulnerability. Socio-economic factors, institutional failures, political issues and lack of disaster education have been found to be the leading factors that affect vulnerability to stampedes in Nigeria.

Although different factors have been identified as being responsible for the vulnerability of Nigerian populations to different kinds of hazards, particularly those considered in this research, institutional failures and lack of disaster education have been recognised as the common factors. Thus, strengthening Nigeria's disaster management institutional capacity to enable the development and implementation of policies and regulations that would support emergency management activities particularly targeted towards educating the people and creating disaster awareness within society would go a long way to improve preparedness, promote rapid response in emergencies and reduce didasters impacts. Developing and implementing such policies will accordingly foster establishment of programmes such as workshops, seminars, training and exercise programmes that would help educate the public about contemporary disaster issues and promote their level of awareness of the various possible ways through which disasters can be mitigated and prevented.

Even though disasters are inevitable and many are sudden-impact events, it is well known that good disaster education and increased levels of disaster

awareness provided to any affected population will avail them of a better understanding of the consequences of disasters and enable them to promote organised response when disasters do occur (Alexander, 2015; Alexander, 2018), thereby minimising their impacts. Political issues and socio-economic factors have also been recognised as issues of concern, particularly regarding building collapses and stampedes. The lack of political willingness to develop policies that guide and regulate the building industry or event organisers, and the absence of adequate (or provision of inadequate) facilities and equipment to carry out social events and activities increase the level of vulnerability of the people and subjects them to large-scale disaster impacts. This is often a result of poor management and response due to lack of facilities and equipment. Hence, the research invites the government to ensure that policies are developed, and events are properly monitored to ensure safety of the society and protection of her citizens, for the lack of monitoring and supervision of events and activities may lead to failure in taking responsibility by both organisations and individuals.

Disaster management in Nigeria is seen as government's responsibility: to provide resources, formulate policies, and promote the share of resources and information between government and its agencies, emergency service providers and the general public. However, it is recognised that government lacks the capacity or has failed in its responsibility to prioritise emergency management and provide adequate resources such as staffing, funding and technological equipment to support emergency operations. Also, the limited availability of communication equipment has led to communication deficiencies in sharing information between different actors that would enable adequate distribution of resources for rapid response. Consequently, these findings serve as a wake-up call for government to improve implementation of disaster management policies so as to boost disaster management and emergency response activities as a whole. The results further demonstrate that the Nigerian EMS lacks adequate resources to carry out effective response. The government's inability to prioritise and promote emergency management activities contributes to this. While the number of staff that are generally available for emergency response activities was shown to be satisfactory, it is nevertheless argued that the staff are not well trained and do not have the skills required to promote rapid response and enhance effective implementation of disaster management programmes.

While policies and regulations to control and manage disasters do exist in Nigeria, these policies are not implemented in a way that supports effective disaster management and emergency response. As a result, according to questionnaire respondents' perceptions and opinions, the overall outcome of the research indicates that Nigeria's EMS lacks the capacity to satisfy the emergency needs of the people. To improve preparedness and promote rapid response when disasters occur, this research suggests that the government and emergency managers needs to focus attention on the provision of adequate resources, equipment and facilities; training for emergency response staff; and resource and information-sharing networks between different entities.

8.2.1. Recommendations for improved disaster management in Nigeria

Even though disasters are rare events that occur without absolute predictability, there is no community or nation that has immunity from them, so it is important always to be prepared for the unknown. In responding to a disaster of any type, organisations and communities need to develop measures that will promote rapid response and reduce the impacts of such events, and to devise means of recovering from them. In this regard, the research encourages response organisations to develop strategies that promote collaboration, cooperation and integration so that they can respond in emergencies in a way that meets the expectations of the people affected by disasters and reduces impacts on affected populations. It is necessary to use experience from past events; evaluate the efforts of affected individuals, groups and communities; and adopt measures to recover from events. Such outcomes can be used to improve preparedness and planning for future events. Examining the capacity of organisations involved in managing and responding to disasters and emergencies, together with the response efforts of affected populations, would determine how effective the management and response approaches are, and enable development of improved strategies that would allow society to cope with future events.

Due to a lack of a conceptual framework to structure the cumulative development of knowledge about the impact of, and effective response to, disasters, the current progress made towards establishing a disaster management framework and developing measures that enhances effective emergency response has been limited in Nigeria. Considering the discrepancies between factors affecting disaster management in Nigeria and the capacity of emergency response institutions in terms of availability of resources, communications capability and the

operations of the EOC to foster effective coordination, collaboration and cooperation, as well as adequate allocation and utilisation of resources as highlighted throughout the thesis, it is obvious that emergency management in Nigeria remains a complex and challenging issue that requires satisfactory coordination and an increasing level of resources, facilities and support. Achieving this aim would enhance the provision of adequate resources such as trained and skilled staff, funding and equipment, and facilities – all towards promoting rapid response. It would also ensure effective communication for sharing valuable information that would foster adequate coordination and allocation of resources in emergencies to meet the expectations of the people. Providing these elements adequately will therefore contribute to quelling the devastating impacts of disastrous events on affected populations.

