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FuLafia

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Agricultural Waste Utilization; Awareness, Perception and Practices in Kuje Area Council of Abuja, Nigeria

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ABSTRACT

This research investigates the awareness, perception and practices of farmers on agricultural waste utilization in the study area. The non-utilization of these agricultural waste is capable of posing threats to mans' environment and public health. Survey research design was adopted and the foremost instrument used for data collection was questionnaire. A total of seventy eight respondents were sampled; one per village in the entire Wards of Kuje Area Council. Cross tabulation in quantitative research technique was used for analysis in the study. The findings revealed that 71.8% of the respondents are not at all aware of the modern ways of wastes utilization, 12.8% are only little informed, 15.4% are moderately informed, while 0.0% are neither well informed nor very well informed. In furtherance, all the farmers think, know and practice as per utilizing agricultural wastes are; burning the waste by (79.0%), dumping the waste products into water ways (76.3%), leaving the waste products on farm sites (73.5%), selling to those who ask for it (56.7%), feeding of animals (40.3%), composting (18.2%), and turning into other useful ***forms (8.0%*** *respondents****).*** *These processed facts above showed that there is poor environmental awareness looking at the perceptions and practices of the farmers. It is therefore recommended that; the Kuje Area Council should endeavour to carry out a periodic enlightenment programs for farmers on global and modern agricultural wastes utilization.*

KEY WORDS: agricultural-waste, utilization; awareness, perception, and practices.

1.1 INTRODUCTION

The Sustainable Development Goals Report (2023): Special edition provides a powerful call to action, presenting a candid assessment of the SDGs base on the latest data and estimates. While highlighting the existing gaps and urging the world to redouble its efforts, the report also emphasizes the immense potential for success through strong political will and the utilization of available technologies, resources, and knowledge. Nigeria has not keyed into this vision in terms of modern utilizations of agricultural wastes which in turn have the advantages of economic growth as well as enhancing the environment. The SDGs vision believes that together, the global community can reignite progress towards achieving the SDGs and create a brighter future for all.

According to the report, the impacts of the climate crisis amongst other factors, have revealed weaknesses and hindered progress towards the Goals. The report further warns that while lack of progress is universal, it is the world's poorest and most vulnerable who are experiencing the worst effects of

these unprecedented global challenges. It also points out areas that need urgent action to rescue the SDGs and deliver meaningful progress for people and the planet by 2030. Just as in the words of the United Nations Secretary-General, António (2023), he said; Unless we act now, the 2030 Agenda will become an epitaph for a world that might have been. To help provide a working guide for action in Nigeria, the assessment of agricultural waste utilization; awareness, perception and practices in Kuje Area Council, FCT Abuja, Nigeria, have been conducted. The study is to provide relevant information to all stakeholders it concern for policy making and implementations of strategies toward achieving the 20230 sustainable development goals.

Generally, nations work to improve their citizens' quality of life and economic development through growing various economic sectors and obtaining knowledge that will support sustainable development (McLamb, 2011). The nation of Nigeria depends heavily on agriculture to increase its Gross Domestic Product (GDP). One of man's earliest alleged jobs is agriculture. Agricultural wastes, in the opinion of Obi *et al., (*2016), are leftovers from the production and processing of raw agricultural products such fruits, vegetables, meat, poultry, dairy products, and crops. They are the non-product outputs of production and processing of agricultural products that may contain materials that can benefit man. It can also be defined as the unwanted or unsalable materials produced wholly from agricultural operations directly related to the growing of crops or raising of animals for the primary purpose of making a profit or for a livelihood. Their composition will depend on the system and type of agricultural activities and they can be in the form of liquids, slurries, or solids.

There is likely to be a significant increase in agricultural wastes globally if developing countries continue to intensify farming systems. Agricultural wastes have become an increasing concern in recent years as they cause significant environmental problems. According to Sadh*, et al.,* (2018), agricultural-based industries produced the vast amount of residues every year. If these residues are released to the environment without proper disposal procedure they may cause environmental pollution leading to harmful effect on human and animal health. Most of the agro-industrial wastes are untreated and underutilized, and are disposed of either by burning, dumping or unplanned land filling. These untreated wastes create different problems leading to climate change effects by increasing a number of greenhouse gases. As countries around the world continue to advance economically, they put a strain on the ability of the natural environment to absorb the high level of pollutants that are created. However, with increase in the use of technology through the '3R' strategy of waste management, they may also serve several beneficial purposes, for example as feed stock, energy production, and dye adsorption, etcetera.

One major difference between developed and developing nations is in the use of knowledge to drive the economy. Appropriate knowledge on farm wastes handling and utilization can eradicate or reduce to the barest minimum the inherent problems on the environment as well as put inplace a sustainable environmental management process. Keen, *et al.,* (2015) while buttressing the need for appropriate knowledge of waste handling and utilization opined that in the last fifty years environmental management has become integral to a wide range of community, professional and government activities. They

reiterated that social change is needed if society is going to adequately address the environmental challenges threatening human societies and the global economic systems on which they rely.

Furthermore, caring for the planet takes a community as all members of the society are needed to nurture a healthy environment. As environmental problems mounted, environmental protection agencies were created and environmental legislation was slowly introduced into a number of countries. In Nigeria, before the establishment of Federal Environmental Protection Agency (FEPA) Act No 58 of 1988, there was no National comprehensive statutory law that could be easily addressed as "National Environmental Law", although there were on ground various statutes on environment. The history of environmental law started with legal enactments designed to consciously preserve the environment, for its own sake or human enjoyment.

While the modern history of environmental law is one of continuing controversy, by the end of the twentieth century, environmental law had been established as a component of the legal landscape in all developed nations of the world, many developing ones, and the larger project of international law. It has been acknowledged that a massive pollution of the environment through damage of land, air and water by industrial waste, chemical, oil, the dumping of garbage, the indiscriminate use of pesticides and by other means threatens the very conditioning of social survival.

The agricultural straw and livestock excrement are considered to be potential resources. Improper disposition of agricultural wastes not only result in environmental pollution, but also waste a lot of valuable biomass resources. The recycling and utilization of agricultural wastes are considered to be the important step in environmental protection, energy structure and agricultural development. The main challenge that rouses the researchers' interest for this study were the littering of the Environment with Agricultural-Crop Waste; the Farmers Knowledge on the utilization of the waste products; and, the thinking of the farmers and their practices. Concerns and questions asked on this study were that whether they citizens are conversant with the different methods of utilizing agricultural wastes; and what were the agricultural practices and the waste types they generate during crops harvesting and processing at different locations in the study area.

The above questions were addressed through an evaluation of the farmers' different method(s) of agricultural waste utilization; awareness and perception of the farmers on agricultural wastes management. The study also examined the agricultural practices and the waste types generate during crops harvesting and processing at different locations in the study area.

2.0 LITERATURE REVIEW

2.1 Agricultural Waste and Utilization

Agriculture refers to the science, art, or practice of cultivating the soil, producing crops, and raising livestock (Agamuthu, 2009). Both the livestock and crops production have significant impacts to the environment. For instance, the wastes generated from crop have a good potential to be converted to energy. The waste produced from animal or from crop residues are called biomass (any organic matter such as wood e.g. logs, chips, barks and sawdust, crops e.g. corncobs, fruit pits, seaweed, animal wastes that can be used as energy source) Food and Agricultural Organisation (FAO) of the United Nations (2018). They

have interdependent relationship with the ecosystem from production to disposal and have physicochemical properties. In the past this biomass and agricultural waste were either burnt or naturally converted into organic fertilizer under favourable condition. Like other facets of developmental activities, agriculture too has been a major source of environmental pollution and waste generation Environmental Protection Agency (FEPA) Act (1988).

According to OECD (2007), Agricultural waste refers to waste produced as a result of various agricultural operations. It includes manure and other wastes from farms, poultry houses and slaughterhouses; harvest waste; fertilizer run- off from fields; pesticides that enter into water, air or soils; and salt and silt drained from fields(OECD, 2001).In this context, this study provides an overview of the complexities of agricultural waste, their impacts and possible options to manage them. A significant constraint encountered in managing agricultural waste is lack of data pertaining to different geographical regions. Therefore, there is an urgent need to formulate a tangible mechanism to create a database on the quantity, composition and characteristics of agro wastes.

Agricultural wastes are residues from the growing and processing of raw agricultural products. They are non-product outputs of production and processing and may contain materials that can benefit man. United Nations (Wikipedia, updated 2012) defines agricultural waste as waste produced as a result of various agricultural operations. It includes manure and other wastes from farms, poultry houses and slaughterhouses; harvest waste; fertilizer run-off from fields; pesticides that enter into water, air or soils; and salt and silt drained from fields. This definition drives home the fact that the quantity and composition of agricultural waste are dictated by the geographical and cultural aspects of a country or a region and also the extent of land used for agriculture. These wastes when managed properly through the application of the knowledge of agricultural waste management such as the "3Rs" can be transformed into beneficial materials for human and agricultural usage. Wastes are generated throughout the agricultural value chain. While tropical climate is favourable for growing crops, it also supports the generation and development of insects and weeds. This situation creates a high demand for pesticides in order to kill insects and protect against the spread of epidemic diseases; this need often lead to the abuse of pesticides by farmers. After using pesticides, most of the bottles and packages holding these pesticides are found to be thrown into fields or ponds. According to an estimate made by the Plant Protection Department (PPD), about 1.8% of the chemicals remain in their packaging. These wastes have the potential to cause unpredictable environmental consequences such as food poisoning, unsafe food hygiene and contaminated farmland due to their potentially lasting and toxic chemicals. In addition to this, existing stagnant or unused pesticides and pesticide packages with residue from the original contents poses serious environmental consequence in that they could be stored or buried in the wrong way which may leak or enter the environment through osmosis and thereby affecting the environment. In agricultural production for example, fertilizers play an important role in maintaining the productivity and quality of plants. Inorganic fertilizer is inexpensive and characterized by high productivity. However, many farmers apply more fertilizer to their crops than the amount needed by the plants (Hai & Tuyet, 2010). The serious

consequence of such an excessive application of fertilizer is that it is used to the point of abuse in order to increase the annual agricultural output. The rate of absorption of such fertilizer compounds (nitrogen, phosphorus, and potassium) varies depending on the land characteristics, plant types, and method of fertilization (Thao, 2003).Among the fertilizer excess, a portion is retained in the soil, a portion enters ponds, lakes and/or rivers as a result of either surface runoff or the irrigation system adopted, which results in the pollution of surface water; a portion enters the ground water, and a portion evaporates or becomes denigrate, causing air pollution.

