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Article

Developing Effective Project Management Strategy for Urban Flood Disaster Prevention Project in EDO State Capital, Nigeria

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Abstract: Emphasizing the need to provide a coordinated flood management strategy in the country and avoid acting in an isolated way when it occurs, improving the attitude of flood control during floods, and controlling floods with comprehensive analysis are among the main purposes of the current study. In this study, the environment's physical, technological, social, economic, and political characteristics are considered to assess the urban flood risk. This study entails a discussion of flood hazard control in Benin City, the capital city of Edo State of Nigeria. The research methodology involves employing both interviews and questionnaire distribution. First, three key persons involved in flood control are interviewed at the State Emergency Management Agency (SEMA), which coordinates disaster risk reduction in the state, and then, the responses are classified into themes that are used to prepare the questionnaire to be distributed in four main regions. The questionnaires are distributed to the employees in institutions concerned with flood control and to the general population living in the region. Based on the obtained results from the interviews, some methods that could be applicable in controlling flooding in the region are listed. The results showed that the most important ones are flood warning systems, flood prevention through using the building resilient infrastructure and community programs, protection and mitigation through using natural processes, and strategic implementation of a flood emergency plan through sustainability.

Keywords: urban flood; disaster prevention; project management; flooding; Nigeria

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1. Introduction

A flood is caused by a river, stream, or channel that overflows its banks and floods large areas of dry land. Changing weather patterns and global warming have led to more widespread flooding in urban areas [1,2]. When it comes to dealing with pollution, local governments in developing countries face huge obstacles and problems. Flooding in urban areas is a threat to the environment as well as human health and safety, especially in infrastructure and service delivery areas, which are critical to the long-term existence of cities [3,4]. As many people believe, the negative impact of flooding on the economy is not limited to the loss of customers and inventory. Even more harmful is the ripple effect that power and transportation disruptions have over a larger geographic area [5,6].

Flood is a global phenomenon that affects all aspects of human society due to its extent. Unsustainable human activities and climate events have the potential to derail the 17th UN Sustainable Development Goals, as they reverse the progress made possible through international cooperation and already achieved in eradicating extreme poverty and disease. Flooding is one of the key contributors to climate-related hazardous events that disproportionately affect poor countries due to their vulnerability. The International Federation of Red Cross and Red Crescent Societies conducted a study showing that flood disasters caused more deaths and injuries than any other natural or technological disaster between 1993 and 2002 [7,8]. There have been flood disasters in many different regions

around Nigeria, as virtually every state has been affected by floods at some point in its history.

According to Hasson et al. [9], successful or sustainable flood protection project management can help reduce long-term flood losses and community suffering. The best or most sustainable project management strategies (PMS) to deal with the ongoing issue of floods are still being pursued by many countries and governments, especially those that are plagued by floods. This research aims to find ways to manage floods in order to minimize and even prevent the disasters in Nigeria as well as the problems and dangers these communities face as a result of floods. Benin City, the capital of Edo State in southern Nigeria, is considered as a case study. Due to the location, temperature, flora, and soils of Benin City, as well as the city's population numbers and settlement patterns of the city, the city is highly vulnerable to climate-related consequences such as floods and other natural disasters. Experimental field results are classified using a combination of primary and secondary data.

2. Literature Review

2.1. Urban Flood Disaster

Given the frequency of flooding, it is critical to consider physical hazards and socio-economic impacts during a thorough survey. Effective assessment of flood disasters, as well as other environmental disasters, can be made by examining the effects that disaster has had on past, present, and future events [10]. Flash floods and river floods are the two most common types of floods in the United States [11]. Depending on the amount of received rainfall, flash floods can occur within minutes or hours of heavy rainfall. However, these floods only last for a short time, and the entire region is not affected. River flooding is a natural and inevitable element of the river's life cycle and cannot be avoided. Floods caused by rivers may occur when rivers, streams, or water channels overflow their banks due to heavy rains upstream. In general, if there is significant rainfall upstream, river flooding may occur [12].

In a study, researchers summarized the main causes of floods as climate changes caused by high-level rainfall, temperature changes, and human activities such as construction works including water reservoirs, modification of canals, and changes in land use patterns, all of which have a combined impact on perennial flooding [13]. It is described as the change in the amount of precipitation that falls at a particular location over time, as measured by International Standard Time (IST) [14].

