CHAPTER 2
LITERATURE REVIEW

2.1 Theoretical Basis

2.1.1 Disaster Preparedness Theory

Disaster preparedness is an inseparable phase in every stage of disaster risk management as shown in Figure 2.1 (Atmanand, 2003). Disaster preparedness efforts include developing emergency response plans, establishing authorities to govern disaster management efforts, preparing and planning resources, creating awareness and building competencies needed for managing disaster risks, and developing early warning systems (Stikova, 2016; Sutton & Tierney, 2006; UNDP, 2013). The Sendai Framework for Disaster Risk Reduction (SFDRR) prioritizes disaster preparedness as a strategy required for effective response and the ability to build back better during the recovery phase of a disaster (UN, 2015).

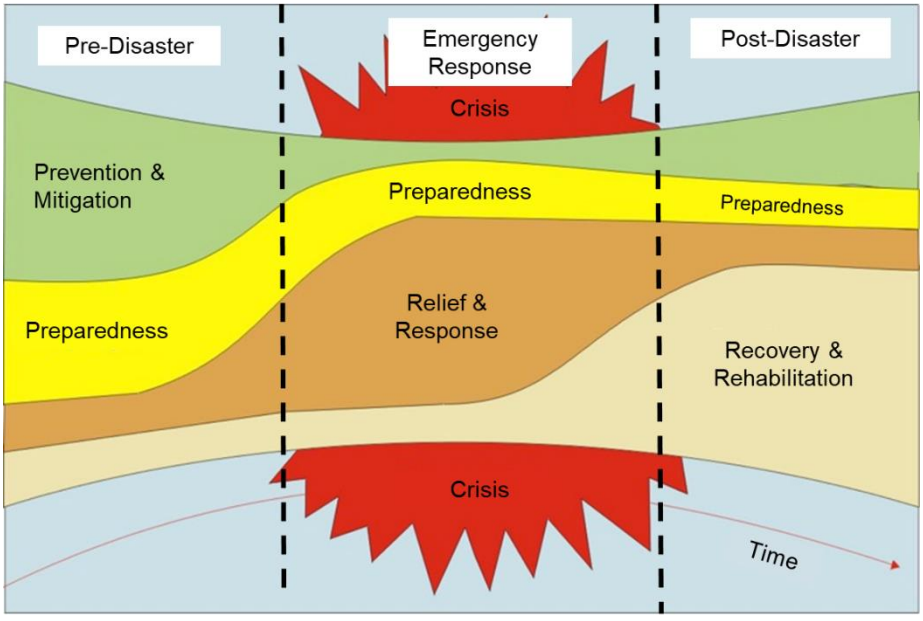

Figure 2.1 The Expand-Contract Model

Source: Atmanand (2003)

As illustrated in the expand-contract model (Figure 2.1), most disaster preparedness activities are done during the pre-disaster stage. In the pre-disaster stage, the series of activities and capacities prepared to manage disaster risks is needed to build disaster readiness, community resilience and as well serve as preventive measures. In the emergency response stage, disaster preparedness efforts aim to mitigate the negative impacts of hazards through effective and timely emergency response and disaster relief. In the recovery stage of disaster management, preparedness is also necessary for impacted communities to successfully overcome the challenges associated with rehabilitation and reconstruction efforts.

2.1.1.1 Definition of Disaster Preparedness

According to the Nigeria Disaster Management Framework (NDRF), disaster preparedness are pro-active measures taken to ensure effective and timely response to the impact of disasters and emergencies (NEMA, 2010). The NDRF also explains disaster preparedness as measures taken for effective early warning and the coordinated evacuation of people and property from hazardous locations. In the NDRF, it is further explained that disaster preparedness strategies shall enable state emergency management agencies such as LASEMA to develop contingency or emergency plans for specific hazards such as fire hazards, build capacity at state and local levels, create awareness of hazards by educating communities, conduct regular monitoring and evaluation of hazards and ensure the availability of resources such as fire fighting vehicles and ambulances.

Sutton and Tierney (2006) define disaster preparedness as measures which support life safety in the event of a disaster, emergency, or hazardous situation such as a condition of dangerous substance spill. Disaster preparedness also includes actions which enhance the ability to take emergency measures to protect and contain property damage and provide the ability to engage in early rehabilitation and long-term. The

authors also highlighted that preparedness is generally seen as activities aimed at improving response and coping capabilities.

Stikova (2016) defines disaster preparedness as a systematic approach whereby strategies, policies, and improved coping capacities are implemented using administrative measures, institutions and operational capabilities to reduce the negative effects of disasters and minimize the likelihood of disasters or emergencies. The author further explains that preparedness means comprehensive planning, allocation of resources, and training which includes simulated disaster response drills. Preparedness is ensuring that mechanisms and coordination needed to minimize disaster risks and save lives and properties are well understood and readily available.

Based on the above conceptual definitions of disaster preparedness, it can be seen that the main goal of disaster preparedness is to create readiness by preparing plans, institutions and coping capacities which enhances the capability to respond quickly and appropriately when needed. However, there is an increasing focus on preparing for recovery otherwise known as recovery preparedness which means planning in order to meet the challenges associated with recovery efforts.

2.1.1.2 Household Disaster Preparedness

Household preparedness is considered the smallest unit of analysis for disaster preparedness (Sutton & Tierney, 2006). Based on the composition of a household, it may consist of an individual, a small family with two or more individuals, extended families, single parents raising their children, people who are co-living in a single residential unit, and even those living in a house for a short period. The localized nature of disasters makes household preparedness important which can be implemented through a few simple steps to improve life safety, protect properties, livelihoods, and survivability during hazardous situations. The variability of households also helps us to understand vulnerabilities and the level of community

preparedness at large. Vulnerability in households is closely associated with the family's income, level of education and other factors. Financial capital such as income can influence a family's access to physical capital such as adequate water supply and safe buildings equipped with fire reduction or suppression systems (Kollmair & Gamper, 2002).