Proper waste utilization will assist in developing our agricultural sector and provide viable resources for other sectors. Agricultural residues are rich in bioactive compounds. These residues can be used as an alternate source for the production of different products like biogas, bio-fuel, and mushroom as the raw material in various researches and industries. The use of agro-industrial wastes as raw materials can help to reduce the production cost and also reduce the pollution load from the environment. In a study carried out in Egypt by Sadh et al (2018), it was found that Agricultural wastes in Egypt range from 30-35 million tons a year of which only 7 million tons and 4 million tons are utilized as animal feeds and organic manure respectively. These resulting crop residues after harvesting in the farm are characterized as coarse plant by-products, chemically low in protein and fat contents. Also they are high in lignin and cellulous contents.

The researchers however, observed that sometimes the problem of agricultural wastes becomes very obvious and aggregated after the harvesting. This is because the farmers are in a hurry to re-cultivate their lands. Therefore getting rid of the wastes has his highest priorities, and this he does usually by burning. Burning is not only considered to be an economic loss but also has harmful effects on the environment. There is the emission of poisons gases to the air as well as the killing of soil microbes as a result of burning. In addition, storing these wastes in the field after compacting can provide suitable environment for reproduction and growth of pests and pathogens that will attack new crops. Therefore, utilization of agricultural wastes in any other environmentally friendly way is very important. The work further opined that the wastes can be utilized in the following ways:

a) **Compost production by fermenting the waste.** This will help in re-fertilizing the soil organically.
b) **Animal Feed Production:** By treating some wastes such as rice straw by urea or ammonia to increase its nitrogen content hence its nutritional value.
c) **Food Production:** This can be done by growing mushroom on agricultural wastes such as rice straw as a substrate. This means the conversion of wastes to economic, nutritional human food. Growing vegetables on rice straw compacted bales is good in areas where soil disease and salinity are constrains. These findings are collaborated by the following works as current agricultural wastes utilization practices.

2.2 Agricultural Waste Management System (AWMS)

An Agricultural Waste Management System (AWMS), according to (Fabian *et al.,*1993)

AWMS is a "planned system in which all necessary components are installed and managed to control and use by-products of agricultural production in a manner that sustains or enhances the quality of air, water, soil, plant, and animal resources". The concept of minimizing waste reduces the quantity and ill-effects of waste generation by reducing quantity of wastes, reusing the waste products with simple treatments and recycling the wastes by using it as resources to produce same or modified products. This is usually referred to as '3R'. Some waste products can be consumed as resources for production of different goods or the same product, meaning recycling the same resource. When wastes are reused time and again, it offsets harvesting of new similar or same products. This saves fresh resources exploitation and reduces waste generation. All in all, the 3Rs individually or collectively save fresh resources exploitation, add value to the already exploited resources and very importantly minimizes the waste quantity and its ill effects.

Recently, Agricultural Waste Management (AWM) for ecological agriculture and sustainable development has become an issue of concern for policy makers. The usual approach to agricultural waste management has been to discharge to the environment with or without treatment. There is need to consider wastes as potential resources rather than undesirable and unwanted, to avoid contamination of air, water, and land resources, and to avoid transmission of hazardous materials. This will require better use of technology and incentives, a change in philosophy and attitudes, and better approaches to agricultural waste management.

In recent times, there are cases of improper solid waste management activities that dominate the developing world. This did not exclude agronomical agricultural waste seems being one of the major culprit in the underdeveloped world. As noted by Majale (2011), low levels of solid waste collection in developing countries have led to people adapting measurers such as burning and open dumping as a way of doing away with waste. These measures are usually associated with some environmental health problems such as respiratory diseases due to the smoke that comes out of the burning waste, environmental (air, ground and surface water and soil) pollution among other health related problems to the environment.

3.0 INTRODUCTION

In Nigeria, millions of Naira is lost due to ignorance on the inherent wealth in agricultural wastes. The instinct of this research was derived from a view that if the populace can explore the resource value in agro-wastes and the appropriate technologies are put in place to recycle them, there will be job creation leading to wealth generation, cleaner environment and increased GDP of the Nation. This chapter focuses on research design, study area, study sample and sampling techniques. Detailed procedures for data collection, research instrument and data analysis are discussed.

3.1 Materials and Methods

Primary and secondary data were collected through a self-administered questionnaire and interview methods. They practicing crop farmers' resident (both as large and small scale farmers) in the ten (10) Wards of the Kuje Area Council, FCT were made the targeted population for the study where both qualitative and quantitative data were sourced.

The population of farmers in Kuje Area Council is unrecorded. In the attempt to make the work easier, the researcher had to take the statistics of all villages per ward and get the contact of one serious farmer from each of the villages as nominated by the farmers in such an area to respond to the questions on the questionnaire. Below is a table showing the number of sampled respondents per ward.

Table 3.1: Table showing the number of respondents per ward

S/N	NAME OF WARD	STRATA OF WARD	RANDOMLY SELECTED NUMBER OF VILLAGES	NUMBER OF RESPONDENTS PER WARD
1	Kuje Central	Large Scale farming/ processing points	8	08
2	Kulo/ Rubochi	Small Scale farming	20	20
3	Kwaku	Large Scale farming	14	14
4	Kwali Central	Large Scale farming/ Processing points	18	18
5	Chibiri	Large Scale farming	10	10
6	Gwargwada	Small Scale farming	08	08
	TOTAL		78	78

3.2 Methods of Data Collection

The collection of appropriate data for this Study was done using techniques such as:

Observation: Here, the researcher watched the farmers and the technique they used for the utilization of farm waste generated.

Questionnaire: A Likert type scale structured questionnaire was used. Questions were asked and a number of response options were supplied from where respondents picked anyone that best suited their responses. A face to face administration of the Questionnaire was carried out.

Interview: Information on the Questionnaire was elicited through the use of Interview for respondents who were not literate enough to answer the questions on the questionnaire. The researcher engaged the services of a literate indigene who understands the language of the environment to assist on the oral means of data collection.

3.3 Technique for Data Analysis

Descriptive statistics was used basically in analyzing the data collected with the aid of SPSS Package, Version 11. Cross tabulation quantitative research technique with graphs

and charts were used for the analysis and presentation of the result.

4.0 DATA ANALYSIS AND RESULTS PRESENTATIONS

In this Chapter, data collected through the items on the Questionnaire are presented and analyzed to include overview of findings from the Demographic data and find answers to the Research questions.

4.1 Data Analysis and Presentation of the Respondent Bio-Data:

4.1.1 Location and Gender of Respondents

Table 4.1: Table showing the Location and Gender of Respondents

S/N	LOCATION	FREQUENCY/ PERCENTAGE OF MALE RESPONDENTS	FREQUENCY/ PERCENTAGE OF FEMALE RESPONDENTS	NUMBER OF RESPONDENTS
1	Kuje Central	06 (75.0%)	02 (25.0%)	08(100.0%)
2	Kulo-Rubochi	14 (70.0%)	06 (30.0%)	20(100.0%)
3	Kwaku	10 (71.4%)	04 (28.6%)	14(100.0%)
4	Kwali Central	08 (44.4%)	10 (55.6%)	18(100.0%)
5	Chibiri	10 (100.0%)	0 (0.0%)	10(100.0%)
6	Gwargwada	08 (100.0%)	0 (0.0%)	08(100.0%)
	TOTAL	**56 (71.8%)**	**22 (28.2%)**	**78(100.0%)**

Analysis of data collected shows that there are 75% male respondents and 25% females in Kuje Central. In Kulo, there are 70% males and 30% female respondents. In Kwaku, there are 71.4% males and 28.6% female respondents. In Kwali Central, there are 44.4% males and 55.6% female respondents. In Chibiri, there are 100% male respondents and 0% female respondents. In Gwargwada, there 100% male respondents and 0% female respondents. However, across the locations, there are 71.8% male respondents and 28.2% female respondents. This shows that the number of female farmers in the study area are trice lesser than the number of male famers.

4.1.2 Location and Age of Respondents

Table 4.2: Table showing the Location and age of Respondents

S/N	LOCATION	16 -25	26 – 35	36 -45	46 AND ABOVE	NUMBER OF RESPONDENTS
1	Kuje Central	06(75.0%)	02(25.0%)	0(0.0%)	0(0.0%)	08(100.0%)
2	Kulo-Rubochi	04(20.0%)	04(20.0%)	08(40.0%)	04(20.0%)	20(100.0%)
3	Kwaku	0(0.0%)	04(28.6%)	04(28.6%)	06(42.8%)	14(100.0%)
4	Kwali Central	06(33.3%)	12(66.7%)	0(0.0%)	0(0.0%)	18(100.0%)
5	Chibiri	04(40.0%)	06(60.0%)	0(0.0%)	0(0.0%)	10(100.0%)
6	Gwargwada	0(0.0%)	0(0.0%)	04(50.0%)	04(50.0%)	08(100.0%)
	TOTAL	**20(25.6%)**	**28(35.9%)**	**16(20.5%)**	**14(17.9%)**	**78(100.0%)**

Information from the analysis above presented the highest percentage of respondents per locations indicating the age range that are actively into farming in the study area. The results shows that 75% of respondents are within the age range of 16 – 25 years in Kuje Central, in Kulo-Rubochi 40% are within the age range of 36 -45 years, in Kwaku, 42.8% are within the age range of 46 – above, in Kwali Central, 66.7% are within the range of 26 – 35 years, in Chibiri, 60% are within the age range of 26 – 35 years and in Gwargwada, 50% are within the age ranges of 36 – 45years and 45 –above ranges respectively.

On the average, this shows that 25.6%of the respondents are within the age range of 16 – 25 years, 35.9% are within the age range of 26 – 35 years, 20.5% are within the age range of 36 – 45 years and 17.9% are within the age range of 45 years – above. This implies that between the ages of 26 and 35 years (the strong youthful age range) are the highest percentage into farming in the study area.