According to Alam [15], Dhaka in Senegal (Africa) has not yet completed the implementation of its city master plan (CMP), claiming that the city's development control laws are ineffective and the city's CMP has not yet been fully implemented. There was the following wave of land development by landowners, some of whom did not even seek plan clearance before commencing their projects, resulting in the distorting of the natural drainage setting and, as a consequence of the floods, a significant increase in flooding in the region. Furthermore, drainage restriction is another key element contributing to the recurrence of floods in the Dhaka metropolitan area. The tendency of blocking drainage systems, according to Alam [15], only serves to worsen the issue, which finally results in floods. He went on to remark that the city's poor drainage capacity is also a contributing element to the city's chronic flooding problems. This study revealed that drainage blockage and an insufficient drainage capacity to meet the city's rising population are important challenges in Edo State capital, Nigeria, and these issues are contributing reasons to the city's chronic flooding problems. Because of these circumstances, the Capital City Development Agency is obligated to destroy developments that hinder drainage systems in the vast majority of situations. In addition, there is a lack of coordination between flood prevention PMSs in the agencies while managing structural aspects of flood protection, and failures to include non-structural aspects of flood prevention projects, such as laws, public participation, awareness building, and appropriate plans, among other things. On the other hand, the literature on public engagement and awareness campaigns is severely

lacking when it comes to the people of Edo State. Table 1 presents an overview of some recent flood disasters in Nigeria, as summarized by Ismail et al. [16].

Table 1. A review of some flood disaster cases in Nigeria.

Year	Location	Cause	Estimated Damage
2001	Abia, Adamawa, and Akwa-Ibom States	Rainfall	5000 people affected
2001	Zamfara State	Rainfall	12,300 people displaced
2005	Taraba State	Rainfall	50,000 people displaced
2008	Imo State	Rainfall	12,250 people displaced
2008	Edo State (Benin City)	Rainfall	20 houses collapsed and 4 dead
2008	Benue State	Rainfall	Destroyed 350 houses
2012	Plateau State	Rainfall leading to overflow of Lamingo dam	39 people dead, 200 homes submerged, 3000 people displaced

According to some of the world's top experts on project management, understanding an effective PMS and putting it into practice is vitally important to the success of any project [17]. According to the literature, project management has not been as effective as it might have been in terms of project delivery and improvement [8,18]. It was discovered that, even when initiatives were completed on time and under budget, the effects were, on average, less effective and less long-lasting [18].

A PMS is used in the managing of a project, as opposed to the concept of a "project strategy", which may be applied to a project in the management of the project, i.e., a high-level plan to achieve the project objectives [8]. Furthermore, it is said that the meaning of "strategy" varies depending on the academic and may vary from an overall strategy to a basic plan. According to academics, current literature has not yet embraced the merging of the concepts of "project management" and "strategic planning", even though they are both important. Despite this, the most important component of a PMS is to guarantee that the project achieves its objectives, is completed within financial constraints, and is completed on schedule, all of which contribute to the success of the project management process [19].

In their inquiry, Carvalho et al. [18] discovered a gap in the literature on the relationship between project success/failure and project management methodologies, which they filled. According to Newton [19], project management success has historically been defined as the achievement of project objectives in terms of money, time, and quality within the framework of a given project. Flood disaster management has three main steps: flood forecasting, runoff reduction, and flood peaks by volume reduction [20].

2.2. Project Management Strategy for Urban Flood Disaster

In order to evaluate the role of project management and its strategies for urban flood disasters, there are several studies that are considered here.

Kim et al. [21] emphasized improving developing countries' current management and laws and regulations. Later, Verweij et al. [22] illustrated that there is no sufficient single policy tool that can be considered to achieve success. In this regard, they proposed three useful combinations for policy instruments, including integrated contracting, project management, and non-government combinations. In another study, it was mentioned that not only decision-makers should monitor the processes, but also they should analyze the obtained results in this regard [23]. According to the study conducted by Komolafe et al. [24], all hydrological processes, advanced flood forecasting models, and flood risks should be discussed and investigated in an integrated manner, and mapping should be done more accurately and in more detail.

In 2016, Nkwunonwo conducted a study to identify cognitive limitations in flood management in Nigeria [25]. The author mentioned that Nigeria's main cause of floods is

climate change and a lack of proper urban planning. According to the information obtained, between 1985 and 2014, the destructive effects of floods, which included a cost of 17 billion USD, affected 11 million people, including 1100 deaths.

Moreover, the findings of research considering the participants' point of view, conducted by Adelekan [26], showed that about 50% of the respondents to the questions had experienced at least a flood in their lives. This is while in Abeokuta or other places in Nigeria, more than 66% of these people did not anticipate the recurrence of floods in their minds and did not have the necessary preparation to deal with such an issue, while there was no warning before the flood occurred in these areas.

According to Adelekan and Asiyanbi [27], understanding the social aspects of risks is one of the most important pillars of risk management. According to them, urban management in the field of floods is often focused on quantitative studies regarding the vulnerability and flexibility of the flooded population; however, structural social actions are taken using these results. Therefore, the understanding level of the residents of flooded areas, their concerns, paradigm approach, and psychometrics have been investigated in that study [27].