Stikova (2016) explained household preparedness as part of public preparedness. The author explained public preparedness as activities which are taken to empower ordinary citizens, households, and neighbourhoods. To be effective, public preparedness activities must exceed simply raising hazard awareness. Households must be equipped with the skills that allow them to perform fire response and recovery actions. Household preparedness must begin with a written emergency plan which considers various scenarios of a fire outbreak.

This study will use household preparedness as the unit of analysis for fire disaster preparedness in Lagos State, Nigeria. This approach is useful in having a closer look and understanding vulnerabilities in a community.

2.1.1.3 Dimensions of Disaster Preparedness

Several dimensions to measure disaster preparedness have been proposed by different scholars. Dimensions of disaster preparedness comprise several goals and activities which aim to enhance readiness and reduce the impacts of a disaster. Specifically, the dimensions of household disaster preparedness applied in this study are as proposed by Sutton & Tierney (2006). The dimensions adapted for this study are as follows:

a. Formal and Informal Plans.

   A key disaster risk reduction (DRR) activity is formulating a preparedness plan. Households are encouraged to design a plan for the proper management of disaster risks and coordinated response in the face of an impending disaster. Every member of the family is to have a say and make

contributions to the development of these plans. An evacuation plan is necessary for a well-coordinated egress during an emergency. An emergency communication plan is important to enable families remain in contact during an emergency and to facilitate the reunification of family members. Households as part of a community are encouraged to participate in developing community preparedness plans for more access to resources during emergencies. After formulation of these plans, families are advised to have drills or disaster simulations.

b. Life Safety Protection.

This measure enables family members to take prompt actions to save lives and prevent injuries during an emergency. In a situation whereby a family member is mildly affected by a hazard, other family members can assist with available first aid kits and medical supplies. Access to medical care facilities such as an ambulance is vital in a situation of severe health complications during an emergency. These actions will reduce the health and safety impacts of a disaster on family members.

c. Property Protection.

Property protection measure includes structural and non-structural activities which aim to mitigate the effects of a hazard or disaster. Structural mitigations include periodic inspections of buildings' structural elements such as columns and beams. Also constructing roofs and walls with fire-resistant materials. Non-structural mitigations include installing fire-resistant doors and windows, ensuring that hazardous or flammable materials are stored properly, planning for access to water and protecting critical records or documents. Keeping an inventory by documenting valuable household properties is important for insurance claims.

d. Emergency Coping.

Emergency coping capacities provide families with the ability to be self-sustaining during an emergency. An emergency supply kit which can help families survive a couple of days is usually recommended. The emergency supply kit should be updated regularly by replacing expired or damaged items. Financially, it is important to maintain an emergency fund in cash which can be used to acquire additional items and basic needs such as shelter, water and food. The cash must be always properly secured and accessible after a disaster.

e. Initiation of Recovery.

This measure includes actions which can be prepared in order to enable households begin early post-disaster recovery processes. Acquiring insurance is important for the assured restoration of key functions. Health insurance can help households access quality medical care after being exposed to a disaster, while property insurance helps in managing disaster risks by transfer. All these actions support a household in recovering better and faster. After a disaster, family members might experience post-disaster stress and trauma. Knowing how and where to receive psychosocial care can help them during recovery.

2.1.2 Disaster Education Theory

Disaster education is a relatively new area of study seen as a community solution for reducing disaster risks and mitigating the impact of disasters. It is also a way of familiarizing the community with how to be ready and effectively responsive to disasters. Disaster education takes various forms, starting from disaster education for community awareness to community-based disaster management. Various terms have been used to describe modes of executing disaster education depending on changes in

national policies regarding citizen disaster preparedness. Before World War II, the United Kingdom (UK) used the term national defense which involved training individuals as part of the unified approach in preparation for war. Post World War II, other nations like the United States of America (USA) and Canada used the term civil defence which involved means by which individuals and families as part of the civil society are being prepared and protected from disasters(Preston, 2012).

Education is an invaluable asset that can be transmitted intentionally in a morally acceptable manner. Disaster education entails providing knowledge and experience regarding disasters which must be given to people in order to boost their coping capacities (Barrow & Woods, 2006). Education is also one of the most effective methods to increase awareness of disaster risk in vulnerable communities which helps supports satisfactory disaster risk mitigation efforts (Hamid, 2020).

According to UNESCO-UNEP (1976), the objectives of disaster education regarding environmental concerns are to; (i) create awareness to help individuals and social groups have awareness and sensitivity regarding environmental-related issues; (ii) provide knowledge to help individuals and social groups have an understanding of the environment and the critical roles humans in it; (iii) encourage attitudes that help individuals or groups have social values and motivation to participate in protecting and improving environmental conditions; (iv) build skills to help individuals or social groups evaluate environmental conditions in terms of ecological, political, economic, social, aesthetic and educational factors; (v) encourage participation to help individuals or social groups develop a sense of responsibility by ensuring that relevant actions are taken to solve urgent environment issues.

Based on the referenced theories, it can be seen that disaster education is a method or approach which aims to create disaster-aware households and communities to understand disaster-related concepts and inform measures which can be taken in adapting to life in disaster-prone

areas. Fire disaster education can also be seen as a conscious effort to create a society that cares, have the knowledge, and skills in dealing with fire disaster risks. Household and community understanding of disasters is the initial capital of disaster safety and security.

2.1.2.1 Definition of Disaster Education

Disaster education otherwise known as DRR education is a relatively new field of study that deals with providing disaster-related knowledge and skills for a better understanding of disaster and its related risks for an enhanced capacity and resilient society. Disaster Risk Reduction (DRR) Education is a long-term activity that supports sustainable development. Disaster education is designed to build a culture of safety and a resilient community (Suharwoto et al., 2015).