The thesis has attempted to address problems of coordination, cooperation and integration of resources and efforts by examining the operations of the EOC, levels of resource availability and the communication ability of the Nigerian EMS. By considering the availability of communication tools and networks for sharing information and resources, the adequacy of available resources, and the operational ability and functionality of the EOC, this research takes into account the Nigerian EMS's ability to share disaster-related information between different levels of government and various participating agencies and organisations. These conclusions are drawn from insight into factors affecting vulnerability to disasters, factors affecting disaster management, and the public perception of disasters in Nigeria; they lead to the construction of a generic framework for disaster management and emergency response in Nigeria.

While many disasters are seen to be caused by natural events which are beyond the control of the most advanced technology, their sudden occurrence and catastrophic impacts can be moderated by putting in place effective management practices through planning and implementation of good measures. This is achievable through the provision of adequate resources, communication tools that enhance effective dissemination of information, and the adequate coordination and utilisation of available resources that can be achieved through a well-equipped EOC. Although most parts of the world suffer natural disasters, Nigeria is mostly bedevilled by human-induced disasters which occur as a result of human errors and system failures due to poor management and lack of implementation of policies and regulations. Hence, one of the most important steps that can be taken

to avert the impacts of such disasters is to consider the risks that individuals or groups of people are exposed to and identify the kind of hazards involved. Aside from this, assessing the capacity of those that may be affected by the disaster and the capability of emergency response organisations involved in dealing with the hazards when they result in disasters is necessary in order to enable the development of a disaster management plan that would enhance capacity building for the individuals and organisations involved and would improve preparedness.

In emergencies, coordination, communication and allocation of resources are very important components that improves response. Available resources need to be allocated in a manner that meets the need created by any given disaster in order to reduce its impacts on affected populations. Likewise, the operations and functions of emergency equipment and facilities need to be robust and constantly tested to improve them and strengthen the capacity of the organisations involved. Doing so will enhance effective coordination and integration across different organisations and different levels of government, while the manner in which information can be distributed or shared also needs to be pre-planned in order to put in place structures for the rapid dissemination of information that would promote coordination, cooperation and integration of response efforts and resources. Drabek and McEntire (2003) highlighted the importance of the coordination of multiple organisations during crises management to include activities such as prearranging in advance with other organisations to develop necessary agreements and contingency plans for each part of the disaster process. Doing so would promote rapid response and reduce disaster impacts in the event of an emergency.

As is well known, emergency management involves several phases, namely preparedness or planning, mitigation, response, and recovery (Quarantelli, 2000; Khan et al., 2008; Comfort et al., 2012). This means that coordination of resources and activities must cut across all phases, especially at the planning stage in order to prepare for and be ready to respond to disasters and reduce their impacts among affected populations. As a result, the questions of this study lie in: how resources are coordinated and allocated in a way that meets the needs of affected populations; the way information is communicated and disseminated between various response agencies and affected populations to ease coordination of response; and how operations and functions of the EOC enhance coordination and allocation of resources within a multi-agency, inter-organisational and

intergovernmental emergency management situation. At the same time as it is necessary to plan for disasters and emergencies, taking into account the availability of resources; the availability of adequate communication tools, facilities and networks to enhance effective communication; and the operations of the EOC to enhance coordination, cooperation and integration.

8.2.2. Wider policy implications of the research findings

The findings from this research have certain implications for the operations and functions of disaster management and emergency response activities. They call for the Nigerian government and its agencies, as well as other organisations that are involved in carrying out disaster management and emergency response activities, to establish measures that will enhance coordination, cooperation and integration among various participants and build disaster management capacity to enhance rapid response. Such strategies are helpful in reducing the impacts of disasters within society and promoting the well-being of entire populations. It is recognised that policies around the field of emergency management are influential in Nigeria following the establishment of NEMA, which indicates a paradigm shift in emergency management within the nation. However, the research maintains that such policies are still at their developmental stage and cannot promote and sustain effective implementation of emergency response and emergency management activities in a way that overcomes the increasing frequency of disaster occurrences, particularly those that emerge from human-induced hazards. It is as yet unclear how emergency management activities are integrated, particularly at the state and local government and community levels.

Although the Act that established NEMA gave authority to states to establish State Emergency Management Agencies (SEMAs) and local governments to establish Local Emergency Management Agencies (LEMAs), the majority of the states and local governments are yet to establish SEMAs and LEMAs, respectively. The result of this is poor coordination, cooperation and integration and this has continued to be a setback to effective emergency management in Nigeria. Given the challenges that affect disaster management and emergency response highlighted in this thesis, before detailed suggestions can be made on how to improve disaster planning and emergency preparedness in the future, further work is required to clarify what is expected of the government and its agencies and what is expected of communities or populations affected by disaster. It has been made known that, for some reason not clearly understood but related

to attempts to satisfy personal needs and desires instead of focusing on public interest, government officials often cut corners and bypass existing policies and regulations. They do not consider involving participants outside their own agencies and departments during emergencies to ensure that response efforts and resources are well coordinated and integrated so as to reduce disaster impacts within the society. In the same way, the results have suggested that building owners and contractors within the building industry often cut corners during building processes, which has recently led to the construction of poor structures with increased numbers of building collapses. Section 7.6.3, Section 7.6.4 and Section 76.5, made some consideration and suggestions about what needs to be done to improve disaster management and emergency response activities in order to reduce the numbers of disaster events and minimise their impacts.