3. Methodology

This section discusses the processes and methods that are used in the course of performing this study in order to achieve the objective of designing an effective PMS for flood protection projects in the Edo State of Nigeria. The qualitative data methodology is used extensively in this study, with a small amount of quantitative data included in the data analysis part in order to confirm a conclusion made during the interviews.

A purposive selection of participants is required for this study, which informed the decision to use the purposive sampling method, which included three key stakeholders in the flood prevention project in the state: a project manager, a principal town planning officer, and a senior government official in the flood prevention projects in Edo State capital. Semi-structured interviews were conducted with the three key stakeholders and questions to be asked were drawn from previous literature. The responses of these key persons were classified into themes and presented in a table. The most popular or most common themes were selected and these themes were used to construct a questionnaire that would be given to two groups of people, including the general population and employees of important organizations concerned with fighting flooding in the area. The responses from the two populations were compared and conclusions drawn from the results.

3.1. Primary Data

For this study, primary data in the form of interviews are collected and thoroughly examined. According to researchers, open-ended questions allow respondents to speak more freely from their point of view, while also allowing the interviewer to uncover new ways of comprehending and seeing the subject under conversation [28]. This is achieved by allowing important issues to be discussed that depart from the Interview guide.

The study begins with coding the transcribed interviews and categorizing them into the most significant themes, after which the most highlighted topics are selected to form the summary of results, as shown in the diagram below. Figure 1 illustrates the thematic analysis procedure for this study.

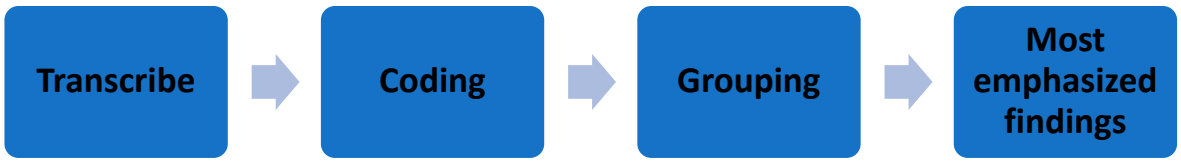

Figure 1. Thematic analysis procedure.

3.2. Validity and Reliability

Having confidence in a piece of research is important because it allows the public to have some trust in it, and it ensures that the measures used are as close to true measures as possible. Having confidence in the validity of a piece of research is also important because it informs the public whether or not what is measured is actually what is intended to be measured, and this is equally important. As a result, the deliverables of this project are evaluated by an expert in urban projects in this respect. Additionally, the supervisor of this study is active in confirming all of the sources of data obtained as well as the sort of data that is appropriate for the project's objective throughout the duration of the project. The conclusions from the interviews are further supported by a study from the Capital City Development Authority, which included an illustration of a drainage obstruction and statistical data on the consequences of floods.

3.3. Case Study

Benin City is the administrative and economic hub of Edo State, Nigeria, and is home to over a million people. This tropical urban community is characterized by its high humidity and temperature. It is comprised of three main local government areas: Oredo, Egor, and IkpobaOkha. The city of Benin is located on a short, key-shaped piece of land in West Africa that runs north to south. The land area is about 1125 km^2 and is located on relatively flat terrain at an elevation of averaging 200 m above sea level. It is situated between latitudes 6440 N and 6210 N and longitudes 5350 E and 5440 E [29]. Figure 2 shows the map of Edo State.

Figure 2. Map of Edo State.

The weather in Benin City is hot and humid most of the year. The wet season lasts from April to November, while the dry season lasts from December to early March. The temperature in Benin City is quite high, with an average daily temperature of around 28 degrees Celsius in the dry season and approximately 24 degrees Celsius in the wet

season. The temperature range in the research region is rather minimal. During the rainy or wet season, Benin City and its surroundings get a lot of rain, particularly in the morning. Rainfall is present throughout the year, with an annual total of 2000–2300 mm and a monthly average of over 170 mm. This heavy rainfall is caused by significant evapotranspiration in the metropolitan region as a result of the high temperatures that have prevailed. In addition, high in the study region is relative humidity, which may reach up to 80 percent during the rainy season and 70 percent during the dry season in the summer [29].