Disaster education includes appropriate education regarding disaster preparedness, disaster mitigation, emergency response, disaster recovery, and other disaster-related activities. Disaster education gears toward improving preventive measures by providing knowledge and information about hazards and disaster risks. When disaster education is well planned and implemented, society will become more familiar with and be able to execute disaster safety practices (Setyowati, 2019).

Based on the above definitions of disaster education, it can be generally accepted that fire disaster education as related to this study should be an action-oriented activity which empowers communities and households at the grassroots level to enhance their fire disaster preparedness and provide skills for performing disaster-related activities for reducing disaster risk.

2.1.2.2 Dimensions of Disaster Education

The United Nations Educational, Scientific and Cultural Organization and United Nations Children’s Fund (UNESCO & UNICEF, 2014) proposed a set of systemic and reinforcing disaster education

dimensions which can be effectively implemented (Figure 2.2). Disaster education or otherwise known as Disaster Risk Reduction (DRR) Education in this study is seen as a program designed by UNESCO & UNICEF which can be implemented in households. Hence, the dimensions adapted for this study to measure the attitude and opinions of households towards fire disaster education are as follows:

a. Understanding the Science and Mechanisms of Disasters.
   This dimension deals with developing a rich understanding of the science and mechanisms by which disasters occur. This understanding provides valuable information regarding the reasons (why) and mechanisms (how) by which disasters occur. This understanding can also help in assessing the likely physical impacts of these disasters through active enquiry and experimentation, analysis and discussions. A rich understanding of the science and mechanisms of disasters is more than acquiring textbook knowledge, it helps to have active engagements with disaster professionals and experts.
b. Learning and Practicing Safety Measures and Procedures.
   Learning and practicing safety measures and procedures is important for cementing the understanding obtained from the previous dimension. To familiarize people with these measures, it is advised that they are learnt and practised at home, school, and community levels. Activities included in this dimension involves familiarizing family members with early warning signs, evacuation procedures, and learning basic first aid and the content of a medical kit. Health and safety measures, and how to stay after a disaster are important things to be learnt and practised.

c. Understanding Drivers of Risk and How Hazards Become Disasters.

This dimension encourages being proactive in the mitigation of disaster risks by examining the individual elements of the disaster risk formula (Disaster Risk = Hazard x Vulnerability / Capacity). In a situation whereby the available capacity is unable to cope with the effects of a hazard in a vulnerable condition, arises the risk of a disaster. From the formula, it can be seen that greater intensity of hazard will increase the likelihood of a disaster. Activities involved in this dimension include having all members of households participate and take leadership in assessing risk drivers (hazard and vulnerability).

d. Building Community Risk Reduction Capacity.

The disaster risk formula shows that the risks associated with disasters can be reduced by increasing needed capacities. Families as part of a community are encouraged to take part in local vulnerability assessments and hazard mapping measures. This hands-on approach gives people an experience of participatory citizenship education. Building community risk reduction capacities aims to build community resilience. Activities related to disaster risk mitigation and adaption are measures for community capacity for enhanced resilience.

e. Building a Culture of Safety and Resilience.

This dimension involves the blending of structural and non-structural measures so that households and communities become disaster education learning laboratories with the goal of building a culture of safety and resilience. It involves giving every family member a role and voice in the structural and non-structural aspects of disaster safety and resilience. Learning about disaster risks at home and in the community will provide people with adequate knowledge, skills and attitudes. Activities

involved in this dimension include making designated time to discuss and assess potential hazards and vulnerability, in which every member of the family is involved. Assigning responsibility to every family member including children in the learning prosses is also recommended. As a household, collectively participating in community disaster risk reduction activities with children is necessary to make communities safer and better prepared. Parents are also encouraged to support children's DRR assignments and attend children's school DRR events when organized (UNESCO, 2014).