4.1.3 Location and Marital Status of Respondents

Table 4.3: Table showing Location and marital status of Respondents

S/N	LOCATION	SINGLE	MARRIED	TOTAL
1	Kuje Central	06(75.0%)	02(25.0%)	08(100.0%)
2	Kulo-Rubochi	08(40.0%)	12(60.0%)	20(100.0%)
3	Kwaku	0(0.0%)	14(100.0%)	14(100.0%)
4	Kwali Central	04(22.2%)	14(77.8%)	18(100.0%)
5	Chibiri	06(60.0%)	04(40.0%)	10(100.0%)
6	Gwargwada	0(0.0%)	08(100.0%)	08(100.0%)
	TOTAL	**24(30.8%)**	**54(69.2%)**	**78(100.0%)**

Information from the data collected shows that in Kuje Central, 75% of the respondents are single while 25% are married. In Kulo, 40% are single, while 60% are married. In Kwaku, 100% of the respondents are married. In Kwali, 22.2% are single, while77.8% are married. In Chibiri, 60% are single, while 40% are married. In Gwargwada, 100% of the respondents are married.

On the average, 30.8% of the respondents are Single, while 69.2% of the respondents (farmers) are married. It also explains that the family responsibility made them to actively maintain farming business to support their families with food and cash derive from the business. This implies that the respondents are not really into farming for real money making but rather for their family upkeep. This is back up with the farmers' standard of living that seems to be low as observed by the researcher during data collection period in the very capital city of Nigeria.

4.1.4 Location and Education of Respondents

Table 4.4: Table showing Location and Education of Respondents

S/N	LOCATION	UNCERTI-FICATED	FSLC	JSCE	SSCE	TERTIA-RY EDUCA-TION	TOTAL
1	Kuje Central	02(25.0%)	04(50.0%)	02(25.0%)	0(0.0%)	0(0.0%)	08(100.0%)
2	Kulo-Rubochi	10(50.0%)	06(30.0%)	04(20.0%)	0(0.0%)	0(0.0%)	20(100.0%)
3	Kwaku	10(71.4%)	02(14.3%)	02(14.3%)	0(0.0%)	0(0.0%)	14(100.0%)
4	Kwali Central	08(44.4%)	02(11.1%)	04(22.2%)	04(22.2%)	0(0.0%)	18(100.0%)
5	Chibiri	0(0.0%)	0(0.0%)	0(0.0%)	04(40.0%)	06(60.0%)	10(100.0%)
6	Gwargwada	06(75.0%)	02(25.0%)	0(0.0%)	0(0.0%)	0(0.0%)	08(100.0%)
	TOTAL	36 (46.2%)	16 (20.5%)	12 15.4%	08 10.3%	06 7.7%	78 (100%)

Analysis of data for Location – Education Cross Tabulation shows that in Kuje Central 25% of the respondents are Un-certificated (UC), 50% have First School Leaving Certificate (FSLC), 25%have obtained Junior School Certificate in Education (JSCE), while no respondents had neither Senior Secondary Certificate in Education (SSCE) or Tertiary Education (TE) certification.

In Kulo Rubochi, 50% of the respondents are UC, 30% have obtained the FSLC, 20% have obtained the JSCE, while no respondents have obtained the SSCE or TE certification.

In Kwaku, 71.4% of the respondents are UC, 14.3% have obtained the FSLC, 14.3% have obtained the JSCE, while no respondents had neither the SSCE nor TE certification.

In Kwali Central location, 44.4% of the respondents are UC, 11.1% have obtained the FSLC, 22.2% have obtained the JSCE, 22.2% have obtained the SSCE, while no respondent has the TE certification.

In Chibiri location, 0.0% of the respondents are UC, have no FSLC and JSCE. 40% of the respondents have obtained the SSCE, while 60% have obtained the TE certification.

In Gwargwada location, 75% of the respondents are UC, 25% have obtained the FSLC, while 0.0% do not have the JSCE, SSCE, nor TE certification.

On the average however in all the locations, 46.2% of the respondents are UC, 20.5% have obtained the FSLC, 15.4% have obtained the JSCE, 10.3% have obtained the SSCE, while 7.7% have the tertiary education certification. This entails that majority of farmers in Kuje area council of the Nigeria FCT are people without western education. Meaning issue of agricultural waste utilization is a subject of interest for research which this study aimed at assessing.

4.1.5 Location and Occupation of Respondents

Table 4.5: Table showing the Location and Occupation of Respondents

S/N	LOCATION	SELF EMPLOYED FARMER	EMPLOYED BY OTHERS	TOTAL
1	Kuje Central	02 (25.0%)	06 (75.0%)	08 (100.0%)
2	Kulo-Rubochi	20 (100.0%)	0 (0.0%)	20 (100.0%)
3	Kwaku	14 (100.0%)	0 (0.0%)	14 (100.0%)
4	Kwali Central	02 (11.1%)	16 (88.9%)	18 (100.0%)
5	Chibiri	0 (0.0%)	10 (100.0%)	10 (100.0%)
6	Gwargwada	08 (100.0%)	0 (0.0%)	08 (100.0%)
	TOTAL	**46 (59.0%)**	**32 (41.0%)**	**78 (100.0%)**

Analysis of the location-occupation Cross tabulation of respondents shows that in Kuje Central location, 25% of the respondents are self - employed i.e working for themselves, while 75.0% are employed by others. In Kulo-Rubochi and Kwaku locations, 100% of the respondents are self-employed while 0.0% is employed by others respectively. In Kwali Central, 11.1% of the respondents are self - employed while 88.9% are employed by others. In Chibiri, no respondent is self-employed, while 100.0% of the respondents are employed by others. In Gwargwada, 100% of the respondents are self-employed. No respondent is employed by others. In summary, 59.0% of the respondents are self – employed while 41.0% are employed by others.

4.1.6 Location and Farm Size of Respondents

Table 4.6: Table showing the Location and Farm size of the Respondents

S/N	LOCATION	LESS THAN 2 HECTARES	2 – 4 HECTARES	ABOVE 6 HECTARES	TOTAL
1	Kuje Central	08 (100.0%)	0 (0.0%)	0 (0.0%)	08 (100.0%)
2	Kulo-Rubochi	16 (80.0%)	04 (20.0%)	0 (0.0%)	20 (100.0%)
3	Kwaku	12 (85.7%)	02 (14.3%)	0 (0.0%)	14 (100.0%)
4	Kwali Central	18 (100%)	0 (0.0%)	0 (0.0%)	18 (100.0%)
5	Chibiri	0 (0.0%)	0 (0.0%)	10 (100.0%)	10 (100.0%)
6	Gwargwada	08 (100.0%)	0 (0.0%)	0 (0.0%)	08 (100.0%)
	TOTAL	**62 (79.5%)**	**06 (7.7%)**	**10 (12.8%)**	**78 (100.0%)**

Farmlands less than two hectares are classified as small, two to four hectares as semi-medium, four to six hectares as medium and above six hectares as large. Information from the location, farm size Cross tabulation shows that 100.0% of the farms are less than two hectares, in Kulo-Rubochi, 80.0% of the farms are less than two hectares, while 20.0% are between two to four hectares in size. In Kwaku location, 85.7% of the farms are less than two hectares, while 14.3% are between two to four hectares. In Kwali Central, 100.0% of the farms are less than two hectares. In Chibiri, 100.0% of the farms are between four to six hectares while in Gwargwada, 100.0% of the farmlands are between two to four hectares.

In all, 79.5% of the farmlands are less than two hectares, 7.7% are between two to four

hectares, while 12.8% are between four to six hectares. This means that there are no large farmers in the Study area; and, food security issue will be a matter to contain within the FCT.

4.1.7 Location and Income of Respondents

Table 4.7: Table showing the Location and Income of Respondents

S/N	LOCATION	₦11,000 - ₦25,000	₦26,000 AND ABOVE	TOTAL
1	Kuje Central	02 (25.0%)	06 (75.0%)	08 (100.0%)
2	Kulo-Rubochi	08 (40.0%)	12 (60.0%)	20 (100.0%)
3	Kwaku	06 (42.9%)	08 (57.1%)	14 (100.0%)
4	Kwali Central	02 ((11.1%)	16 (88.9%)	18 (100.0%)
5	Chibiri	0 (0.0%)	10 (100.0%)	10 (100.0%)
6	Gwargwada	06 (75.0%)	02 (25.0%)	08 (100.0%)
	TOTAL	**24 (30.8%)**	**54 (69.2%)**	**78 (100.0%)**

Analysis of the data obtained shows that in Kuje Central, 25.0% of the respondents earn between eleven thousand to twenty five thousand naira income from their produce per season, while 75.0% earn twenty six thousand naira and above. In Kulo Rubochi, 40.0% of the respondents earn between eleven thousand to twenty five thousand naira while 60.0% earn above twenty six thousand naira. In Kwaku, 42.9% of the respondents earn between eleven thousand and twenty five thousand naira, while 57.1% earn above twenty six thousand naira.

4.2: Data Analysis and Presentations of the Research Questions and Objectives

Below are the two objectives to the study being achieved and also serves as answers to the two research questions in this research. Majorly, farmer's means of agricultural waste utilization in this study is centred on the farmer's ***perception***, ***awareness*** and ***practices***.

4.2.1 Methods of agricultural waste utilization; perception and awareness

Objective one: Evaluation of farmers different means of agricultural waste utilization; perception and awareness on agricultural wastes in the study area.