Edo State has many unique relief zones, including the Northern Plateau, the Orle Valley, the Esan Plateau, the Benin lowlands, and swamp woods. It is composed of six sorts of physical elements that make up the landscape of Edo State. In Benin City, lowlands are found in a sandy coastal plain and alluvium clay, with some hills in the east, as well as in a sandy coastal plain. Slopes are filled in the direction of the southwest. The region is drained by the rivers Osse, Orhionmwon, and Ikpoba. In addition to having a huge flood plain throughout the River Osse's course, the other rivers are characterized by sharply incised valleys in their upper courses, which grow progressively wider as they flow into the River Ethiope in Delta State [30]. The Northern Plateau consists mostly of foundation rock, ranging in elevation from 183 to 305 m above sea level, with rare granite summits reaching beyond 610 m. Sandstone dominates the southern half of the mountain. The Afemai Hills rise to a height of 672 m above sea level, making them the highest point in the state. Orle Valley is created by an east–west river that cuts through the sandstone between the Northern Plateau and the Esan Plateau, resulting in the formation of a narrow gorge. The Plateau is drained by the rivers Owan and Orle, which flow west and east, respectively. The Esan Plateau, which extends from 213 to 305 m above sea level, is a continuation of the sandstone of the Northern Plateau [29].

4. Results

The obtained results are presented in three different categories of classification of experts' responses into themes, obtained responses from a questionnaire distributed to citizens, and obtained responses from a questionnaire distributed to employees of key organizations. Afterwards, comparing responses of the first and second surveys are presented.

4.1. Classification of Experts' Responses into Themes

Following the thematic analysis procedure, the responses from the interview of the key persons in the State Emergency Management Agency (SEMA), which coordinates Disaster Risk Reduction at the State level, are classified into themes based on keywords. The summary of the coding and classification is given in Table 2.

The interview responses from the key stakeholders, including a project manager, a principal town planning officer, and a senior government official in the flood prevention projects in Edo State capital, were classified into themes and presented in Table 2. These themes were arranged from the most popular to the least popular, which is simply the number of times one or more of the keywords associated with the themes were mentioned. The most popular themes (Themes 1, 2, 3, and 4) were selected to be scrutinized below.

Theme 1. Flood Warning system to ensure timely response against the threat of flood.

Edo State is widely known as an agricultural-based region and it is super dependent on seasonal characteristics of rainfall. In fact, recent studies have shown that rainfall variability is a real threat that cannot be ignored [31–33]. Agricultural growth has been largely affected by natural climate variability and extreme climate events like flooding, which have led to a massive decline in food productivity that has, in turn, caused food insecurity and poverty, especially in rural areas. The knowledge of this has prompted farmers to accept scientific forecasting as a way to access climate variability [32,33].

Theme 2. Flood prevention through using building resilient infrastructure and communities program.

Table 2. Summary of coding and classification of themes.

Theme Number	Themes	Keywords	Frequency (Number of Responses)
Theme 1	Flood warning system to ensure timely response against the threat of flood	Early warning systems; weather forecasts; access to information and warnings.	3
Theme 2	Flood prevention through using building resilient infrastructure and communities program	Floodproofing measures; improved traffic access; constructing dams, levees, bridges, and culverts.	3
Theme 3	Flood prevention, protection, and mitigation through using natural processes	Land use planning controls; catchment flood modeling; planting of shrubs and cover crops; construction of appropriate water channels.	3
Theme 4	Strategic implementation of flood emergency plan through sustainability	Maintenance of existing infrastructure; developing and improving maintenance structures.	3
Theme 5	Flood preparedness through understanding and awareness	Household emergency plan; access to information; understanding and awareness; educating citizens and stakeholders.	2
Theme 6	Flood mitigation through floodplain regulations	National flood insurance program; land use regulations; laws against deforestation; land zoning; subdivision regulations; development and redevelopment policies.	2
Theme 7	Flood prevention and mitigation through joint and coordinated action	Joint bodies; Government bodies and commissions; global water partnership; sustainable development goals; public awareness and public participation; flood insurance.	2
Theme 8	Flood prevention and mitigation through research, education, and exchange of knowledge	Research; research outputs from European countries; training and mentoring.	1
Theme 9	Flood prevention through water retention and non-structural measures	Water treatment plants; irrigation for farmlands.	1

The importance of building resilience, as part of disaster recovery strategies, reduce losses by ensuring the continuous provision of service, including shelter, health care, education, utilities, transportation, and other services [34]. Furthermore, it provides recommendations for future research into this area, including possible links between housing affordability challenges and physical environments. These issues are addressed by highlighting the opportunities for affordable housing development in urban areas, increasing population growth by reducing land use, expanding the public transit system, and decreasing air pollution. It provides information about how the implementation of an appropriate building design plan can lead to sustainable and affordable construction projects by focusing on several key areas [35]. Flood protection is achievable through enhancing resilience by strengthening physical environments that are essential in mitigating stormwater.

Theme 3. Flood prevention, protection, and mitigation through using natural processes.