Even though this research is not able to provide a complete solution to the problems of disaster management and emergency response, by providing knowledge and understanding of a disaster management framework that include all aspects of risk assessment, hazard identification and capacity assessment, it can help more informed strategies to be adopted to improve preparedness and facilitate effective response. The research has again reaffirmed conclusions from other scholars such as Perry and Lindell, 2003; Comfort, 2006, Kapucu, 2008 and Alexander, 2016, who emphasised the importance of emergency planning, disaster preparedness, effective communication and emergency response. These scholars argued that adequate allocation of resources, effective communication and development of a disaster preparedness plan have had significant value in enhancing effective response in emergencies and overall emergency management. The existing relationship demonstrated between federal, state and local governments in Nigeria supports such findings on intergovernmental and inter-agency collaboration and integration for the coordination, allocation and utilisation of resources effectively, when disasters and or emergencies arise.

The conclusions again highlight the need for transparency, clear communications, provision of skilled and well-trained staff, and adequate resources (including substantial funding and its correct utilisation) to build the capacity of organisations involved in carrying out emergency response activities and to help them establish trust with local people. Trust has been recognised as a key factor that affects the way people respond to disaster messages and divide up disaster management responsibilities among affected populations, government

agencies and the other organisations involved (Perry et al., 2001; Comfort et al., 2004; Drabek, 2012; Palttala et al., 2012). It has also been established that building owners and contractors often cut corners and resort in using substandard construction materials during building processes, while they also employ cheap and unskilled labour with the aim of making illicit profits. As such, the importance of creating more awareness of the need for safer housing must not be neglected. In this regard, government needs to solidify policies and regulations around the building industry and ensure they are implemented in a way that overcomes the challenges of building collapses in society. This can be achieved through adequate monitoring and supervision of the activities of those who are responsible and holding them accountable when they fail to honour their duties. However, lack of government commitment in monitoring and supervising the projects and activities of other institutions results in the poor implementation of policies and regulations, leading to increased frequency of human-induced hazards occurrences in the country. Such findings serve as a wake-up call for government to stand up to its commitment to prioritise disaster risk reduction by making sure that disaster management policies and regulations are adequately implemented and hold those involved accountable.

Although, considerable work has been conducted around the field of emergency preparedness, disaster planning and emergency response in different parts of the world (Alexander, 2002; Kendra and Wachtendorf, 2003; Perry and Lindell, 2003; Ritchie, 2008; Day et al., 2012), where the current research stands out from other previous works is in its focus on understanding the various links between federal, state and local governments and relationship between them in sharing and allocating resources during disasters to meet the expectations of the people affected by any given disaster. This includes creating an understanding of the communication abilities between the various stakeholders involved and networks for sharing information during emergencies that would ensure adequate allocation and utilisation of resources for prompt interventions. The research assessed how the operations and functions of the EOC enhance coordination, cooperation and integration, given the complex nature of emergency management organisations in Nigeria. It has been suggested that understanding the institutional capacity of the organisations involved in emergency response and the coping ability of any affected population is invaluable to improving preparedness and aiding planning, enhancing rapid and effective response in emergencies (McEntire

et al., 2002; Twigg, 2004; National Research Council, 2007; Bealt et al., 2016). The knowledge obtained by this research can be used to enable identification of the kind of support that may be needed to improve preparedness and response efforts by the entire EMS. Accordingly, support provided in emergencies will be determined by the kind of hazards, the institutional capacities of emergency response organisations and the abilities of affected populations to cope with the situations.

Previous research emphasised the importance of paying attention to resource availability and the coordination and allocation of resources so as to meet the needs created by any given disaster (Wisner et al., 2004; Perry, 2007; Kusumasari et al., 2010; Kusumasari and Alam, 2012; Blaikie et al., 2014). This is confirmed by the present work. Given that emergency response activities in Nigeria are often coordinated at the national level through NEMA, effective coordination of efforts and response activities, can be well achieved through the operational capacity and functionality of the national EOC. Again, such knowledge can be used to promote collaboration, cooperation and integration of collective efforts and resources among different entities towards achieving a common goal of minimising disaster impacts. However, considering the difficulties involved in sharing and allocating resources and information among different levels of government, and the problems caused by lack of trust in the people involved and a lack of government commitment in monitoring implementation of disaster management policies and regulations, it may be worth also considering engaging communities in a range of activities that consider a variety of potential emergencies, not simply in those that are related to human-induced disasters (such as the building collapses, stampedes and electrical power failures that have been considered in this research). But including a wide range of issues will mean developing a clearer plan to mitigate, prevent and respond rapidly to any given event rather than focusing on one particular event.

In order to act, people affected by disasters often rely on information from government officials. However, very often the majority of these people do not have access to information from official sources and end up receiving such vital information through unofficial sources such as neighbours, friends and others. This is due to government negligence in providing adequate facilities or incentives that would mobilise officials to provide facilities at disaster sites and in disaster-prone areas. The people appreciate risk and vulnerability in situations where government

prioritises the protection of society by identifying risks and hazards and taking positive actions to minimise them, but not when such hazards and risks are being ignored and the government fails in its promises in emergency situations. As such, risk awareness and risk reduction programmes targeted towards the local population can be enabled by engaging the public during key decision-making processes and informing them of what they may be required to do during disasters and emergencies.