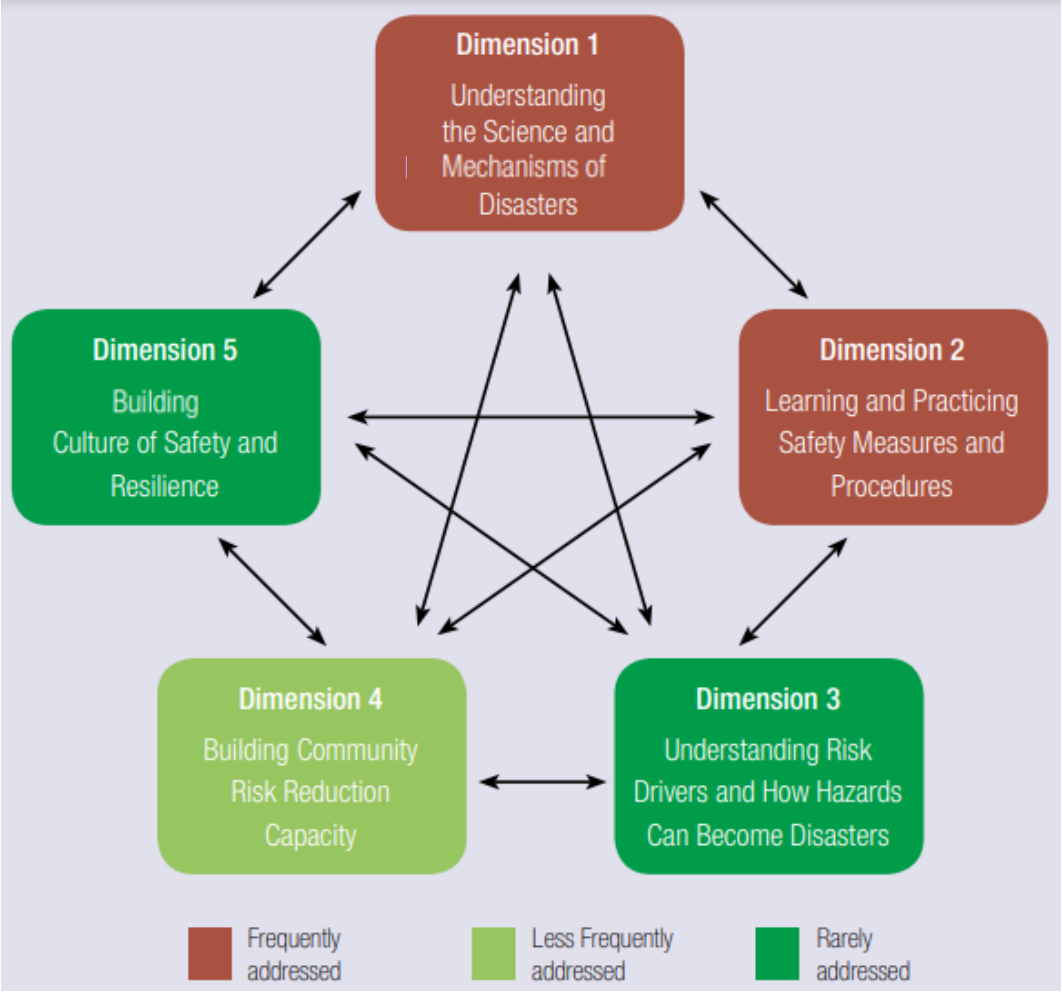

Figure 2.2 Dimensions of Disaster Education

Source: UNESCO & UNICEF (2014)

2.1.3 Building Safety Policy Theory

Winter (2006) explained that in the implementation of policies, bureaucrats cannot stand alone, target groups of public policies such as citizens and private firms also play an important role in influencing the performance of policies. The integrated model shows that the successful implementation of policies is determined from formulation to evaluation, which in itself means that there is a link between the political and administrative processes. Policy implementation is strongly influenced by policy design and policy formulation. Another factor that affects policy implementation is the socio-economic conditions of the society. A policy's performance might be influenced by the environment in whereby it is being implemented. Meanwhile, the author further explained that policy implementation is related to the behaviour of related organizations, leading organizations or agencies, and policy target groups.

The political-administrative model assumes that the task of policy implementation is to establish a link that allows the general policy direction to be realized as a result of government activities (Grindle, 1980). In this case, government policy is translated into a series of programs to achieve the policy goals. The programs can be further elaborated as specific projects that are easily implementable. A policy is a statement of direction, purpose, and means which is general. The implementation process can only be started if the general policy direction and objectives have been specifically stated, the action programs designed, and funds allocated for its implementation. The author's implementation model includes a two-factor group that can potentially lead to a successful or failed policy implementation, namely; policy content and implementation context. The dependent variable in the model is the policy outcomes.

The building safety policy to be analysed and discussed in this study are the implementation of certain fire-related provisions as per the Lagos State Urban and Regional Planning and Development Law: Lagos State Building Control Agency Regulations, 2019. These provisions are meant to

protect buildings against the devastating impacts of a fire outbreak with building resilience. With the implementation of these provisions, lives and properties can be saved. The content and context of these provisions include ways to prevent fires in buildings, standards on how to prevent and suppress the spread of fire internally and externally, means of escape during a fire outbreak and additional facilities to support firefighting such as access to water supply and fire vehicle vehicular access.

Based on the referenced theories and provisions of the building safety policy, it can be seen that the implementation of policies is usually associated with activities that are carried out to achieve certain goals. Implementation is also often referred to as a process whereby a series of activities is executed after planning. Policy implementation is an activity after the briefing of a policy which includes efforts to manage inputs in order to produce outputs or outcomes for the community. In this study, the outcomes of implementing the building safety policy are to save lives and properties as well as enhancing buildings resilience.

2.1.3.1 Definition of Building Safety Policy

Van Meter & Van Horn (1975) define policy implementation as an action to be carried out by individuals, groups, government and private entities aimed at achieving stated goals. The authors emphasize that a new stage of implementation occurs after legitimacy is passed and resources are allocated. The agreed and allocated funds are not utilized at the commencement of the public policy goals-setting process but during the implementation stage.

(Nugroho, 2016) stated that the implementation of policy in principle is a way for a policy to be implemented properly in order to achieve its goals. To execute a public policy, there are two choices of steps, namely; by directly implementing policies in the form of a policy program or through the step of formulating a policy derivative before implementation. In other words, public policy implementation is carried out in two forms, namely; the

form of direct programs and programs derived from additional public policies. In principle, the implementation of public policy in the form of programs is implemented downwards in the form of projects, activities and utilization per the objectives of the government and the public policy.

Based on the above definitions of policy implementation, the implementation of building safety policy in this study is defined as the implementation of policies relating to fire safety in buildings which contain the elements of; (i) processes, described as a series of activities or real actions carried out to realize the stated goals or objectives, (ii) goals, described as something to be achieved through the activities carried out, and (iii) results and impacts, described as the real benefits felt by the target group.

2.1.3.2 Dimensions of Building Safety Policy

There are five (5) dimensions adopted and adapted to analyse the implementation of building safety policy in this study. The first dimension which is building safety according to regulations is formulated from fire safety provisions in the Lagos State Building Control Agency Regulations, 2019. The remaining dimensions are proposed by George C. Edwards III and Michael Lipsky. There are four dimensions in public policy implementation, namely; Communication, Resources, Dispositions and Bureaucratic Structures (Edwards III, 1980). These four factors must be implemented simultaneously because they are strongly related as shown in Figure 2.3. Policy implementation is a dynamic process that includes the interaction of many factors.