Experience has shown that effective flood prevention and protection measures need to be taken in the watershed and that it is important to keep the interrelationships and interactions of the results of measures in mind. It is clear that there is a need to organize water management systems and improve forecasting, flood protection, and disaster relief measures based on the watershed. This can be carried out in cooperation with relevant institutions in the fields of hydrology and meteorology, emission reduction planning,

water resource restoration, disaster management, and crisis prevention. In addition, there is a need for embedded technology. Flood prevention, safety, and mitigation require a very good mix of structural, preventive, and practical measures in all flood situations: building codes to keep systems out of flood-prone areas, proper land use, and designed floodplains with safety and control. Systems need to be developed in consideration of flood development plans, mitigation, early warning structures, careful verbal risk allocation, and flood preparedness [36–38]. In some cases, it is even advisable to change the sport and have unusually threatened housing.

Theme 4. Strategic implementation of flood emergency planning through sustainability.

As per the results of the study, comprehensive contingency plans must be organized at the local levels of the city to adequately and timely respond to floods and maintain operational popularity in all places where flooding can occur due to direct flooding, dams, dam failure, and various related problems and many others. To build the capacity and readiness of companies forced into the sport of flood protection.

4.2. Responses from Questionnaire Distributed to Citizens

Regarding the demographic characteristics, the results presented that of the total respondents, 83 were males and 125 of the respondents were females. This result represents a percentage of 39.9% and 60.1%, respectively. The majority of the respondents, 139, were less than 30 years old, while 41 were between 30 and 40 years of age, 21 were between 40 and 50 years old, and 7 of the respondents were between 50 and 60 years old. In terms of the relationship status of the respondents, 135 of the total respondents were single, 52 were married, 17 were currently divorced, and 4 chose not to identify within these categories. In terms of educational qualification, 11 of the respondents had a higher school diploma and below, 41 of them possessed an associate diploma, 85 possessed bachelor's degree from a university, 59 possessed postgraduate degrees, including M.Sc. and Ph.D., while 12 of them did not fall within these categories. This report shows that the majority of the respondents were educated, as a total of 69.3% possess at least a B.Sc. degree. Table 3 presents the information related to questionnaire distributions and retrieves in the three mentioned locations in this study.

Table 3. Questionnaires administered per area.

Location	Number of Questionnaires Distributed	%	Number of Questionnaires Retrieved	% of Questionnaires Distributed to Locations	% of Total
Upper mission/Lawani	75	25%	54	72%	26%
Ugbowo/UNIBEN Area	75	25%	52	69%	25%
Oba Market/Akpakpava area	75	25%	51	68%	24.5%
Murtala Mohammed Area (MMA)	75	25%	51	68%	24.5%
	300	100%	208		100%

At the state level, the State Emergency Management Agency (SEMA) is in charge of Disaster Risk Reduction (DRR). SEMA is tasked with administering policies that benefit the most vulnerable communities and areas. At local levels, SEMA has established volunteer schemes from local communities, such as the Emergency Management Vanguard (EMV), but the activities of these groups are unsustainable as they only engage in awareness campaigns during a disaster event. Moreover, they provide an immediate response to emergencies before the arrival of relevant agencies. The six managers that were interviewed in this study, were from the State Emergency Management Agency (SEMA) with headquarters in Benin City.

In terms of employment status, 49 of the respondents were self-employed, representing 23.6% of the sample population, 71 were currently employed, which represents 34.1% of the sample population, 59 were currently unemployed that represents the second largest group with 28.4%, while 29 of the respondents, 13.9%, were currently studying for their degrees.

From the obtained results, it can be concluded that the general population agrees with the key officers who were interviewed in the first part of the thesis. This is because the majority of the respondents in this study either agreed or strongly agreed with the points asked; 40.4% of the respondents agreed, while 13% strongly agreed with the point that flood warning systems are necessary for timely response in order to deal with the threat of flood. In total, 48.6% agreed and 13.8% strongly agreed that a flood warning system requires an effective forecast system through an experts forecasting team; 52.4% agreed and 21.6% strongly agreed that the main risk in the operating of early warning systems is the possibility of false alarms due to poor or too high forecasts. A total of 39.9% agreed and 31.7% strongly agreed with the point that flood prevention, safety, and mitigation require a very good mix of structural, preventive, and practical measures in all flood situations.

Furthermore, 47.6% agreed and 26.9% of the respondents strongly agreed that project management and other government institutions of Nigeria should collaborate to control the hazards of flooding. 37.5% and 35.6% agreed and strongly agreed that maintenance and improvement of current infrastructure are very important when dealing with flooding problems. Lastly, 45.2% and 23.1% agreed and strongly agreed that public awareness is necessary to combat flooding. From this result, it can be concluded that the general population is aware of the issue of flooding, its dangers, and control measures that must be put in place in order to address the issue.