Table 4.8: Table showing the Location and method of agricultural waste utilization; perception and awareness by Respondent

S/N	LOCATION	NOT AT ALL INFORMED	ONLY LITTLE INFORMED	MODERATELY INFORMED	TOTAL
1	Kuje Central	06(75.0%)	02(25.0%)	0(0.0%)	08(100.0%)
2	Kulo–Rubochi	14(70.0%)	04(20.0%)	02(10.0%)	20(100.0%)
3	Kwaku	14(100.0%)	0(0.0%)	0(0.0%)	14(100.0%)
4	Kwali Central	14(77.8%)	02(22.2%)	0(0.0%)	18(100.0%)
5	Chibiri	0(0.0%)	0(0.0%)	10(100.0%)	10(100.0%)
6	Gwargwada	08(100.0%)	0(0.0%)	0(0.0%)	08(100.0%)
	TOTAL	**56(71.8%)**	**10(12.8%)**	**12(15.4%)**	**78(100.0%)**

Analysis of the results obtained on the location – waste utilization methods cross tabulation shows that in Kuje Central location, 75.0% of the respondents are not at all informed about the methods of waste utilization, 25.0% are only little informed, 0.0% are neither moderately, well informed nor very well informed respectively. In Kulo-Rubochi, 70.0% of the respondents are not at all informed, 20.0% are only little informed, 10.0% are moderately informed while 0.0% are neither well informed nor very well informed respectively. In Kwaku, 100.0% of the respondents are not at all informed. There are no responses for only little informed, moderately informed, well informed and very well informed respectively. In the Kwali Central, 77.8% of the respondents are not at all informed, 22.2% are only little informed, 10.0% are moderately informed, while there are no responses for well informed and very well informed respectively. In Chibiri, 100.0% of the respondents are moderately informed, while there are no responses for not at all informed, only little informed, well informed and very well informed respectively. In general, 71.8% of the respondents across the locations are not at all informed, 12.8% are only little informed, 15.4% are moderately informed, while 0.0% are neither well informed nor very well informed. The question item 10 of the questionnaire was an open ended item where the responses were qualitative in nature. The researcher compiled and summarises the responses which explains that they farmers believe after harvesting their farm produce, all other products becomes a waste. Such a perception seems to be a norm to a larger percentage of the respondents except few that are using the waste as fuel for cooking and partly rearing of animals from some of the crops waste; especially waste from guinea corn.

4.2.2 Agricultural Practice /Type of Farming and Waste Generated

Objective two: Examining the agricultural practices and the waste types generated during harvesting and processing at different locations in the study area.

Table 4.9: Table showing Location and the type of farming practised by the Respondent

S/N	LOCATION	SUBSISTENCE	COMMERCIAL	TOTAL
1	Kuje Central	06 (75.0%)	02 (25.0%)	08 (100.0%)
2	Kulo-Rubochi	04 (20.0%)	16 (80.0%)	20 (100.0%)
3	Kwaku	08(57.1%)	06 (42.9%)	14 (100.0%)
4	Kwali Central	06(33.3%)	12 (66.7%)	18 (100.0%)
5	Chibiri	0 (0.0%)	10 (100.0%)	10 (100.0%)
6	Gwargwada	06 (75.0%)	02 (25.0%)	08 (100.0%)
	TOTAL	**30 (38.5%)**	**48 (61.5%)**	**78(100.0%)**

Information from the table showing the location and type of farming cross tabulation shows that in Kuje Central location, 75.0% of the respondents is engaged in subsistence type of farming, while 25.0% are engaged in commercial farming. In Kulo – Rubochi, 20.0% of the respondents are engaged in subsistence farming and 80.0% are engaged in commercial farming. In Kwaku, 57.1% of the respondents are engaged in subsistence farming and 42.9% are into commercial farming. In Kwali Central, 33.3% of the

respondents are into subsistence farming, while 66.7% are into commercial farming. In Chibiri, 100.0% of the respondents are engaged in commercial
farming and in Gwargwada, 75.0% are engaged in subsistence farming, while 25.0% of the respondents are engaged in commercial farming. In general therefore, 38.5% of the respondents are engaged in subsistence farming, while 61.5% are engaged in commercial farming.

Table 4.10: Table showing the location and the categories of wastes generated during harvesting and processing activities by the Respondents

S/N	Location	Corn Shaft/Stalk	Guinea Corn Shaft/Stalk	Melon Shell	Groundnut Shell	Plantain/Banana Leaves &Trunks	Total
1	Kuje Central	04(50.0%)	04 (50.0%)	0(0.0%)	0(0.0%)	0 (0.0%)	08(100.0%)
2	Kulo–Rubochi	04(20.0%)	04 (20.0%)	04(20.0%)	02(10.0%)	06 (30.0%)	20(100.0%)
3	Kwaku	04(28.6%)	02(14.3%)	02(14.3%)	02(14.3%)	04(28.6%)	14(100.0%)
4	Kwali Central	0(0.0%)	0(0.0%)	18(100.0%)	0(0.0%)	0(0.0%)	18(100.0%)
5	Chibiri	06(60.0%)	04(40.0%)	0(0.0%)	0(0.0%)	0(0.0%)	10(100.0%)
6	Gwargwada	02(25.0%)	02(25.0%)	02(25.0%)	0(0.0%)	02(25.0%)	08(100.0%)
	TOTAL	**20(25.6%)**	**16(20.5%)**	**26(33.3%)**	**04(5.1%)**	**12(15.4%)**	**78(100.0%)**

Analysis of the results obtained on the location-waste type generated cross tabulation shows that in Kuje Central, 50.0% of the waste types generated are corn shaft/stalk, and 50.0% are guinea corn shaft/stalk. In Kulo-Rubochi, 20.0% of the wastes types generated are corn shaft/stalk, 20.0% guinea corn shaft/stalk, 20.0% melon shell10.0% groundnut shell and 30.0% plantain/banana leaves/trunks. In Kwaku, wastes generated include 28.6% corn shaft/stalk, 14.3% guinea corn shaft/stalk, 14.3% melon shell, 14.3% groundnut shell, 28.6% plantain/banana leaves/trunks. In Kwali Central, waste generated include, 100.0% melon shell. In Chibiri, wastes generated include 60.0% corn shaft/ stalk, 40.0% guinea corn shaft/stalk while in Gwargwada, wastes generated include 25.0% corn shaft/stalk, 25.0% guinea corn shaft/stalk, 25.0% melon shell and 25.0% plantain/banana leaves/trunks. In general, 25.6% of corn shaft/stalk, 20.5% of guinea corn shaft/stalk, 33.3% of melon shell, 5.1% of groundnut shell and 15.4% of plantain/banana leaves/trunks wastes are generated across the study area.

4.3 Discussion of Findings

The following findings emerged from the study based on the data collected and analyzed.

On the educational background of the respondents, 46.2% of them don't have a basic education, 20.5% have obtained the First School Leaving Certificate (FSLC), 15.4% have the Junior Secondary Certificate in

Education (JSCE), 10.3% have obtained the Senior Secondary Certificate in Education (SSCE) and 7.7% have acquired a form of tertiary education. Those with tertiary education were found in Chibiri ward operating large mechanized farms. Findings show that 79.5% of farmlands size are less than two hectares, 7.7% are between two to four hectares while 12.8% are above six hectares per farmers respectively. The wastes generated from selected crops include 25.6% corn shafts/stalks, 20.5% guinea corn shafts/stalks, 33.3% melon shells, 5.1% groundnut shell and 15.4% plantain/banana leaves/trunks.

Findings from the knowledge of method(s) of utilization of the wastes generated (ie. Awareness findings) showed that 71.8% of the respondents were not at all informed about the modern methods of waste utilization. This may be as a result of the fact that most of the respondents had not attended any seminar or neither workshop on modern waste utilization strategies nor any form of western education had played a vital role on the farmers' awareness, perceptions and practices in the study area. With respect to the method of utilization of the waste generated in practice, 79.0% of the respondents affirm they burn the wastes, 18.2% of the wastes go into composting, 76.3% are dumped into water ways, 73.5% are left on the farm sites, 40.3% are used to feed animals, 56.7% are sold to those who ask for it and only 8.0% are turned into other useful forms.

It was also found that there are no cottage industries where these agricultural wastes can be turned into more useful forms in any of the communities in the study area. However, 100.0% of the respondents agree that establishment of cottage industries for agricultural wastes recycling can benefit their communities.

The findings of this study revealed that some agricultural wastes generated across the study area as articulated by the respondents are similar and in varying percentages. They include; corn shaft/stalk, guinea corn shaft/stalk, melon shell, groundnut shell, and plantain/banana leaves/trunks among others. This finding agrees with the Integrated Solid Waste Management's (ISWM) Framework definition of waste to be "any material that is no longer considered to be important to the owner in the present form/condition and the owner is willing to discard it. Furthermore, the finding aligns with Bringi (2011) explanation that waste generated in one place may significantly differ from that generated in another place due to factors such as geographic location, season of the year, frequency of collection, extent of salvage and recycling, legislation and the farmers kind of practices.

In the course of the study, the estimated size of agricultural wastes generated/farm cycle could not be quantified as majority of the respondents were uncertain about the quantity of waste they generate in a season since their concern is more on their crop outputs. This is in agreement to the findings of Obi *et. al*., (2016) who affirmed that estimates from agricultural wastes arising are rare as there are standards of measurement but they are generally thought of as contributing a significant proportion of the total waste matter. It is also noted that some of the wastes are generated from the processing points. However, the respondents agree that the major methods of utilizing these wastes in declining order include, burning, dumping into water ways, leaving on farm sites, selling to those who ask for it, composting and feeding animals. Turning into other useful forms, for example, using guinea corn stalks to build barns for storage and fences is another practise. This is in tandem with the

finding that majority of the respondents are uninformed and do not have adequate knowledge on how to turn agricultural waste to useable forms and so resort to practices that harm the environment and human health. The farmers seem not to be aware of any environmental laws ensuring that the use of appropriate technologies in agricultural waste management activities should be enforced.

However, it was found that 100.0% of the respondents have no enlightenments on proper waste utilization strategies as there are no organized seminars, workshops at their level. Obi *et al* (2016) opined that the single greatest constraint to waste management in developing countries is poor environmental sensitization and awareness. He concluded that it is important for the government to overcome this constraint by implementing successful programmes that will enhance public knowledge of the environment leading to commitment that can transform the residents into an environmentally conscious people.

5.1: Conclusion and policy recommendations

The overall aim of this study was to examined farmers agricultural wastes utilizations; their awareness, perception, and practices during the harvesting and at some processing points in the study area. To elicit information, Primary data were collected. A self-administered questionnaire structured into three parts was used in the data collection; and where necessary, interview method was used, especially to respondents that don't know how to read and write. Two research questions were raised and answered in the study. Descriptive Statistics was used in analyzing the data collected using the SPSS Package, Version 11. A Cross tabulation quantitative research technique was used for analyzing the descriptive data and answering the research question.

Based on the data analyzed, the following findings were made:

35.9% of the respondents are between the ages of 26 to 35 years of the total number of respondents, 46.2% are un-certificated while 7.7% have a form of tertiary education.