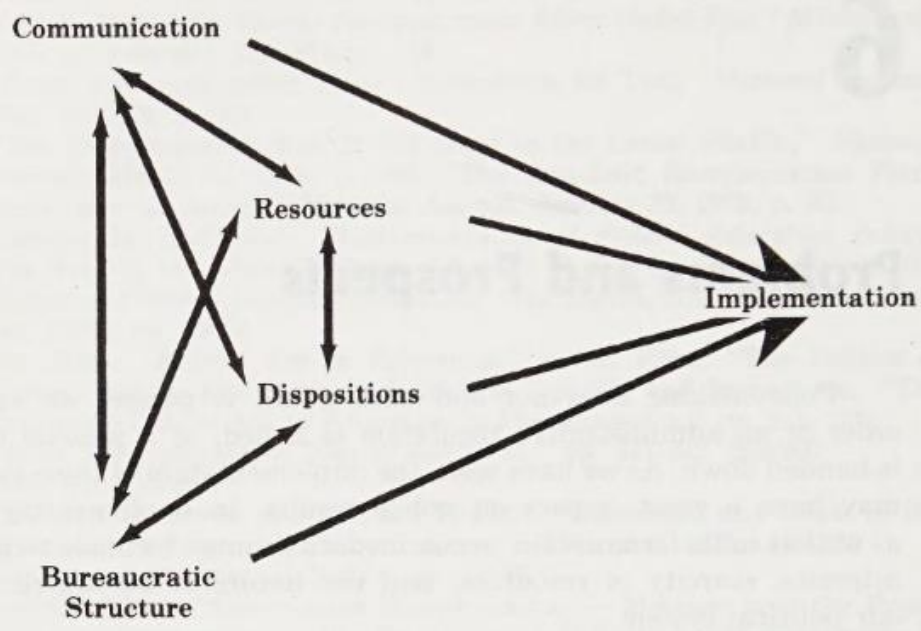

Figure 2.3 Implementing Policy

Source: Edwards III (1980)

The dimensions of implementing building safety policy as used in this study are explained in the following paragraphs.

a. Regulations.

The regulations implied in this dimension are provisions related to fire safety in buildings in the Lagos State Urban and Regional Planning and Development Law: Lagos State Building Control Agency Regulations, 2019. These regulations are regarding proactive ways of preventing a fire outbreak in buildings, control of fire spread internally and externally, means of escape in the case of a fire outbreak, and facilities to support firefighting operations such as fire service vehicular access and access to water supply.

b. Communication.

This dimension in policy implementation will be executed effectively and efficiently if the measures and objectives of the policy are understood by the implementers. Clarity on the measures and objectives of the policy thus needs to be

communicated appropriately. Uniformity and consistency of measures and objectives need to be communicated effectively so that implementers can understand the precise purpose of the policy. Vagueness and ambiguities in the policy might lead to misunderstanding of what is being directed. Socialization and communication with policy implementers will have a significant impact on policy implementation.

c. Resources.

This component consists of skilled human resources, clear and relevant information to implement the policy, as well as supporting facilities for executing programs such as funds and infrastructure. A situation of inadequate resources in implementing policies will have an impact on the success rate of the policy. Thus, a measure in this dimension could be improving human resource management in order to enhance the performance of policy programs. Information is a very important resource for policy implementation. There are two forms of information, namely; information related to how to execute policies and information related to actions which should be taken and about supporting data on compliance with government regulations and laws. Facilities needed to implement policies must be provided, such as sufficient equipment and funding.

d. Dispositions.

Another factor that affects the effectiveness of policy implementation is the implementer's attitude or inclination to the policy. When the attitude or perspective (discretion) of the implementer differs from policy makers', implementing policies becomes more complicated. Implementers may understand the purpose of the goals or objectives of policy programs. However, often the goals of the policy are not achieved appropriately

because of rejection. Hence, silent divergence or avoidance in implementing the program can be seen occurring. Using incentives to influence the attitude of implementers is a technique for overcoming issues regarding non-compliance with policies.

e. Bureaucratic structure.

Lipsky (1980) explained a structure of bureaucracy known as street-level bureaucracy. Street-level bureaucrats such as community prominent figures, teachers, police officers, social workers and legal-aid lawyers deal directly with the public based on local norms and so represent the frontlines of government policy. Street-level bureaucracy provides the ability to implement policy programs or important decisions by using a more dominant influence beyond formal authority (discretion). Street-level bureaucrats prioritize relationships with the community in the delivery of policies. Therefore, the lower-level bureaucracy becomes an essential actor in the implementation of public policy, and its performance is very consistent with the standards of the program relating to its activities. The author describes this lower-level bureaucracy as "a position directly related to society". Based on their position in the community, they have a greater chance of a policy ruling. They can give consideration, using their influence outside of formal authority.

2.1.4 Fire Theory

Fire is rapid oxidation as a result of the chemical reaction of three elements in the fire triangle theory, namely: heat, oxygen and fuel that generates heat, smoke and light. A fire will not occur without these three elements. Likewise, fire will be extinguished by the removal of one of these elements (Bhandari, 2014). The source of oxygen is from the air, whereby slightly about 15% volume of air oxygen in needed for burning to occur. The

air in our atmosphere contains 21% oxygen volume. Several fuels have enough oxygen content that can support combustion. A heat source is needed to reach the ignition temperature so that it can support a fire. Sources of heat include solar heat, hot surfaces, open flames, friction, exothermic chemical reactions, electrical energy, electric sparks, welding/cutting flames, and compressed gas. Fuel is the substance that supports burning. There are three forms of fuel, namely solid, liquid and gas. For solids and liquids, heat is needed to change all or part of the substance to a gaseous state in order to support combustion. For combustion to take place, a fourth component is needed, namely a chemical chain reaction as explained in the Fire Tetrahedron Theory (Figure 2.4). The chain of chemical reactions is an event whereby the three elements (heat, oxygen and fuel) react chemically with each other to produce flame or combustion.