The main responses obtained and concluded from the citizens are listed in the following:

- To deal with the threat of flood, a flood-warning system is necessary;
- A flood warning system requires an effective forecast system through an expert forecasting team;
- The main risk in the operation of early warning systems is the possibility of false alarms due to poor or too high forecasts.
- Collaboration of multiple institutions in Nigeria can plan measures related to restoration and environmental protection, which can also restore or protect these opportunities for weed growth and reduce flood risk;
- Climate forecasts are a major source of uncertainty, especially at the regional or local level, but other elements, including social and economic changes, are also important for climate resilience;
- A mix of structural, preventive, and practical measures in all flood situations, flood prevention, safety, and mitigation;
- Public awareness is necessary to combat flooding, as there may be a desire to adjust or even restrict the use, including industrial, agricultural, recreational, or personal use, to reduce potential damage;
- Floods occur when soil becomes saturated and its infiltration capacity is zero;
- Project management and other government institutions of Nigeria should collaborate to control the hazards of flooding;
- Maintenance and improvement of current infrastructure are very important when dealing with flooding problems;
- Taking Preventive measures for flooding hazards is inevitable to overcome flood management issues.

4.3. Responses from Questionnaires Distributed to Employees of Key Organizations

According to the results, 33 of the total respondents were male, while 17 were female; these figures represent 66% and 34% of the sample size, respectively. Only 3 of the respondents were less than 30 years old, with a percentage of 6%; 11 belonged to the category of 30 to 40, with 22%. A total of 21 and 15 were in the categories of 40 to 50 and from 50 to 60 years old, respectively, showing that most of the respondents were found to be

between 40 and 50. In terms of the relationship status of the respondents, the majority of the respondents, 27 of them, were married, one was divorced, 17 were single, and 5 of them chose not to identify within these categories. In terms of educational qualification, 1 of the respondents had a higher school diploma and below, 11 of them possessed the associate diploma, 22 possessed bachelor's degree from a university, 15 possessed postgraduate degrees including M.Sc. and Ph.D., while 1 of them did not fall within these categories. This report shows that the majority of the respondents were educated, and a total of 74% possessed at least a B.Sc. degree.

After answering the questions, it can be concluded that the sample population has a similar level of understanding to the citizens of the area. This is because the responses were similar to the first survey conducted on the citizens, as the majority of them either agreed or strongly agreed with the points asked; 22% of the respondents agreed while 58% strongly agreed with the point that flood warning systems are necessary for timely response in order to deal with the threat of flood. Additionally, 22% agreed and 78% strongly agreed that a flood warning system requires an effective forecast system through an expert forecasting team. Further, 26% agreed and 62% strongly agreed that the main risk in the operating of early warning systems is the possibility of false alarms due to poor or too high forecasts, while 26% agreed and 66% strongly agreed with the point that flood prevention, safety, and mitigation require a very good mix of structural, preventive, and practical measures in all flood situations.

Furthermore, 42% agreed and 48% of the respondents strongly agreed that dealing with climate change and its adverse effects is necessary in order to control flooding; 30% and 62% agreed and strongly agreed that project management and other government institutions of Nigeria should collaborate to control the hazard of flooding. Lastly, 26% and 52% agreed and strongly agreed that public awareness is necessary to combat flooding.

The main responses obtained and concluded from the employees are listed in the following:

- To deal with the threat of flood, a flood-warning system is necessary for a timely response;
- Flood warning system requires an effective forecast system through an expert forecasting team;
- The main risk in the operation of early warning systems is the possibility of false alarms due to poor or too high forecasts;
- Collaboration of multiple institutions in Nigeria can plan measures related to restoration and environmental protection, which can also restore or protect these opportunities for weed growth and reduce flood risk;
- Climate forecasts are a major source of uncertainty, especially at the regional or local level, but other elements (including social and economic changes) are also important for climate resilience;
- Flood prevention, safety, and mitigation require a very good mix of structural, preventive, and practical measures in all flood situations;
- Floods occur when soil becomes saturated and its infiltration capacity is zero;
- Project management and other government institutions of Nigeria should collaborate to control the hazards of flooding;
- Maintenance and improvement of current infrastructure are very important when dealing with flooding problems;
- Taking preventive measures for flooding hazards is inevitable to overcome flood management issues.

4.4. Comparing Responses of the First and Second Survey

The results shown in Figure 3 are related to the responses given by the general population and the employees of key organizations. It is seen that there is a similarity in responses given by these groups. This result indicates that the general population understands the concept of flooding and what must be done in order to control or mitigate flooding in

the area. This result also indicates that further education is not necessary on the concept of flooding, as the people already understand the concept. However, there is a general belief that the employees of these key organizations have a more detailed understanding of the concept of flooding, hence, their responses should be key in determining the factors or points to consider best for mitigating or controlling the impact of flooding in the area. From the results above, it is found that the following points have the highest percentage of people in agreement.