Descriptively, 79.5% of the farmlands are less than two hectares, 7.7% are between two to four hectares, while 12.8% are between four to six hectares. 30.8% of the farmers earn between ₦11,000 - ₦ 25,000 and 69.2% earn between ₦ 26,000 and above after harvesting of products. According to the Food and Agricultural Organisation (FAO) of the United Nations (2018), a small farmer is defined as one that grows and sells between $1000 and $250,000/year in agricultural products, large farmer earns between $250,000 - $500,000/ year, while the very large farmer earns more than $500,000 yearly. Also, the FAO classified farms into Commercial, Partly Commercial and near Subsistence. Although classification of farm size depends on countries and it is relative by industry (livestock, raw crops, food crops, orchards).it is expected that farms should take many acres to cover the expenses and provide a liveable wage. From the research findings, most of the farms are small farms; less than 2 hectares. More so, the earnings from them are within the FAO stipulated for small farm.

71.8% of the respondents are "not at all informed" about modern methods of waste utilization and as such do not have the capacity to turn the wastes generated into other useful forms. They resort mostly to burning of the wastes.

Most farm sizes are small but the agricultural practices in the study area are somewhat seems to be commercial in nature as the

earnings from them provide a liveable wage for the respondents; even though it is not reasonable enough base on the economic situation in the country.

The agricultural wastes generated are similar. Though un-estimated in terms of the quantity, it is observed that most respondents are not informed about the modern methods of waste utilization and so do not have the capacity to turn the wastes into more useful forms.

Development is needed to enhance the quality of the lives of citizens in a country and developmental projects affect the environment and ecology. According to UN Environment Report on Frontiers 2018/19: Emerging issues of environmental concern, there are three components of sustainable development; economic development, social development and environmental protection. There are as well, many factors that Contribute to the degradation of environmental quality. One of the factors is the type of agricultural practices as well as the handling of agricultural wastes by farmers. The traditional on-farm and homestead processing facilities in practice are rudimentary, inefficient, tedious, and small scale with large dumping of farm produce wastes into the environment. To meet the needs of a fast growing global population, agriculture and livestock production have been intensified, resulting in environmental pollution, climate change, and soil health declining (Kuje Area Council Brochure (updated 2018).Obi *et al*., (2016), in their study opined that improper waste handling and utilization pose serious threats to the environment and public health. It is therefore suggested that to mitigate the challenges of improper handling and disposal of crop wastes, social change through sensitization/education should be intensified alongside the following recommendations.

5.2: Recommendations

Based on findings of the study, the following recommendations were made:

i) The Kuje Area Council personnel should endeavour to carry out periodic enlightenment programmes, seminars and workshops for farmers and processors on modern methods of agricultural wastes utilization is recommended.

ii) Lack of suitable technology is a great impediment to effective waste management. Instead of open air burning of wastes, Waste-to-energy facilities should be put in place by the Kuje Area Council and all relevant government establishments. These facilities can generate power to drive some other processes, create jobs and curb rural-urban migration of the citizens.

iii) Further study on the farmers' attitude towards agricultural waste utilization; impacts of the waste to the environment and the relationship between the agricultural waste type utilization and the attitude of farmers is highly recommended.

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Appendix A



Agricultural Wastes dump site near residential buildings in Kuje Central.

Circular Economy and Sustainable Electronic Waste Management: Assessing Public Awareness and Access to Formal Waste Recycling Infrastructure in Ilorin Metropolis, Nigeria

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Abstract

Nigeria is grappling with the problem of sustainable electronic waste (e-waste) management in all its urban communities. Through policy interventions, the Circular Economy (CE) model was introduced to manage the problem. CE model for e-waste management entails industrial production and post-consumption system that facilitate e-waste management through reduction, recovery, re-using, recycling and, redesigning. CE model also involve collaboration among all the stakeholders in the e-waste value chain, including the consumers of electrical and electronic products during the post-consumption phase. This study investigated public awareness and access to formal e-waste recycling infrastructure in Ilorin metropolis to fill identified gaps in literature. Data collection and analysis entailed both quantitative and qualitative methods. Study participants were selected using a combination of random and convenience sampling. They comprised 477 households that responded to the questionnaire survey, 30 households for in-depth interview and, four artisanal servicemen for key informant interview. Results revealed that approximately 11% of the respondents to the questionnaire survey reported awareness of formal e-waste recycling practices as a sustainable method for the management of e-waste. Furthermore, all the study respondents reported a lack of access to formal e-waste collection centres within the study city, no access to public or private organizations that incentivizes the formal collection of e-waste and, no access to government licensed recyclers. The results of qualitative data analysis also supported these findings. The study recommends public awareness creation and government investment in the necessary infrastructure to promote the CE model for sustainable e-waste management in the study community.

Keywords: Circular economy, Extended producer responsibility, Electronic waste, Formal e-waste recycling, Ilorin metropolis, Nigeria

Introduction

Nigeria is grappling with the problem of sustainable management of electronic waste (e-waste) generated in its urban cities (Woggsborg & Schröder, 2018). E-waste refers to all types of electrical and electronic (EE) devices or equipment, and their components, at their End of Life (EoL), which have been discarded, by the owners (individuals, business entities or formal organizations) as waste, without the plan of reusing (Pandebesie, Indrihastuti, Wilujeng & Warmadewanthi, 2019). E-waste is turning out to be a fast-growing domestic and industrial waste stream in urban Nigeria and its sustainable management demands non-conventional waste disposal methods because of its high content of non-organic materials, compared to common household thrash (Bimir, 2020).

Some studies have documented the human and livestock health hazards of the heavy metals and chemical toxicants in e-waste (for example Sonone, Jadhav, Sankhla, & Kumar, 2020); while some other studies have documented the general effects of the hazardous components of e-waste on the eco-system (for example Nithya, Sivasankari & Thirunavukkarasu, 2020). These hazardous environmental effects are universally the same across countries and continents because the toxicants and pollutants in e-waste have the same chemical and metallic properties regardless of the geographical or cultural environment where they are managed non-sustainably (Sonone *et al*., 2020).

From research findings, e-waste contains several metals and materials which can be recovered, recycled and, reused within industrial production processes, some of them include, mercury, nickel, gold, silver, zinc, copper and, other chemical solvents which potentially can become new raw materials if recovered (Nithya *et al*., 2020). In advanced economies (for example European Union and Asian Countries), urban mining is the term employed to describe the process of recovery and recycling of reusable resources from e-waste before the eventual scrapping of non-useful things to which they are attached in products (Arya, Patel & Kumar, 2021).

In many advanced economies, the Circular Economy (CE) model has been mainstreamed into industrial processes and post-consumption cycles to sustainably manage e-waste and facilitate urban mining (Khan, Razzaq, Yu & Miller, 2021; Tsalis, Stefanakis, & Nikolaou, 2022; Cai, Song, Peng, Yuan, Liang & Li, 2020). CE model is a method employed to manage the circularity, efficiency and optimization of industrial raw materials supply system and, the approach promotes the use of e-waste as resources to generate value (Khan *et. al*., 2021). Furthermore, CE reduces the dependence of industrial manufacturers on virgin mining of natural resources for production processes (Azizuddin, Shamsuzzoha & Piya, 2021).

One of the important components of the CE model is the Expanded Producer Responsibility (EPR). EPR enables industrial manufacturers to extend responsibilities for their EE commodities up to the post-consumption stage of their product's life cycle (Leclerc & Badami, 2020). Important features of CE and EPR, as they relate to e-waste management include, industrial production and post-consumption systems, that facilitate e-waste reduction, recovery, reusing, recycling, redesign, and remanufacturing to achieve economic savings in raw materials sourcing and, reduce non-value-adding activities in

manufacturing processes (Doan, Amer, Lee, Phuc & Dat, 2019). These inter-woven processes are dubbed the 6Rs in contemporary industrial management systems (Azizuddin *et al*., 2021).

Based on research results, some of the social and environmental benefits of the CE model's adoption and utilization to consumers of EE products and, the physical environment, include monetary gains or income for consumers when disposing of their e-waste (van Yken, Boxall, Cheng, Nikoloski, Moheimani & Kaksonen, 2021) and, opportunities for environmental conservation and protection of natural resources and, the eco-system generally, through reduced virgin mining of solid minerals for industrial raw materials (Kamble & Gunasekaran, 2021; Tansel, 2017). Furthermore, in some of the emerging economies in Asia, both CE and EPR adoption, has been facilitating the generation of new business opportunities and, novel entrepreneurial activities, for individuals seeking avenues for self-employment (Ghisellini, Cialani & Ulgiati, 2016; Kamble & Gunasekaran, 2021; Khan *et. al*., 2021).

Following global trends in CE uptake, EPR was officially launched in Nigeria in 2016 (Woggsborg & Schröder, 2018). Woggsborg and Schröder reported that EPR implementation in Nigeria was envisaged to be a collaborative programme between the national government and a coalition of private sector actors. Based on the accounts of Woggsborg and Schröder, a major goal of the Nigerian EPR initiative, was to seek how to transfer more responsibilities on e-waste reduction and management, onto the few local manufacturers, assemblers, importers and, major distributors of EE products, whose commodities have the potential to generate e-waste at End-of-Life (EoL).

Little is known about the diffusion and penetration of the CE model and the EPR policy at the community level in Nigeria. Therefore, the general objective of the present study was to investigate the level of public awareness and public access to the formal e-waste recycling infrastructure at the community level in Ilorin, north-central Nigeria. The specific objectives of the study were to (1) assess the level of public knowledge of e-waste as an environmental problem, (2) investigate awareness and patterns of physical access to the formal e-waste recycling infrastructure and platforms for sustainable e-waste management and, (3) examine the popular e-waste management options in the study community.

The remainder of the article is structured into the following sub-sections: sub-section 2 covers the literature review, sub-section 3 handles the research methodology, sub-section 4 reports the empirical results and, sub-section 5 is on discussions of results. The final sub-section of the article carried the conclusion and recommendations based on the findings from the current study.

Literature review

A review of previous studies revealed that some important works have been undertaken on e-waste in many developing countries. The study by Bimir (2020) examined e-waste trends policies and challenges faced in Nigeria Kenya Ghana South Africa and Egypt. The author Bimir (2020) opined that the increasing e-waste problem in many of these countries was an outcome of compulsive consumption of imported used EE products by the poor in those countries. Bimir noted that the effort

by some of these study Countries to introduce EPR systems for e-waste control has faced structural limitations such as the inability to locate important actors in the local importation of EE commodities corruption in public regulatory departments and bureaucratic laxities lack of funding to provide incentives to local participants willing to participate in formal recycling system and poor manpower capacity on the technical nature of EE products and formal recycling processes.