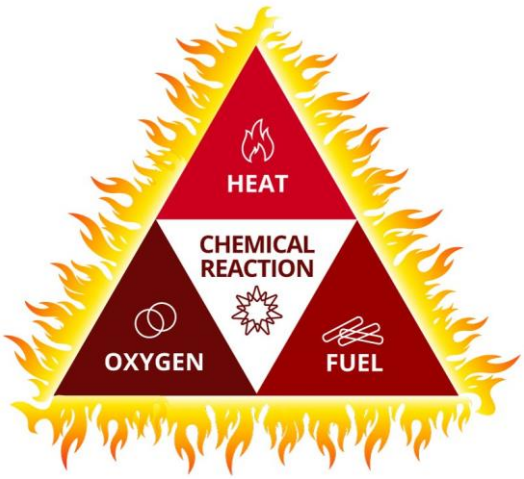

Figure 2.4 Fire Tetrahedron

2.1.5 Fire Disaster

A fire disaster is a catastrophic event as a result of an uncontrollable fire causing property loss, injury and death. Fire disaster also causes psychological disorders such as fear, shock, stress and depression. The fire will not stop if not extinguished. However, the fire will quench if there is no balance in the concentration of the three elements in the fire triangle. Fire disasters are caused by human error, lack of information and knowledge

about fire hazards, and deliberately known as arson. Heat and smoke are the major killers in a fire outbreak (Bhandari, 2014).

According to the National Fire Protection Association (NFPA), fires are classified based on the object or material burning. With this classification, it is easier and faster to select the extinguishing media that is suitable for fire suppression (O'Connor, 2021). Fire classification is in accordance with the burning material is as follows:

a. Class A

   Fires involving ordinary combustible materials such as paper, wood, cloth, and plastic. Water as an extinguishing agent which can be used to lower the temperature below the ignition point. Dry powder can also be utilized to stop the combustion process.

b. Class B

   Fires in this category involve combustible or flammable liquids such as gasoline, kerosene, and other similar materials. Foam-based and Carbon Dioxide (CO2) extinguishers can be used on fires in this category.

c. Class C

   Fires caused by high-voltage electricity. Nonconductive fire extinguishing materials such as water are not recommended when dealing with fires in this category to avoid electric shock. Carbon Dioxide (CO_2) fire extinguishers are suitable for fires in this category.

d. Class D

   Fires involving flammable metal materials such as titanium, aluminium, magnesium, and potassium. Dry powder fire extinguishers are suitable for fires in this category.

2.1.6 National Security

National security which was primarily concerned with state and military affairs experienced a paradigm shift to the human security concept

which led to the security sector reform (SSR). In this context of human security, national security encompasses all sectors. Human security issues are considered important in contemporary security studies because of the increasing humanitarian problems around the globe. The United Nations (UN) emphasizes changing the understanding and focus of security, from state and military security to human security which encompasses security issues regarding economy, food, health, environment, personal, community, politics and technology.

Disasters are occurrences which can greatly disrupt human life and activities thereby causing a disturbance in human security across various dimensions. The formulation and implementation of disaster management policies should be done in relation to developments in the strategic environment. Efforts in maintaining human security need to be developed by prioritizing the participation of policy analysts, academics, business entities, media, and defense practitioners for the benefit of people's welfare. Human security must be planned with the aim of preparing communities for dealing with natural and man-made hazards. In the implementation of human security, the entire community must be prepared to participate in the implementation of total defense by involving the entire layer of community in the disaster preparedness phase of disaster management (Syamsunasir et al., 2022).

2.2 Previous Research

Findings from previous studies are necessary and can be used as building blocks and supporting data in research. Reviewing previous studies is also intended to distinguish the current research from previous works. Novelty can be identified through the process of literature review. Studies which are relevant and related to this research are reviewed as follows:

a. Daramola & Ibrahim (2021) conducted a study published in the Journal of Disaster and Risk with the topic “Analysis of Fire Safety Measures in Residential Buildings in Yaba Local

Development Council Area (Yaba LCDA), Lagos State, Nigeria". The study examined fire safety measures adopted in residential buildings at Yaba LCDA, Lagos State, Nigeria. The study was conducted quantitatively by utilizing spatial and aspatial data. The authors also administered questionnaires, reviewed administrative records regarding fire incidents and conducted interviews. A cross-sectional research design was adopted in this study by using the stratified sampling method. The samples collected from households were in proximity to already documented fire incidences in the research area. Building fire safety concepts and theories were used in the discussion. Results from this study show that fire exits and extinguishers were the primary firefighting facility available to households in the research area. Though, most of the fire extinguishers were not functioning properly. The related costs and indifference to using fire safety devices were identified as factors causing the low adoption of fire safety measures. The authors recommend that the government and fire service provide fire safety education and training to enhance household preparedness. More government investment towards administering and reporting fire issues was also recommended. Possessing fire and building insurance to manage fire disaster risk was also highlighted.

b. Adeleye et al. (2020) published a research article in the Open Access Journal with the topic "Fire Disaster Preparedness of Public Buildings in Ibadan Metropolis, Nigeria". This study was conducted to assess the level of preparedness and mitigation measures available in the situation of a fire outbreak in public buildings situated in Ibadan Metropolis, Nigeria. The study was conducted quantitatively. Data from public buildings were obtained through a cross-sectional survey. The authors

conceptualized fire disaster preparedness through three indicators (fire safety awareness, availability of firefighting apparatus and knowledge of municipal authorities). Results from this study show that around 90% and 79% of the surveyed buildings were designed with emergency exits and possess fire extinguishers respectively. Around 51% of occupants have not received any fire training, and only 36% have the contact of local fire service.

c. Oloke et al. (2021) published a scientific article in the IOP Conference Series on Earth and Environmental Science with the topic “Fire Risk Exposure and Preparedness of Peri-Urban Neighbourhoods in Ibadan, Oyo State, Nigeria”. The study was conducted quantitatively. Data from households were obtained through a cross-sectional survey. Human-related activities are reported as the primary cause of fire outbreaks in the surveyed communities. Data from this study support the fact that communities in the study area are vulnerable to several environmental hazards including fire hazards caused by inappropriate storage of fuel, unsafe cooking practices, electric surges and other causes. The level of fire safety education, access to water sources, possession of fire extinguishers and other fire safety apparatus is extremely low in the study area.