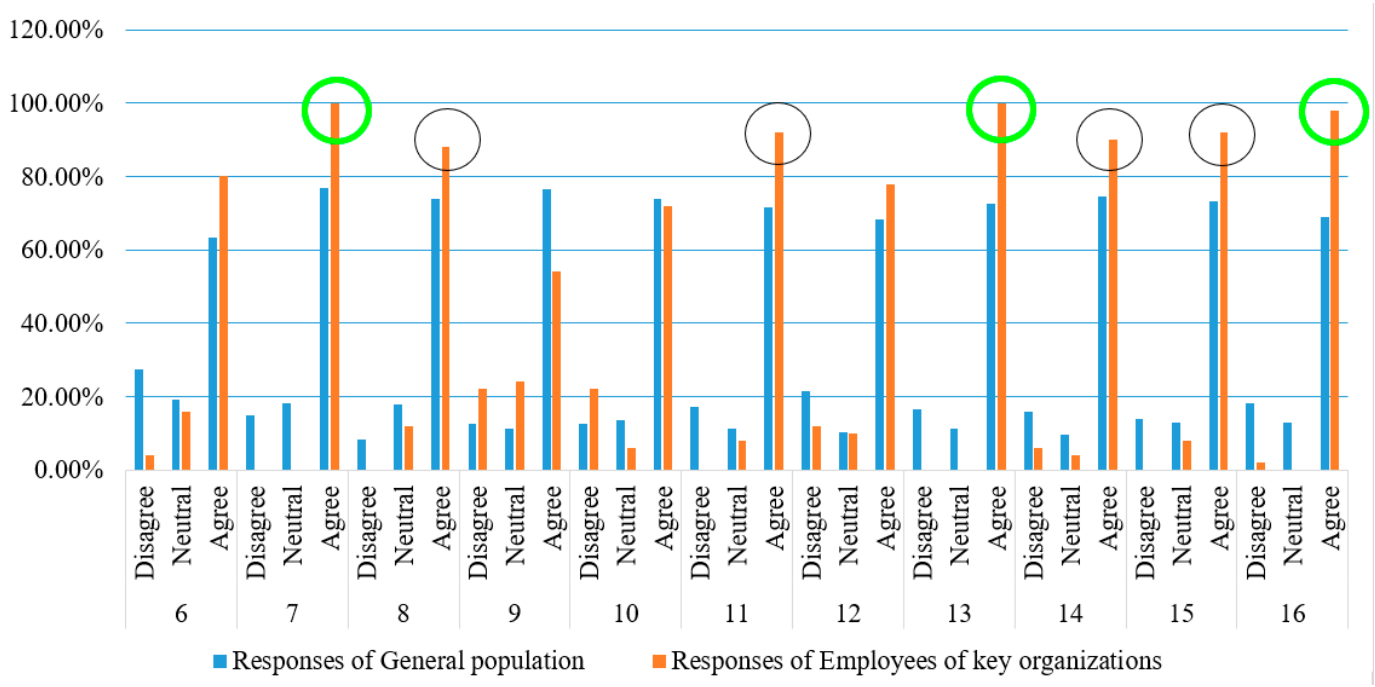

Figure 3. Summary of responses of the general population and employees of key organizations.

I. To deal with the threat of flood, a flood-warning system is necessary for a timely response.
II. The main risk in the operation of early warning systems is the possibility of false alarms due to poor or too high forecasts.
III. Flood prevention, safety, and mitigation require a very good mix of structural, preventive, and practical measures in all flood situations.
IV. Floods occur when soil becomes saturated and its infiltration capacity is zero.
V. Project management and other government institutions of Nigeria should collaborate to control the hazards of flooding.
VI. Maintenance and improvement of current infrastructure are very important when dealing with flooding problems.
VII. Taking Preventive measures for flooding hazards is inevitable to overcome flood management issues.

Of the four themes selected to conduct the survey, the results from the distribution of the questionnaire point to three themes: Theme 1, Theme 2, and Theme 4, which are the most important for combating flooding in the region. This is because points I and II reflect the ideas portrayed by Theme 1. Points III and VII reflect the ideas of Theme 2, while point VI reflects the ideas of Theme 4.