Given the range of activities going on in daily life, it has become essential to increase preparedness, and build a strong relationship between government, its agencies and other organisations that are responsible for carrying out emergency response and emergency management activities, as well as involving communities, in order to promote effective utilisation of resources. For instance, the positive relationships that have being demonstrated between federal, state and local governments in sharing disaster-related information and resources during emergencies were found to be very helpful in strengthening disaster management efforts across different levels of government and promoting rapid responses during disasters and emergencies. Hence, the conclusions emphasise the importance of active community engagement to improve emergency planning and disaster preparedness as they are affected directly, both by disasters and by the decisions taken about emergency management. Accordingly, the government is exhorted by the outcome of this research always to include community participation, risk assessment, hazard identification and capacity assessment as a strategy for developing preparedness plans for effective response when disasters and emergencies arise so as to reduce their impacts upon society. A good disaster management plan that includes active community participation would therefore mean adequate coordination and integration of emergency management activities. This would further enhance adequate utilisation and allocation of resources to meet the needs of the people affected by disasters.

8.3. Considerations for future study

This study had a number of focuses: how resources are coordinated and allocated within a multi-agency, inter-organisational and intergovernmental EMS to respond to disasters according to people's expectations; the way information is communicated between such various agencies and affected populations to ease coordination of resources and response activities; and how the operations and functions of the EOC enhance the coordination of activities and allocation of

resources by different stakeholders in emergencies. While the research's conclusion provides sufficient knowledge of the EMS in Nigeria, it is not yet clear why available resources are not evenly distributed between different levels of government to support effective emergency management and why NEMA (the lead agency for emergency management) has failed in its responsibility to adequately cooperate and integrate other entities involved. Therefore, it is important to further study these issues in order to bring to the fore a better understanding of these challenges and develop more effective means of managing them. The discrepancy in the opinion of the participants from different emergency management agencies regarding the level of preparedness for disaster management in Nigeria demonstrates an absence of cooperation and integration. However, what causes the difference is not yet well known and remains a concern for further investigation. This would reveal the factors affecting collaboration and integration of different stakeholders and propose measures to eliminate such confronts. A framework for disaster management has been proposed which incorporates capacity assessment, vulnerability assessment, risk assessment and hazard identification, as well as community participation and information and resource-sharing networks designed to improve preparedness and increase rapid response in emergencies. Nevertheless, how these findings and framework have advanced the extensive literature on emergency management and emergency response, and where this fits with current thoughts on the future of emergency preparedness and disaster response, are not considered in this research and this needs to be done at a later date.

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Appendixes

Appendix 1: Survey questionnaire One

The purpose of this questionnaire is to examine the emergency response situation in Nigeria in terms of man-made disasters, evaluate the consequences and investigate the management practices adopted in the Nigerian emergency management system to develop a strategic framework and preparedness plan for effective disaster response, risk mitigation and vulnerability reduction.

Part 1: Basic information:

Name of organization: _____
Address: _____
Participant's job title: _____
Participant's rank in organization: _____
Years in Service: _____
Age: _____
Gender: _____

Part 2: Structured questionnaire

Section 1: General Performance and Resource Evaluation

1. My jurisdiction has a functioning Emergency Operations Centre (EOC).

   [Answer 1=strongly disagree, 2=disagree, 3= neither agree nor disagree, 4=agree, 5=strongly agree]

2. During emergencies, casualties are normally identified, stabilized and moved to hospital within one hour of the incident.

   [Answer 1=strongly disagree, 2=disagree, 3= neither agree nor disagree, 4=agree, 5=strongly agree]

3. During an emergency, relief materials are always available to provide support for casualties.

   [Answer 1=strongly disagree, 2=disagree, 3= neither agree nor disagree, 4=agree, 5=strongly agree]

4. Government offers good support to survivors of major incidents and disasters to ensure that they recover properly.
   [Answer 1=strongly disagree, 2=disagree, 3= neither agree nor disagree, 4=agree, 5=strongly agree]

5. What category of support does the government provide for disaster affected areas/communities (e.g. food, shelter etc.)?
   _____
   _____
   _____

6. The emergency response team in my jurisdiction consists of trained personnel with adequate skills to effectively and efficiently handle victims and manage emergency situations.

   [Answer 1= strongly disagree, 2=disagree, 3= neither agree nor disagree, 4=agree, 5=strongly agree]

   6a. What skills have your team got (e. g. flexibility, critical thinking, decision making etc.)?
   _____
   _____
   _____

   6b. How adequate are the skills in responding to emergency?
   [Answer 1= not very adequate 2 = not adequate 3 = neither adequate nor not adequate 4 = adequate
   5 = very adequate]

7. Emergency rescue teams are well equipped and provided with adequate means of

moving casualties to the hospital (e.g. first-aid kits and ambulances).
[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

8. What kind of equipment are available for the emergency response team (e.g. ambulances, etc.)?

   _____

   _____

   _____

9. Casualties are given first aid treatment during disasters before transporting them to the hospital.
   [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

10. The emergency response team consists of medical personnel who are trained to administer first aid to casualties during disasters before moving them to the hospital.
    [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

11. The emergency response system and strategy in Nigeria are sufficient to reduce disaster impacts (e.g. numbers of casualties, levels of property damage and economic losses).
    [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

12. The emergency responders normally conduct impact assessments during and after disasters before they take any further action.
    [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]
13. Is a free emergency call number available to the public to disseminate information about disasters in case of emergency?