The study by Ichikowitz and Hattingh (2020) investigated consumers' e-waste recycling behaviour in South Africa 10 years after the launch of the EPR programme in the country. The authors undertook a household consumer survey in the Gauteng region of South Africa. Results from this study revealed that there was a general lack of awareness about formal e-waste recycling and limited formal recycling behaviours among the study population. In the opinion of the authors, these two conditions were both influenced by poor e-waste collection mechanisms and infrastructural deficits. Ichikowitz and Hattingh recommended enhanced opportunities for improved household e-waste recycling through South Africa's collaboration with international e-waste management schemes.

In Nigeria, Miner, Rampedi, Ifegbesan and Machete (2020) studied the level of awareness and willingness to participate in e-waste management among households in Jos Nigeria. The authors found that close to 70% of respondents to their study were aware of e-waste and about the same number reported that they had not received sufficient education on the proper methods of handling and disposing of e-waste. Furthermore, the study by Nduneseokwu, Qu and Appolloni (2017) in Onitsha, Nigeria investigated the factors that influenced EE consumers' intentions to participate in a formal e-waste collection system in Onitsha, Nigeria. The authors reported that attitude, subjective norm and, environmental awareness, among study participants, had a strong influence on intentions to participate, in formal e-waste collection system. While the study by Nduneseokwu *et al*. (2017) is important, the concepts of attitude, subjective norm and, environmental awareness examined were not explicitly operationalized by the authors. It is against this background that the current study investigated public awareness and access to formal e-waste recycling infrastructure in Ilorin metropolis, Nigeria.

Methodology

Study setting

Ilorin is the capital city of Kwara State, Nigeria. The city is located between Latitude 8^{o} 30´ and 8^{o} 50´ N and, Longitude 4^{o} 20´ and 4^{o} 35´ E, with a land area of about 100km^{2}. The metropolis currently has an estimated population of about three million people. Ilorin city covers part of three Local Government Areas (LGAs), these are Ilorin East LGA, Ilorin West LGA and Ilorin South LGA (National Population Commission, 2021a). The metropolis is home to the various ethnic groups in Nigeria. Foreign nationals are also residents of the city. In the area of modern trade and commerce, both the formal and informal sectors co-exist together and, there are also medium and large-scale industrial organizations in the metropolis (Gemma, 2012).

Sampling method and sample size

This study utilized a cross-sectional research design and, a mixed-method approach. For

public administrative purposes, Ilorin metropolis is divided into three LGAs. LGAs are the lowest units of Nigeria's federal system of administration. The three LGAs are: Ilorin South LGA, Ilorin West LGA and, Ilorin East LGA. The study employed a multi-stage random sampling system, to randomly select two, out of the three (3) LGAs. Consequently, both Ilorin South (IS) and Ilorin East (IE) LGAs, were randomly selected. The National Population Census' Statistical Areas demarcations of the two randomly selected study LGAs were obtained from the Kwara State office of the National Population Commission (NPC). Based on Enumeration Area (EA) demarcations, Ilorin South LGA is demarcated into 1534 EAs, while Ilorin East LGA is demarcated into 1485 EAs (National Population Commission, 2021b).

The EA maps, of the randomly selected EAs, were procured from the National Population Commission to conduct the second stage of the random sampling for the three independent surveys (one quantitative and two qualitative surveys). Random sampling for the quantitative (questionnaire) survey entailed the use of a Microsoft Excel (MS Excel) function to select a random sample of 30 EAs from each of the two selected LGAs. From the EA maps, a third stage of a random sample of two (2) streets was selected from each EAs and, from each street, five (5) households were selected using convenience sampling. This gave a total sample size of 600 households for the questionnaire survey.

Convenience sampling was used at the last sampling stage because the researcher lacked sampling frame on the number of households per street in the randomly selected EA. Data to build sampling frame on the number of households per street in each EA could not be procured by the researcher from the Kwara State office of NPC. This is because of the internal administrative policy of the Commission that restricts the kind of data that could be obtained at State level.

Furthermore, the steps outlined above were repeated to select a separate sample for the qualitative survey (in-depth interviews). Consequently, a sample of 15 households was selected from each of the study LGAs. This yielded a total sample size of 30 households. Likewise, four artisanal electronic servicemen were also randomly selected, from the two study LGAs for the key informant interview.

The sample size of 600 study participants for the questionnaire survey was arrived at following Som (2020) sample size determination formula as follows:

Sample size = $(Z \text{ score})^2 \times p \times (1-p) / (\text{margin of error})^2$
Where:
Z score relates to the confidence level (95% confidence level selected)
P is the standard deviation (0.5 to ensure a large sample)
Margin of error relates to the confidence interval (±5%)

Methods of data collection and analysis

Both quantitative and qualitative methods were employed to collect and analyze data for this study. This involved the use of both structured questionnaires, In-depth Interviews (IDIs) and Key Informants Interviews (KIIs). Authors such as Bryman (2016), and Creswell and Plano-Clark (2018) have discussed the usefulness and limitations of these data collection

instruments. For this current study, pre-tested structured questionnaires were administered to 600 randomly selected study households. Pre-tested IDI instrument, was administered on 30 randomly selected study households. Pre-tested KIIs instrument was administered, to the four randomly selected artisanal electronic Servicemen.

Analysis of the quantitative data entailed the use of descriptive statistics. The free online R Statistical software was utilized for the descriptive statistical analysis. The qualitative data (IDIs and KIIs) were collected through audio recording using mobile phones (consent of each Interviewee was obtained before recording of interviews). Transcribed interviews (IDIs and KIIs), were thematically coded and analyzed using content analysis. In the result section of this article, data obtained from the IDIs, supplemented the information obtained from the questionnaire survey.

Results

Characteristics of the study respondents

From the 600 randomly selected households for the questionnaire survey, the response rate was 79.5% (n=477). On the demographic attributes of the respondents, data analysis showed that the mean age of study participants was 38.7 years (Table 1). Close to 60% of the respondents were males (n=284), while the rest were females. On the marital status of study participants, 62.5% (n=298) were married and, 15.1% (n=72) were singles. Concerning the level of educational attainment among the respondents, individuals with primary school completed (only) were approximately 13% (n=61) and, those who completed secondary and technical school were approximately 18% (n=84). The majority of the respondents (31.9%, n=152) had a First University degree and, equivalent tertiary-level certifications.

On the employment status of the respondents, 73.8% (n=352) reported that they were gainfully employed, while 23.9% (n=114) reported that they were unemployed/not gainfully employed. For those that reported being gainfully employed, the informal sector (comprising largely petty trading, artisanal occupations, daily wage earning and so on) engaged the majority of them (52.4%, n=250), while a sizeable proportion (32.9%, n=157) were also engaged in the formal sector. Fewer respondents (4.4%, n=21) reported that they were engaged in the Charity sector/Religious organizations (mostly religious Clergies like Imams and pastors). On income level, the majority of the respondents (>80%) were in the low and, middle-income categories, and less than 15% were in the high-income category.

Table 1. Demographic and socioeconomic traits of respondents

Characteristics of respondents	Frequency n=477	% of Respondents
Age (Mean/Years)	38.7	
Gender		
Male	284	59.5
Female	193	40.5
Highest level of educational attainment		
No formal schooling	12	2.5
Arabic school completed	69	14.5
Primary school completed	61	12.8
Secondary/Technical College completed	84	17.6
National Diploma (and equivalents) completed	30	6.3
Higher Diploma/First university degree/Equivalents completed	152	31.9
Postgraduate (Master's/ Doctoral degree) completed	37	7.8
Professional Qualifications attained	27	5.7
Others (specify)	5	1.0
Employment status		
Gainfully employed	352	73.8
Not gainfully employed/Unemployed/Retired	114	23.9
No response	11	2.3
Occupational type		
Self employed	271	56.8
Paid employment	157	32.9
No response	49	10.3
Sector of employment		
Informal (e.g. Petty Traders, Artisans, Daily Wage labourers and so on)	250	52.4
Formal (e.g. Public and Private sectors)	157	32.9
Religious organizations/Charity	21	4.4
No response	49	10.3
Income categories		
Low income category	232	48.7
Middle income category	191	40.1
High income category	54	11.3

Source: Survey data analysis, 2022

Prevalence of use of EE devices and knowledge of e-waste among respondents

All the respondents to this study (n=477) reported that they have consistently had access, to EE equipment and devices in the last five years. Data analysis further revealed that respondents' access to EE devices was facilitated by ownership and use of commonplace EE products, at home and for work/business purposes. Data analysis also showed that 68.5% (n=327) of the respondents reported that they were aware of e-waste and that it constitute environmental problems.

Public awareness and access to formal e-waste recycling infrastructure among the study respondents

Questionnaire survey data analysis revealed that approximately 11% (n=51) of the study respondents reported awareness of formal e-waste recycling practices as a sustainable method for the management of e-waste (Table 2). Data analysis further revealed that all the study respondents (100%, n=477) reported a lack of access to formal e-waste collection centres within the study city, no access to public or private organizations that incentivizes the formal collection of e-waste, no access to government licensed recyclers in the city and, no access to prior community-level sensitization on formal e-waste recycling by the CE stakeholders in the e-waste value chain. The CE stakeholders subsumes government agencies, manufacturers of EE commodities or their representatives.

However, approximately 8% of the respondents reported that they had awareness of the likelihood of financial benefits from participation in formal e-waste recycling programmes and, about 5% of the respondents reported awareness of any private company that carries out products take-back or swapping activities on disused EE devices in the community. Data obtained from the IDIs on awareness and access to e-waste recycling infrastructure at the community level among study respondents (as presented below) lent empirical support to the result obtained from the questionnaire survey.