d. Valentine & Bolaji (2021) conducted a study published in the International Journal of Disaster Management with the topic “Fire Disaster Preparedness among Residents in a High Income Community”. The study was conducted in the Parakin community of Ife Central Local Government Area, Osun State, Nigeria. The study examined the perception of residents about fire incidences and assessed the preparedness of residents in preventing and responding to fire hazards. The research was conducted quantitatively with a cross-sectional design. Data

was obtained from building residents in the area. Findings from this research show that the fire disaster preparedness in residential buildings is very low as a result of inadequate firefighting apparatus, low awareness and rare fire training.

e. Iyaji et al. (2016) published a research article in the Journal of Good Governance and Sustainable Development in Africa with the topic “The Role of Design and Construction in Mitigating Fire Disasters in Housing in Nigeria”. The study’s objective was to identify fire hazards and their sources. Also highlighting fire safety measures to secure live and properties in buildings. The research was conducted quantitatively. Design and construction measures to curtail the spread of fire were discussed. Other safety measures to protect lives and properties from fire were also discussed. The authors recommend the use of fire-rated materials, fire-resistant materials, fire detection systems, properly storing flammable substances, and maintaining structural integrity to reduce the spread of fire in buildings.

f. Rahardjo & Prihanton (2020) conducted a study published in the Journal of Building Engineering with the topic “The most critical issues and challenges of fire safety for building sustainability in Jakarta”. The study’s objective was to determine the major issues posing challenges to fire protection of buildings in Jakarta, Indonesia. The authors used descriptive qualitative method in conducting the study. However, the obtained data were processed using the Analytic Hierarchy Process (AHP), Objective Matrix (OMAX), and traffic light system methods. The variables used as assessment criteria include fire safety issues regarding site planning, exit road, active protection systems, passive protection systems, and fire safety management. The authors reported that the fire service access to buildings and

poor condition of roads are the main problems of fire safety for building sustainability in Jakarta. Results from this study also shows that only 42% of the sampled building were reliable with regards to fire safety concerns. Hence, responsible bodies need to take action by raising awareness regarding fire safety and periodically conduct field inspections to assess fire protection systems of building.

The recapitulation of the reviewed literature is presented in Table 2.1.

Table 2.1 Recapitulation of Reviewed Literatures

NO	RESEARCHER (YEAR)	TOPIC	METHODOLOGY, DESIGN & THEORY	RESULTS	SIMILARITY	DIFFERENCES
1	**2**	**3**	**4**	**5**	**6**	**7**
1	Daramola & Ibrahim (2021)	Analysis of Fire Safety Measures in Residential Buildings in Yaba Local Development Council Area (Yaba LCDA), Lagos State, Nigeria	**Methodology**: - Quantitative **Design:** - Cross-sectional **Theory:** - Building Fire Safety	Results from this study show that fire exits and extinguishers were the primary firefighting facility available to households. Though, most of the fire extinguishers were not functioning properly. The related costs and indifference to using fire safety devices were identified as factors causing the low adoption of fire safety measures.	The research location is also in Lagos State, Nigeria. The authors highlighted fire safety education as an important variable that supports preparedness measures.	Measures on how to implement fire disaster education were not explored in detail. Measures on how to effectively implement building safety policies were not explored.
2	Adeleye et al. (2020)	Fire Disaster Preparedness of Public Buildings in Ibadan Metropolis, Nigeria	**Methodology**: - Quantitative **Design:** - Cross-sectional **Theory:** - Disaster Preparedness	Results from this study show that around 90% and 79% of the surveyed buildings were designed with emergency exits and possess fire extinguishers respectively. Around 51% of occupants have not received any fire training, and only 36% have the contact of local fire service.	This study also studied disaster preparedness.	This study collected samples from public buildings while this thesis will collect samples from households. The authors conceptualized fire disaster preparedness with indicators while this thesis will analyse disaster preparedness with dimensions and indicators. This study was conducted in Oyo State while this thesis will be conducted in Lagos State.

1	2	3	4	5	6	7
3	Oloke et al. (2021)	Fire Risk Exposure and Preparedness of Peri-Urban Neighbourhoods in Ibadan, Oyo State, Nigeria	**Methodology**: - Quantitative **Design:** - Cross-sectional **Theory:** - Disaster Risk Exposure - Vulnerability - Disaster Preparedness	Data from this study support the fact that communities in the study area are vulnerable to several environmental hazards including fire hazards caused by inappropriate storage of fuel, unsafe cooking practices, electric surges and other causes. The level of fire safety education, access to water sources, possession of fire extinguishers and other fire safety apparatus is extremely low in the study area.	The authors also studied disaster preparedness. Fire safety education was also discussed.	This study was conducted in Oyo State, Nigeria while this thesis will be conducted in Lagos State. This thesis also did not study fire risk exposure as a variable.
4	Valentine & Bolaji (2021)	Fire Disaster Preparedness among Residents in a High Income Community	**Methodology**: - Quantitative **Design:** - Cross-sectional **Theory:** - Perception - Disaster Preparedness	Findings from this research show that the fire disaster preparedness in residential buildings is very low as a result of inadequate firefighting apparatus, low awareness and rare fire training.	Data was also collected in residential buildings. This study also studied disaster preparedness.	This study was conducted in Osun State, Nigeria while this thesis will be conducted in Lagos State. Also, this study did not discuss how to implement fire disaster education.