    Yes____ No____

14. Government, emergency responders and victims (vulnerable groups) normally engage in positive dialogue during disasters in order to increase resilience and

reduce vulnerability.

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

15. Specific strategies are adopted by emergency response teams in Nigeria to influence their decision-making during emergency response activities.

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

15b. Please briefly state what strategies are adopted in the dialogue process (e.g. Review meetings etc. continue overleaf if you need more space).

_____

_____

_____

Section 2: <u>Survey of participant's opinions</u>

Please circle the one that apply.

16. How satisfied are you with your organization's ability to respond to emergency situations caused by building collapse?

[Answer 1= very unsatisfied, 2= Not particularly satisfied, 3 = Neither satisfied nor unsatisfied, 4= Quite satisfied, 5 = Very satisfied]

17. How satisfied are you with your organization's ability to respond to emergency situations caused by mass gathering (human stampedes)?

[Answer 1= very unsatisfied, 2= Not particularly satisfied, 3 = Neither satisfied nor unsatisfied, 4= Quite satisfied, 5 = Very satisfied]

18. How satisfied are you with your organization's ability to respond to emergency situations caused by major power failures?

[Answer 1= very unsatisfied, 2= Not particularly satisfied, 3 = Neither satisfied nor unsatisfied, 4= Quite satisfied, 5 = Very satisfied]

19. How satisfied are you with the way in which information is communicated to the public during disasters and major incidents?

[Answer 1= very unsatisfied, 2= Not particularly satisfied, 3 = Neither satisfied nor

unsatisfied, 4= Quite satisfied, 5 = Very satisfied]

20. How satisfied are you with the way in which information is communicated to emergency responders and health sector workers during disasters and major incidents?
[Answer 1= very unsatisfied, 2= Not particularly satisfied, 3 = Neither satisfied nor unsatisfied, 4= Quite satisfied, 5 = Very satisfied]

21. How satisfied are you about government perception of man-made disasters and her attitude towards responding to emergency such as building collapses, human stampedes and power failures in Nigeria?
[Answer 1= very unsatisfied, 2= Not particularly satisfied, 3 = Neither satisfied nor unsatisfied, 4= Quite satisfied, 5 = Very satisfied]

22. How effective is the emergency response system in Nigeria at reducing disasters impacts (e.g. number of casualties, amount of property damage and economic losses) caused by building collapse?
[Answer 1= Absolutely ineffective, 2 = Not effective, 3 = Neither effective nor ineffective, 4 = Effective,
5 = Very effective]

23. How effective is the emergency response system in Nigeria in reducing disaster impacts (e.g. number of casualties, level of damage and economic losses) caused by human stampedes?
[Answer 1= Absolutely ineffective, 2 = Not effective, 3 = Neither effective nor ineffective, 4 = Effective,
5 = Very effective]

24. How effective is the emergency response system in Nigeria at reducing disasters impacts (e.g. number of casualties, amount of property damage and economic losses) caused by power failure?
[Answer 1= Absolutely ineffective, 2 = Not effective, 3 = Neither effective nor ineffective, 4 = Effective,
5 = Very effective]

25. The emergency response system in Nigeria needs substantial improvement.

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

28. Resources and personnel used in Nigeria during disasters and emergency response are inadequate to control and mitigate future disasters occurrence.

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

29. There are strong existing policies and environmental regulations on disasters control and emergency management which are constantly implemented to reduce disasters impacts in Nigeria.

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

30. Which are the major factors that affect vulnerability to disaster in Nigeria?
(please rank in order of importance [1= Most important, 2 = Very Important, 3 = Important, 4 = Not quite important, 5 = Not important]

Poor or inadequate housing infrastructure _____

Institutional failure _____

Political issues _____

Lack of disaster education for officials _____

Lack of disaster education for the general public _____

Socio-economic challenges _____

Other: _____

31. How often are disaster awareness and education campaigns conducted among the general public to sensitize people about disasters and their impacts.

a. More than once a year
b. Once a year
c. One every five years
d. Very rarely
e. Never

32. Is Nigeria prepared to manage or control mass gatherings in order to stop them becoming crowd disasters?

- Yes _____
- No _____

If yes, what is the level of their preparedness?

_____

_____

33. What is the level of community participation in emergency response in Nigeria?

34. What are the likely challenges encountered by emergency responders during disasters in Nigeria?

Section 3: Evaluation of Critical Infrastructure Failure

35. Nigeria has a functioning building code that regulates the building industry and protects what they build.

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

36. The relevant government agencies normally carry out environmental impact assessment (EIA) surveys and monitoring before approving new buildings in Nigeria.