5. Discussion and Conclusions

Emphasizing the need to provide a coordinated flood management strategy in the country and avoid acting in an isolated way when it occurs, improving the attitude of flood control during floods, and controlling floods with comprehensive analysis are among the

main purposes of the current study. In order to develop an effective project management strategy for urban flood disaster prevention in Edo State capital, Nigeria, interviews of key selected stakeholders were conducted to develop and suggest four themes as the most important strategies to implement productive project management procedures when combating flooding in the area. The themes emphasize establishing accurate flood warning systems to ensure timely response to flooding. In addition, flood prevention through using the building resilient infrastructure and communities program was seen as an important strategy to adopt. A resilient infrastructure includes the construction of dams, water treatment plants, and proper drainage systems. Dams are considered a resilient infrastructure and would be important in this area, and constant channeling of water from flooding to these water bodies could lead to even greater flooding caused by the overflowing of rivers to land. Policies that require proper land assessment before the construction of buildings and houses should be established. All these policies would work towards the common goal of fighting discriminatory use of land.

Strategic implementation of a flood emergency plan through sustainability is also crucial in this regard. It is considered one of the most important indicators for the purpose of this study. Plans to respond to floods in due time should be made at national and local levels and should be maintained in operational status everywhere flooding might occur. These plans must cover crisis management before, during, and after the occurrence of flooding.

Confinement plans should also be prepared beforehand for every floodplain basin in order to deal with any potential breach in any of the already established defense mechanisms. These plans would help deal with the spreading of the water across the flood plain either by retention or by control of flow. Evacuation plans should also be made to ensure the protection of lives and properties in case of any flood emergency. Finally, maintenance and sustainability are very important to any project. To this end, organizations should be set up or established strictly for the maintenance of already established structures and defense mechanisms. The employees of these organizations should be properly trained and well-maintained in order to ensure an effective organization of flood emergency operations.

In summary, in order to implement efficient project management strategies, countries and regions involved in flood disasters must consider the strategies from a holistic point of view. It means they have policies that cover all the management areas, namely integration, scope, time, cost, quality, communication, human resource, risk, procurement, and stakeholder management. If the related functional areas work in isolation, we cannot claim there is project management in the organization. The obtained themes present the importance of all the named management areas. They help the region to prevent and control flooding and, when it happens, decrease the negative impacts in practice.

6. Recommendation, Limitations, and Future Research

Flooding in Nigeria is largely caused by humans and worsened by human–nature interactions. Flooding is exacerbated by inadequate or non-existent drainage systems. Many neighborhoods lack a drainage infrastructure and depend on natural drainage ditches. Increased urbanization also means that more places are created with concrete, which cannot absorb water and so increases runoff. Another recognized reason is poor waste management. Flooding is exacerbated by citizens' bad attitudes toward garbage disposal and local authorities' failure to provide waste disposal services.

The absence of adequate legal and regulatory frameworks reflects the low priority accorded to controlling and managing floods in Nigeria. As a result, combining flood risk management with spatial design is the way to go. Historically, Nigeria has prioritized post-disaster flood response above flood management. Flood risk reduction and mitigation is now a national priority on the Nigerian government's disaster risk management agenda. The government does not lack research institutes and entities capable of developing a flood risk management plan. For instance, the National Emergency Management Agency has a planning section that works with flood data using a geographic information system.

Incidentally, there is still no efficient national early warning system for floods at the federal, state, and municipal levels. The Nigerian Meteorological Agency, for its part, forecasts seasonal rainfall, but communication remains a challenge. Integration and coordination are insufficient among current government organizations, which often carry out flood control initiatives without communicating with one another.

The government may continue to spend heavily on flood defenses that do not prevent floods, resulting in insufficient funding to deal with the aftermath. All players must be reoriented and engaged, and the boundaries of engineering techniques must be understood [1]. This should also entail marketing the advantages of mainstreaming resilience beyond the catastrophe management that underpins the new techniques [4]. This interaction should begin with an awareness of the elements behind the causes of flooding in Nigerian cities, as well as an appreciation of the uncertainty surrounding the causes of flooding. Green infrastructure and sustainable urban planning might potentially be linked with information and communication technology techniques. When flooding begins, citizens may utilize these to contact the appropriate authorities.

The current study, similar to other studies, has its limitations. The limitations include the small group of participants and stakeholders, which was raised due to the related organization selected as the case study; indeed, it only involved organizations in Edo State capital too. In addition, while there are many countries suffering from flood disasters in Africa, not just in Nigeria and in the small area where the study was conducted. In addition, more than the interviews, employing document analysis, or any previously published data could be helpful to obtain the themes.

This study has revealed and contributed to project management's body of knowledge about the structural and non-structural adaptive governance components that are critical to the successful and sustainable project management delivery of flood prevention projects in do State Capital and Nigeria in general. However, further research is needed on a number of critical issues (not emphasized in this project) such as financial mismanagement and efficient communication, and how they may affect the efficacy of flood prevention projects. Furthermore, research toward globally accepted criteria for successful flood projects will be necessary.

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