1	2	3	4	5	6	7
5	Iyaji et al. (2016)	The Role of Design and Construction in Mitigating Fire Disasters in Housing in Nigeria	**Methodology**: - Quantitative **Design:** - Cross-sectional **Theory:** - Hazards - Disaster Mitigation	Design and construction measures to curtail the spread of fire were discussed. Other safety measures to protect lives and properties from fire were also discussed. The authors recommend the use of fire-rated materials, fire-resistant materials, fire detection systems, properly storing flammable substances, and maintaining structural integrity to reduce the spread of fire in buildings.	The research location is also in Nigeria. The authors highlighted some technical aspects pertaining to the role of building design in mitigating fire disasters.	The authors did not take fire disaster preparedness, fire safety education, and building safety policy as stand-alone variables.
6	Rahardjo & Prihanton (2020)	The Most Critical Issues and Challenges of Fire Safety for Building Sustainability in Jakarta	**Methodology**: - Qualitative **Theory:** - Fire Safety - Fire Protection Systems - Fire Safety Management	The authors reported that the fire service access to buildings and poor condition of roads are the main problems of fire safety for building sustainability in Jakarta. Results from this study also shows that only 42% of the sampled building were reliable with regards to fire safety concerns.	The research also studied building fire safety measures.	The variables assessed in the study are site planning, exit road, active protection systems, passive protection systems, and fire safety management. Disaster education was not studied explicitly.

Source: processed by author

2.3 Theoretical Framework

The theoretical framework is the initial step in formulating the research hypothesis by describing causal relationships between variables (Widana, 2018). The analysis of this study focuses on the influence of disaster education and building safety policy on fire disaster preparedness in Lagos State, Nigeria. The relationships between these variables are illustrated in Figure 2.5.

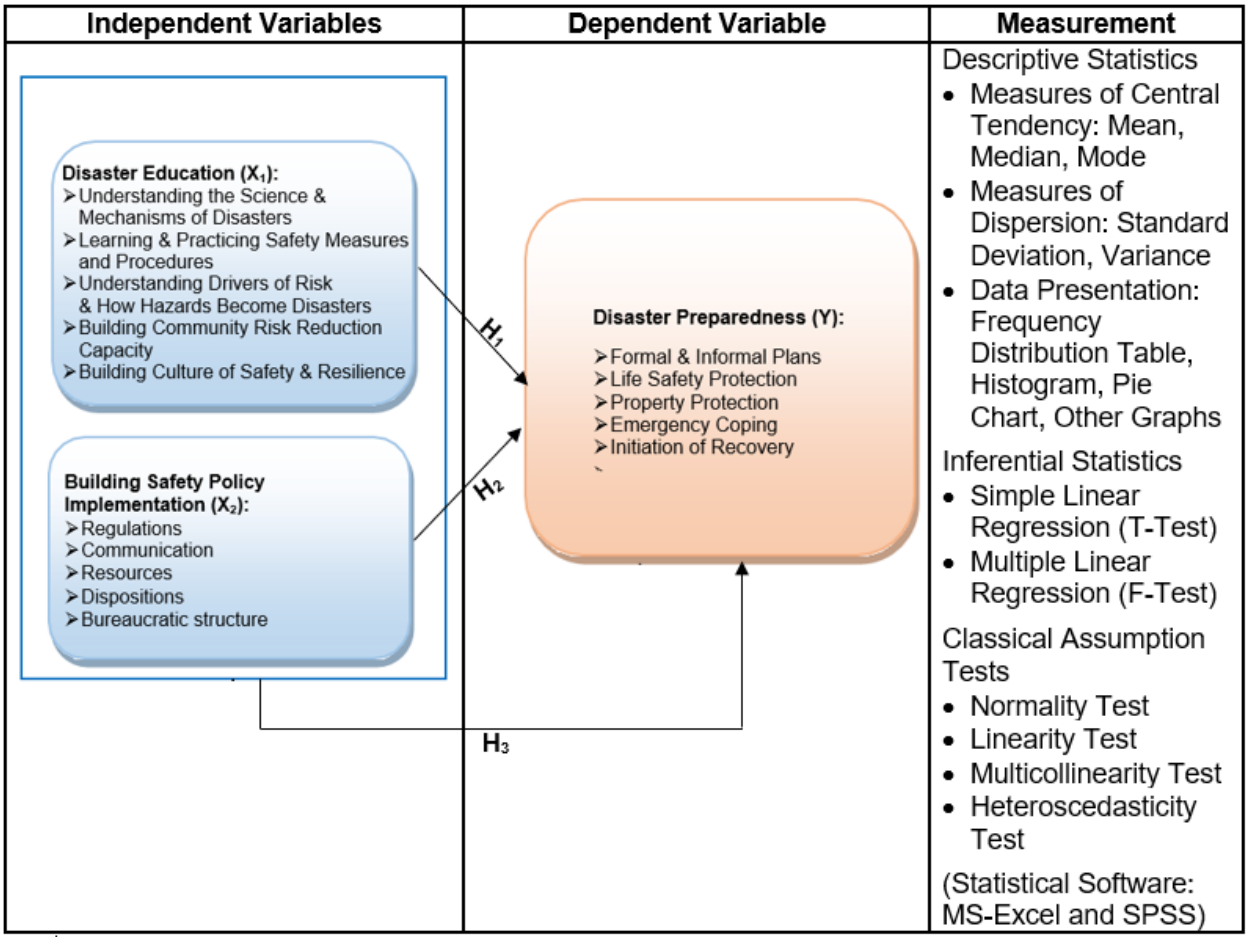

Figure 2.5 Theoretical Framework

2.4 Hypothesis

In quantitative research, the hypothesis has several uses. Hypotheses are useful for assumptions, predictions and tentative explanations of a phenomenon and facilitating the exploration of knowledge

in a field. Hypotheses also provide a statement of ongoing relationships that can be tested in research, providing direction to research, and a framework for reporting conclusions. To prove the truth of a hypothesis, researchers can perform tests, experiments or research. If a hypothesis is regarded as correct and generally accepted, it becomes a theory (Widana et al., 2020). Hypotheses must be able to explain what is predicted to happen, states the expected relationship between variables, testable, consistent with existing knowledge, concise, and understandable. Based on this, the hypotheses of this study are:

H_1: Disaster education has a direct positive influence on fire disaster preparedness in Lagos State, Nigeria.

H_2: Building safety policy has a direct positive influence on fire disaster preparedness in Lagos State, Nigeria.

H_3: Disaster education and Building safety policy simultaneously have a direct positive influence on fire disaster preparedness in Lagos State, Nigeria.