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

37. When buildings collapse in Nigeria, what types of structure are involved?

a. High-rise or low-rise (1, 2 or 3 storey buildings)? _____
b. Flats, offices or industrial buildings? _____
c. Well maintained or dilapidated buildings? _____
d. Old or new buildings? _____

38. How frequent does' buildings collapse occur in Nigeria?

a. Very rarely: less than once in ten years, nationwide
b. Infrequently: about once every two years
c. About least once a year

d. More often than once a year
e. Very often, approximately once a month

39. Which period or season experiences the most building collapses?

e. Dry season
f. Rainy season
g. Not specific

40. Please briefly state the major factors that contribute to building collapses in Nigeria (continue overleaf if you need more space).

41. How frequent are interruptions to electrical power in Nigeria?

a. Very infrequent (less than once a year)
b. Quite frequent (about once a year)
c. Neither frequent nor not frequent (two or three times a year)
d. Frequent (monthly)
e. Very frequent (weekly or more often)

42. If power is interrupted, how long does it usually take for it to be restored?

a. less than one hour
b. up to 12 hours
c. about 24 hours
d. More than 24 hours

43. Power interruption is basically due to

a. Defective grid connections
b. Insufficient voltage from the generating source
c. Excessive demand for electricity in relation to supply
d. Poor maintenance and leadership

44. Frequent or persistent power outage has a negative impact on business investments, education and health.

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

Section 4: National Security

45. Specific security measures are adopted by the Emergency responders to control crowds during mass gathering events.

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

46. What are the most likely events that involve mass gatherings in Nigeria?

a. Church services
b. Sports meetings
c. Recruitment exercises
d. Political gatherings
e. Others: please specify: _____ _____

47. Stampedes are uncontrolled crowd movements in confined spaces with probable casualties. How frequently do stampedes occur in Nigeria?

a. Very infrequent (less than once a year)
b. Quite frequent (about once a year)
c. Neither frequent nor not frequent (two or three times a year)
d. Frequent (monthly)
e. Very frequent (weekly or more often)

Section 5: Scenario (a guide for exit interview and focussed group discussions)

Good morning all, I am conducting a study on the perception of emergency responders in Nigeria about how we respond to disasters to improve the response system to reduce disasters impacts. I shall be glad to listen to your opinions and perception about this. The discussion will be recorded with a good clear tape recorder and notes will be taken. I wish to let you know that whatever is discussed here will remain confidential; your name will not be mentioned. Please feel free to comment on any issues discussed. Thank you.

Date: …….

An industrial building located in the heart of Oggubgu city has 300 occupants and is constantly being use for business. The building is located a few metres away from the national stadium, but 30 km away from the police station and fire service. It also takes about an hour to get to the closest hospital and the roads are very busy. There was an intense storm this lunch time and it lasted for about one and a half hours. The building collapsed shortly after the storm. The number of casualties is not yet known, but it is estimated that the building had 250 occupants and some technological equipment was inside. As it is lunch time, all the roads leading to the city are blocked by traffic jams. Electrical poles on the nearby streets were damaged by the collapsed building and this has affected the power supply within all surrounding areas. All roads that would have linked the site are blocked due to fallen electricity poles. Mobile network facilities have also been damaged, and communication has become difficult because of the disruption to the power supply system. Many victims are unconscious and required urgent medical attention.

You oversee coordination of emergency response in the city, and you require extra support to evacuate the casualties and reduce impacts.

1. How should you respond so that people will not die and those who survive will not be crippled?

2. How would you communicate with your head office, and other responders to provide the extra support you need to reduce impacts?

3. What would you do to identify the number of dead and injured persons?

4. By what means would you move casualties out of the building and transport them to the hospital?

5. Assuming a doctor was in the theatre with a patient when the power supply failed, what would be the alternative option of power supply for the surgery to be successful without causing any damage? Ask If they believe generators would work?

6. How prepared was the emergency respond team to respond to such an incident of building collapse with cascading effects?

7. Does your organization or agency have a joint operational plan or conduct joint training on the handling of their shared roles with NEMA or other stakeholders?

Appendix 2: Survey questionnaire Two

The purpose of the survey is to examine the ability of the Nigerian emergency management system, determine its effectiveness in response to human-induced disasters with the goal to suggest improvement strategies and develop a framework for emergency response in Nigeria.

Information obtain through this questionnaire would be used only for the purpose of this research and will not be shared with any external party except with due permission from the participating agencies.

Part 1: Basic information

Please tick/circle as appropriate:

1. Name of Org: 1= [NEMA] 2= [F/SMOH] 3= [NPF] 4= [FRSC] 5= [NSCDC] 6= [N/HOSPITAL]

2. Participant's rank in org: 1= [4-6] 2= [7-10] 3= [12-15] 4= [DD] 5= [D]

3. Years in Service: 1= [1-7] 2= [8-15] 3= [16-22] 4= [23-30] 5= [31-36]

4. Age: 1= [18 -30] 2= [31 – 40] 3= [41 – 50] 4= [51 – 60] 5= [61 - 70]

5. Gender: 1= [Female] 2 = [Male]

Part 2: Structured Questionnaire

Section 1: Assessing the emergency operation Centre (EOC)

Please tick/circle as appropriate:

6. Do work under the control of an emergency operations Centre (EOC)?
   [Answer 1= Yes 2 = No]

7. If you answered “yes” in Q6, my EOC is fully functional (i.e. functions 24 hours a day, 7 days a week and has adequate capacity) to respond to emergencies
   [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

8. My EOC is located centrally to allow for rapid response to all parts of the jurisdiction

   [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

9. My EOC is in a dedicated space (space set aside for EOC use only)
   [Answer 1= Yes 2 = No]

10. The EOC is in a space with multiple uses (usually in an office, administrative or conference area that is used for day-to-day functions and can be made available to support emergency response and management operations)

    [Answer 1= Yes 2 = No]

11. In a disaster or major incident, my EOC is likely to remain accessible, rather than been difficult to access because of check-points, debris in the road, collapsed bridges or other such problems

    [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

12. The EOC has enough space to accommodate parking for emergency vehicles where necessary

    [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

13. The EOC has:

a. space to perform emergency response and management functions (whether in one large room or in a complex of rooms),
   [Answer 1= Yes 2 = No]

b. a conference or media room (for meetings and press briefings)
   [Answer 1= Yes 2 = No]

c. a communications room (for centralized facsimiles, radios and video teleconferencing (VTC)

[Answer 1= Yes 2 = No]

14. The conference and media rooms in the EOC can be physically separated from the operations area so that media briefings do not interfere with on-going operations

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree,
5 = strongly agree]

15. The EOC has a rest and relaxation space for tired employees after emergency activities.

[Answer 1= Yes 2 = No]

16. The EOC can be expanded to support larger operations in major incidents or disasters

[Answer 1= Yes 2 = No]

17. The operational and administrative supplies of the EOC (e.g., food, water, fuel for backup generators, paper products, office supplies, etc.) are adequate to sustain its operations

[Answer 1= Yes 2 = No]

17b. If you answered “no”, please briefly state what we need to be improved -------
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18. The EOC is usually activated on the scale that is appropriate to the size of the emergency response been managed (for example, a small-scale event might require fewer staff and capabilities, and the conduct of limited emergency response operations while a large-scale event may require all staff of the EOC and capabilities, and the conduct of extensive emergency response operations.)

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

Section 2: Assessing the communication capacity of the Nigerian emergency response system

Please tick/circle as appropriate:

19. Telephones with privacy features are available for communications between emergency responders during emergencies

[Answer 1= Yes 2 = No]

20. The number of land-line telephones available for emergency used in my jurisdiction are inadequate to disseminate information, conduct emergency response and manage operations

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree,
5 = strongly agree]

21. The number of mobile phones available for emergency used in my jurisdiction are inadequate to disseminate information, conduct emergency response and manage operations

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree,
5 = strongly agree]

22. The telephones are connected directly to a local commercial carrier (i.e., draw dial tone from the local switch rather than from the Private branch exchange (PBX) (these telephones are just like those found in a home or office).

[Answer 1= Yes 2 = No]

23. Local Area Networks (LAN) are used to support emergency operations.

[Answer 1= Yes 2 = No]

24. If “yes” they have adequate protection against cyber-attack (e.g., unauthorized access, denial of service or malicious code)

[Answer 0 = not relevant, 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

25. State Wide Area Networks (WAN) are used to support emergency operations.

[Answer 1= Yes 2 = No]

26. If “yes”, they have adequate protection against cyber-attack (e.g., unauthorized access, denial of service, or malicious code)

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

27. Radio communications are inadequate to satisfy communications requirements during emergency

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

28. Radio communications are protected during emergencies (i.e., encrypted or have privacy features)

[Answer 1= Yes 2 = No]

29. Radio frequencies are compatible to all levels of government and different response organizations for easy communication during response to and management of emergencies

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

30. The system has the specifications and capacity that are sufficient to be able to monitor communications of key emergency responders (e.g. police, fire, road safety, emergency medical services, HAZMAT, and public works)

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

31. The system has an established emergency communication network that includes the key emergency responders and local jurisdictions

[Answer 1= Yes 2 = No]

32. During emergencies, there is a clear line of communication between federal and state governments.

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

33. During emergencies, there is a clear line of communication between state and local governments

    [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

34. During emergencies, there is a clear line of communication between local government and community levels

    [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

35. Do federal, state and local governments conduct regular or periodic joint communications training to exercise their communications capabilities?

    [Answer 1= Yes 2 = No 3 = can't say]

36. If "yes", do you think the training is adequate to improve emergency planning and disaster response?

    [Answer 1= Yes 2 = No 3 = can't say]

37. Do you normally conduct debriefing after response exercise to learn lessons that would be used to improve future response?