A female/adult respondent narrated as follows:

> I don't know any place where they do formal recycling of disused electronic products in this city.... Some of the electronic devices that I am using for business, especially my Tiger Generator [Gasoline Electricity Generator] and Freezer [Deep Freezer] have been giving me serious problems for several months …My goods that require refrigeration have been going bad, and I have been recording financial losses. I don't have the cash to replace the two important devices presently … If there is a place where I could do recycling, it would have been just a case of taking the devices to them, probably adding some cash, dropping the worn-out devices and, pick brand new ones for my comfort…
> (IDI/Female/Petty Trade/50 Years/IS LGA/EA 166)

Table 2. Public awareness and access to e-waste recycling infrastructure at the community level among study respondents

Awareness and accessibility criteria	% of Respondents (n=477)	
	Yes	No
Awareness of formal e-waste recycling practices as a method of sustainable management	10.7	89.3
Awareness and access to formal e-waste collection centres within the city	0	100
Awareness and access to any public or private organisation that incentivizes formal collection of e-waste	0	100
Awareness and access to government-licensed recyclers	0	100
Awareness and access to private companies that carry out product take-back or swapping mandates on disused EE devices	4.6	95.6
Awareness of the likelihood of financial benefits from participation in formal e-waste recycling	7.8	92.2
Awareness of prior community-level sensitization on e-waste formal recycling initiatives by the government and manufacturers of EE commodities	0	100

Source: Survey Data Analysis, 2022

A male/adult respondent also remarked as follows:

> The system of recycling malfunctioning or damaged electronic products or what you have explained as EPR is not common in this environment …If you buy some brands of electronic products such as Refrigerators or Freezers from reputable Sales outlets they can provide a warranty on the products for a few years…. apart from this, it is only spoilt Automotive batteries that are accepted for informal recycling system through Retailers … I know about the case of automotive batteries because I own a motor vehicle [Automobile]…
>
> (IDI/Male/Legal practitioner/63 Years/IE LGA/EA 306)

Popular e-waste management practices among the study participants

The result of data analysis on the popular methods of e-waste disposal accentuates the poor level of access of the study participants to formal e-waste recycling infrastructure in the study community. From the analysis of questionnaire survey data, the most popular e-waste management options, among the respondents, were storage of e-waste at home and within business premises, as well as e-waste dumping and informal recycling

with the artisanal Servicemen at the community level.

All the respondents to the survey questionnaire (n=477) reported that they have used storage as a management option at various times and for diverse categories of e-waste. The respondents estimated that the period of storage of e-waste could range from a few months to several years. Data from IDIs revealed that some of the factors responsible for the storage of e-waste could include the possibility of getting re-usable parts from the damaged device, especially when a replacement for it also becomes faulty, or begins to malfunction. Another important factor was the social prestige that ownership of commonplace property items, such as electronic devices, could accord at the cultural level.

A male/adult respondent in Ilorin South explained as follows:

> I am usually not in a hurry to dispose of my damaged electronic devices … this is because a person may not be able to predict how a replacement would behave …. I try to retain at home the damaged devices for a reasonable period in case the replacement becomes faulty and, there is the need to repair it, it is sometimes possible that the Servicemen can get reusable parts from the damaged device, thereby helping to save money on repairs…
> (IDI/Male/Pharmacist/51 Years/ IS LGA/EA 1208)

A female/adult respondent in Ilorin South opined as follows:

> In our cultural environment, possession of some commonplace household electronic devices such as Television sets, Refrigerator, Freezer, Air conditioning units and so on, is an indication, that the head of the household, is leading a responsible life economically and, not a spendthrift … If any of these devices gets damaged and, the household does not have money, to get a replacement immediately, we try to keep the damaged device in its position for some time … This is for the sake of social prestige when members of the extended family or friends come visiting … At least they will be able to see some of the devices around the living room, even if they are non-functioning …
> (IDI/Female/School Principal/56 Years/ IS LGA/ EA 1408)

Questionnaire data analysis also revealed that the second most popular local e-waste disposal option was dumping and informal recycling with artisanal Servicemen in the study community This was reported by approximately 60% (n=283) of the respondents. Data from IDIs revealed that one of the factors responsible for this behaviour was to prevent the clogging of the household's environment or business premises with obsolete or damaged EE devices and equipment.

A male/adult respondent in Ilorin South narrated as follows:

> After taking any damaged device to about two Servicemen and, I get about the same result that the damage is irreparable, or maybe the estimated total cost of repairing, is more than half the market price, of a new product, I usually opt for the decision to discard the damaged product and purchase a new one … In that case, I don't bother to take

> home the bad electronic device, I normally leave it with the artisanal servicemen as gift…
> (IDI/Male/Self-employed Businessman/52 Years/IS LGA/EA 496)

Another interviewee spoke as follows:

> Some of us simply dump our irreparable electronic devices with the Servicemen … It would have been nice if we had access to government-licensed recyclers of disused electronic that could collect them and give us cash [money] .... Frankly speaking, I am not aware of any licensed recyclers, many of us in the community don't even know about people who are collecting spoilt electronics informally too … Take a visit to the workshops of many of the Servicemen, you will see assortment of spoilt TVs [Television sets], pressing iron, Refrigerators, fans, Air Conditioners, that their customers have dumped with them…
> (IDI/Male/Retired Public Servant/67 Years/IE LGA/EA 127)

Complementary roles of artisanal Servicemen *vis a vis* consumers' e-waste dumping and informal recycling

Analysis of data obtained from the key informants artisanal servicemen suggested that their workshops served as receiving centres for disused EE devices that consumers were willing to dump/gift out and, possibly recycle informally. The artisanal servicemen, informally collect e-waste from their customers. In the words of a KII respondent in Ilorin East LGA:

> We collect disused electronic items from our customers … as a matter of fact, many clients make our workshops dumping grounds for electronic items that are no longer useful to them … But we don't have any access to a formal recycling system in the community either…
> (KII/Male/Electronics Serviceman/32 Years/ IE LGA)

Another key informant in Ilorin East remarked as follows:

> On the volition of a few of us engaged in local servicing of electronic products, we try to pay some cash to the customers that turn in their disused electronic devices to us … it can be described as a form of dumping behaviour on their part …We give the cash to them from our own purse, because we know we will get some parts to recover and reuse for other future works on repairs … No foreign or local manufacturer or local distributors gives us any incentives to give cash and collect disused electronic devices from users of electronic products ….
> (KII/Male/Electronics Serviceman/54 Years/ IE LGA)

From the account of the key informants, after the recovery of reusable parts, the end-stage scraps are broken down and, sorted into constituent components (such as steel, plastic, glass/screen, and bronze/brass components). These end-stage scraps are sold to scrap collectors who are in the business of 'Waste-to-Wealth'. A KII respondent in Ilorin South spoke as follows:

> After we have completely taken [cannibalized] all reusable materials inside the devices dumped with us and, we have accumulated substantial scraps that are no longer of any use, we break them down into various components and, sort the parts by material types such as

metallic components, plastic components, glass and so on… We sell these scraps to the local scrap collectors … some of the scrap collectors come to pick metallic materials and some others come to pick plastic materials ...

(KII/Male/Electronics Serviceman/48 Years/ IS LGA)

Discussion

This study investigated public awareness and access to formal e-waste recycling infrastructure in Ilorin metropolis, Nigeria. Findings on awareness of e-waste and the potential of e-waste production by households revealed that more than half of the study respondents had awareness of what constitutes e-waste and also know that the EE devices and equipment they use at home and for business purposes can produce e-waste their EoL due to irreparable damages and obsolesce. Findings from this current study, on public awareness and access to the CE model and EPR infrastructure/platforms, for e-waste management (at the community-level), revealed a low rate of diffusion, evidenced by the results of data analysis. Approximately, 90% of the respondents reported that they did not have awareness and, have never received any education or sensitization on formal e-waste recycling. Also, findings revealed a complete absence of public access to formal e-waste recycling (EPR) infrastructure/platforms among the study respondents. These findings are consistent with results from previous studies by Uddin, Hoque, Mowla, Uddin and Mamun (2022) and, Ichikowitz and Hattingh (2020). However, the findings are not in agreement, with previous results by Cai *et al*. (2020).

Uddin *et al*. (2022) reported that lack of awareness of the CE model was a major factor constraining the spread and utilization of the model among industrial manufacturers in Bangladesh. Furthermore, Ichikowitz and Hattingh (2020) investigated consumers' e-waste formal recycling behaviour in the Gauteng Area of South Africa. Their results revealed that there was a general lack of awareness about e-waste formal recycling with resultant low formal recycling behaviours among their study participants. Ichikowitz and Hattingh opined further that these two observed conditions were influenced by inefficient e-waste collection mechanisms and poor access to infrastructural facilities among their study participants. By contrast, however, Cai *et al*. (2020) found that a large percentage of their study participants in Zhuhai City China had sufficient awareness and access to formal e-waste recycling infrastructure which positively influenced the utilization of formal e-waste recycling.

Results on the popular methods of e-waste control from the current study are in agreement with research outcomes from previous studies in developing countries. The findings in this study on home storage of e-waste as a local option for e-waste management are consistent with previous findings by Nuwematsiko, Oporia, Nabirye, Halage,, Musoke and Buregyeya (2021) in their study in Kampala Uganda. The finding from this study on the informal recycling of e-waste through local servicemen which indicates the willingness of some respondents to recycle e-waste even in the absence of formal e-waste recycling infrastructure is supported by research results from previous studies by Hassan and Dhusia (2020) in Delhi India, and Dzah, Agyapong, Apprey, Agbevanu & Kagbetor. (2022) in Ho community in Ghana. These authors reported that informal recycling was the most important alternative in the absence of access to formal e-waste

recycling among their study respondents in Delhi and Ho communities.

Conclusion and Recommendations

This study investigated public awareness and access to formal e-waste recycling infrastructure in Ilorin metropolis, Nigeria. Results showed a low rate of diffusion and poor access to the formal e-waste recycling infrastructural resources in the study area. Following the results of the current study, this paper argues that very negligible urban mining activities are ongoing in the study community. Furthermore, due to the low urban mining activities there is the likelihood that EE consumers are not deriving financial values from the e-waste they produce periodically. In addition, some of the popular and inefficient e-waste disposal practices especially the storage system portends dangers to the health of members of the society. This paper further argues that failure to stimulate formal e-waste recycling is preventing members of society from harnessing opportunities that come with the novel trend in urban mining.

Findings from this study have implications for two important macro-economic challenges that Nigeria is currently facing which could benefit from the scaling-out and promotion of access to the CE model for e-waste management. Firstly, it is a common awareness that Nigeria is presently facing a fiscal crisis due to the poor global crude oil market. The crisis has propelled a national effort to promote diversification (increased extraction and exportation of non-oil mineral resources) to boost national income earning. Public policy and efforts at diversification of the national economy have targeted virgin mining of solid minerals to enhance national income earning. This paper posits that Nigeria has ample opportunities to augment the volume of solid mineral exports with the materials recovered from urban mining activities. The paper agrees with the views of Tsalis *et al*. (2022) that efforts at promoting urban mining activities could offer substantial reprieve to virgin mining of natural resources, and equally help to reduce damage to the eco-system.