    [Answer 1= Yes 2 = No]

38. If "yes" the lessons are documented and used to identify communications deficiencies, develop solutions that correct the deficiencies and improve communications capabilities

    [Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

39. Do the federal, state and local government conduct routine, recurring, or periodic joint training exercises to practice, test, and refine their communications procedures

    [Answer 1= Yes 2 = No]

40. If "yes", approximately how often are the training being held?

    [Answer: 1 = once only or very rarely, 2 = rarely, 3 = about once a year, 4 = about

once every six months; 5 = about once every three months]

41. A procedure or checklist is in place to facilitate exchange of information between local jurisdictions and key emergency service providers (e.g., NEMA, F/SMOH, police, fire, emergency medical services, etc., and public works)

[Answer 1= Yes 2 = No]

Section 3: Assessing the level of resources such as staffing, equipment and funding

Please tick/circle as appropriate:

42. They are not enough personnel for rapid response during emergencies in Nigeria
[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

43. The personnel are not well trained and do not have sufficient skills to effectively respond to and manage emergencies

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

44. Additional government personnel are available to augment EOC staff should the emergency rise beyond the capability of the on-duty team

[Answer 1= Yes 2 = No]

45. The level of resources available for emergency response are inadequate to put in place damage limitation measures

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

46. To improve response and effectively manage disasters in Nigeria, more staff is required

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

47. Available funding is inadequate for improve preparedness, enhance disaster response and expand the capacity of response organizations to effectively manage disasters

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

48. Is there a network across local, state and federal government to share resources to reduce the challenge of resource shortage during emergency response?

[Answer 1= Yes 2 = No]

If "yes"

a. How good is the network between federal and state governments?
[Answer 1= not very good, 2 = not good, 3 = neither good or not good, 4 = good, 5 = very good]
b. How good is the network between state and local governments?

[Answer 1= not very good, 2 = not good, 3 = neither good or not good, 4 = good, 5 = very good]

49. Does the emergency management system in Nigeria support joint effort between communities and local government to reduce the scale of disasters?

[Answer 1= Yes 2 = No]

50. Does the system support joint effort between local and state governments to reduce the scale of disasters?

[Answer 1= Yes 2 = No]

51. Does the system support joint effort between state and federal governments to reduce the scale of disasters?

[Answer 1= Yes 2 = No]

52. There is a clear definition of role with corresponding authority, responsibility and accountability for emergency response in Nigeria

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

53. The Nigerian emergency management system adequately monitor operation during normal conditions to enhance planning

[Answer 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree]

54. Do you select appropriate procedures when planning for contingencies?

[Answer 1= Yes 2 = No]

55. If “yes” do you normally revisit the suitability of these procedures when disaster occur?

[Answer 1= Yes 2 = No]

56. Are there common operation and reporting procedures between federal, state and local governments?

[Answer 1= Yes 2 = No]

57. Are these procedures being used during response to and management of disasters

[Answer 1= Yes 2 = No]

Section 4: Evaluating response to electricity power failures in Nigeria

Please tick/circle as appropriate:

58. Do you have a backup power supply (example generator power, solar etc.) at your local EOC that is readily available to support power supply during emergencies?

[Answer 1= Yes 2 = No]

59. Is there an uninterruptible power supply (UPS) (UPS usually use batteries to provide power for a limited duration; e.g., 10-20 minutes depending on the load) at your EOC that support vital systems until the backup power comes on line?

[Answer 1= Yes 2 = No]

60. Do you have a procedure in place to investigate the root cause of unplanned power failures to improve operations and minimise future unplanned events?

[Answer 1= Yes 2 = No]

61. Do you have emergency plan that coordinate rapid response between various agencies during unplanned power failures for rapid response? [Answer 1= Yes 2 = No]

62. Do you have a common communication means between the various emergency response agencies and the public during unplanned power failures for rapid response?

[Answer 1= Yes 2 = No

63. During unplanned power failures, do you assign personnel to document the incident and response procedure so that it would be used later to improve the system?

[Answer 1= Yes 2 = No]

64. Do you normally evaluate your response to unplanned power failures by reviewing information obtained from personnel working in the field and reports documented after events to determine the quality of your response?

[Answer 1= Yes 2 = No

Appendix 3: Research Consent form

LETTER OF CONSENT

10th December 2015.

Dear Participants,

You are being invited to participate in a research study on how we respond to and manage emergencies in Nigeria. In particular, I am interested in how government agencies perceived disasters and wish to evaluate how effective is their preparation to mitigate disasters and enhance recovery from man-made disasters in an affected area.

This research will require about 30-60 minutes of your time. During this period, you will be asked to respond to a questionnaire and interviewed about your perception of disaster response and emergency management in Nigeria. The interviews will be conducted wherever you prefer and will be tape-recorded if you agree.

There are no anticipated risks or discomforts related to this research. Several steps will be taken to protect your anonymity and identity. While the interviews will be recorded (with your permission), the audio records will be destroyed once they have been transcribed. The typed interviews will NOT mention your name or contain any information that could directly identify you. All interview information will be destroyed after three years when this research is complete.

Your participation in this research is completely voluntary, although there are no financial incentives. You may withdraw from the study at any time and for any reason. If you do this, all information obtained from you will be deleted.

The results from this study will be presented in writing in journals read by professionals in the field of emergencies, in order to help them better understand the emergency management system in Nigeria. At no time, however, will your name be used, or any identifying information revealed. If you wish to receive a copy of the results from this study, you may contact the researcher at the coordinates provided below.

If you require any information about this study, or would like to speak to the researcher, please call *Uyimleshi Justine at +447736703831 or +234 7067910324* at University College London.

I have read the above information regarding this research study on the evaluation of the emergency management system in Nigeria, and of how government agencies perceive disasters, and I consent to participate in this study.

Name: _____

Signature: _____

Date: _____