Secondly, there is a high rate of unemployment (especially among youth) in Nigeria. The promotion of formal e-waste recycling and urban mining activities could provide job opportunities that could help mitigate the problem of youth unemployment. This study agrees with the views expressed by Murthy and Ramakrishna (2022) on the assertion that the e-waste market is increasing rapidly at the global level and there is a need for local entrepreneurs in emerging economies to identify and tap into its diverse employment opportunities by setting up formal e-waste recycling businesses.

Therefore, based on the findings from this study, it is recommended that the government at the Federal and State levels in Nigeria should undertake interventions to stimulate the CE and EPR diffusion to promote formal e-waste recycling in the study community. Some of these interventions include the creation of an enabling environment that would promote private sector-led investment in the e-waste recycling business, the commissioning of licensed recyclers in urban centres, enhancement of public-private partnerships in formal e-waste recycling, and carrying out mass sensitization and awareness creation on the potential benefits of formal e-waste recycling practices to sustainable environmental management.

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Technology adoption and fertility pattern among urban households in Lafia metropolis

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Abstract

Technology adoption and fertility patterns among households are significant issues that are influenced by global trends and developments in the field of reproductive health. In Nigeria, the adoption of modern contraceptive methods and reproductive health technologies has been instrumental in shaping fertility patterns and demographic transitions. This study examined examined technology adoption and fertility patterns among urban households in Lafia town with the specific objectives to assess the influence of Health Information Technology (HIT) on fertility patterns, the impact of Assisted Reproductive Technology (ART) on fertility patterns and examine the nexus between genetic technology and fertility patterns among urban households in Lafia Town. The study adopted the diffusion of innovation theory as a theoretical framework. The study utilised purposive sampling method to select 200 respondents. Data was collected through the instrument of the questionnaire and key informant interview and was analyzed using simple frequencies and percentages. Findings of the study revealed that HIT such as Telehealth facilitates, patient portals and data analytical tools influence fertility patterns among urban households in Lafia Town and most residents of Lafia town are yet do adopt genetic technologies in handling fertility issues. The study concluded that technology adoption such as Health Information Technology (HIT), Assisted Reproductive Technology (ART) and Genetic technology has to a greater extent influenced fertility patterns in Lafia town. The study recommended among other issues that there should be implementation of community-based health information technology education program to increase awareness and knowledge among urban residents in Lafia Town.

Key words: technology, adoption, fertility, health, information, patterns, urban, Lafia town.

Introduction

The intersection of technology adoption and fertility patterns is a critical aspect of population dynamics that impacts socio-economic development and well-being on a global scale. Globally, it has been documented that about 168 million couples who want to have children are unable to have them through the natural process of intercourse and conception hence they are called infertile, given room for the utilization of modern technology in fertility (Oladapo, 2019). On the other hand the phenomenon of high fertility has been a global concern.

The series of population conferences starting with the 1974 conference in Romania, the 1984 conference in Mexico and the 1994 Cairo Conference in Egypt were all targeted at addressing population concerns across countries of the world (Ibrahim & Akande, 2020). The expected population target has not been achieved since the 1994 conference especially in developing countries of the world. The advent of modern technologies have enhanced the capacity of couples especially the infertile and the aged to have children (Mustapha 2018).

Infertility here refers to the inability of couples to achieve conception despite regular unprotected sexual intercourse for one (1) year. It also includes the inability to carry a pregnancy to the delivery of a live baby. Infertility in the male, therefore, refers to the inability of a man to impregnate a woman after twelve (12) months of regular and unprotected sexual intercourse. That is if the woman has no gynecological problems (Osian, Afemikhe, Olorunfemi & Eweka, 2019). In fact, "Infertility belts" has been described in sub-Saharan African countries (SSA) where about 20-35 million couples are affected by the inability to give birth to a child (Okafor, JoeIkechebelu and Ikechebelu 2017). There is a range of modern techniques available to assist them to have children, if they are not able or willing to adopt a baby. Physicians have developed methods to overcome infertility, with the motive of helping such couples have their own child (Mustapha 2018, Shimakaa et al 2018). These methods are termed modern technologies.

Technologies here means an assemblage of a number of techniques and procedures that allow a bypass of the obstacles to achieving pregnancy by the conventional methods (involving the use of drugs and/or surgery singly or in combination) to allow pregnancy and childbirth to occur where otherwise the chances of pregnancy and childbirth would have been zero (Osian, Afemikhe, Olorunfemi, Eweka 2019). The initial modern technology (in vitro fertilization IVF) involved mixing eggs and sperm in a laboratory dish (in vitro fertilization or IVF) and then implanting the resulting embryos (embryo transfer or ET) into the womb or uterus. The technique was developed to help women with blocked fallopian tubes and who, apart from their blocked tubes have no additional fertility problems. Since early studies suggested that the new technology was without additional risk to mother and baby, IVF soon became widely accepted and modified developments and the treatment of complex types of infertility became available (Ola 2012). Its use is becoming more widespread worldwide, and in the developed world, up to 5% of children have been born following IVF (Kovacs 2014).

Historically, man sought for ways to treat infertility problems. Some of the treatment methods were through traditional medicine, religion and other cultural practices. With advancement in technology many modern reproductive techniques like Assisted Reproductive Technologies (ARTs) now abound. These have helped many couples experiencing difficulty in conceiving naturally to have children (Adekunle & Oyewole, 2022). The advent of Assisted Reproductive Technologies (ART) have enhanced the capacity of couples especially the infertile and the aged to procreate (Kwaghga, 2018). The first modern technology baby (Loius Brown) was successfully delivered through IVF in Britain on July 25, 1978. In 1980, Australia recorded her first IVF birth, this was followed by USA 1981, France 1982, Germany 1982, and Nigeria experienced her first IVF birth in

1989 (the first in Sub Saharan Africa) (Kamel, 2013). The Lagos University Teaching Hospital team of Giwa Osagie, Ashiru and Abisogun produced documented pregnancies through IVF in 1984, 1986, and a live birth in 1989 (Oladapo, 2019). By 2001, there were eight assisted conception centers carrying out IVF in sub-Saharan Africa, as well as numerous other centers offering artificial insemination. In 2005, about eight reproductive technology centres were established and owned by private operators in Nigeria. This was subsequently followed by reported birth of IVF babies in private- and public funded facilities within the country (Oladapo, 2019). Some of these centres in Nigeria include Advanced Fertility Clinic, Providence Hospital, The Bridge Clinic all in Lagos State, NisaPremier Hospital in Abuja, and First Fertility Hospital in Makurdi Benue among others.

Reproductive technologies offer a chance at parenthood to couples, who until recently would have had no hope of having a "biologically related" child. Modern technologies have been reported to relieve more than 50% of infertility cases (Omokanye et al., 2017).While modern technologies including IVF has given hope to millions of couples suffering from infertility, it has also introduced countless ethical, legal, and social challenges which have affected its adoption and effective utilisation in Nigeria (Omokanye et al., 2017). Modern technology infants had twofold increases in risk of perinatal mortality, low birth weight and preterm birth, shortened gestational age, and increased birth defects (Kwaghga eta al, 2018). As long as the Nigerian society fails to address the problem of reproduction adequately, many infertile couples and individuals may continue to have restricted access to modern technology and also live with the adverse consequences of their condition.

Information on technology adoption in reproduction in Lafia town has not been adequately captured leading to a gap in literature which underscores the need for this study. Thus, there is need to research more on the adoption of technology in reproduction in Lafia town with the objective of addressing the obstacles related to fertility in the country. Consequently, this study examined technology adoption and fertility patterns among urban households in Lafia town. The specific objectives were to examine;

i. The influence of Health Information Technology (HIT) on fertility patterns among urban households in Lafia Town
ii. The impact of Assisted Reproductive Technology (ART) on fertility patterns among urban households in Lafia Town
iii. The nexus between genetic technology and fertility patterns among urban households in Lafia Town.

Hypotheses of the Study

i. There is no significant effect of Health Information Technology (HIT) on fertility patterns among urban households in Lafia Town.
ii. There is no significant effect of Assisted Reproductive Technology (ART) on fertility patterns among urban households in Lafia.
iii. Genetic technology has no significant effect on fertility patterns among urban households in Lafia.

Literature Review

The Concept of Technologies in Fertility

Technology in fertility or reproductive technology is any technological procedure that helps infertile couple to impregnate/conceive and bear a child(ren). Reproductive technology refers to all treatments or procedures that include the In Vitro Fertilization (IVF) handling of human oocytes and sperm or embryos for the purpose of establishing a pregnancy. (Mustapha 2018, Ola 2012, Omokanye et al 2017, Kwaghga 2018). It encompasses several techniques to by-pass the problems preventing conception through the normal sexual intercourse in a stable relationship. These techniques involve either artificial insemination or artificial fertilization in which there is alteration in the inherent process leading unto conception and without sexual intercourse (Orhue 2010). The Centre for Disease Control (2007) defined reproductive technologies as those that involve the handling of both sperm and eggs.

A range of reproductive technology options exist to enhance fertility, which fall into two broad categories: Low-tech treatments, which accounts for more than 95 per cent of modern, medical infertility treatments. They are those that do not involve the retrieval of oocytes or fertilization outside the body, which often include the use of fertility drugs to stimulate superovulation, the development and release of more than one egg per ovulatory cycle, and intrauterine insemination, a process by which sperm are placed inside a woman's cervix to facilitate fertilization and pregnancy; and high-tech treatments, also called Assisted Reproductive Technologies (ARTs) (Ola 2012). This includes, but is not limited to artificial insemination; in vitro fertilization; surrogate motherhood; human cloning; gene replacement therapies; artificial embryo donation; ectogenesis; embryo adoption; and egg transfer etc (Mustapha 2018). The two sources of extramarital gametes that are commonly used are those donated by relatives or friends, or those from completely anonymous sources.

There are different reproductive technologies for people to choice from appropriately. Gamete intra fallopian transfer (GIFT) describes a method when eggs are retrieved but not fertilized. Instead, they are mixed with the sperm and immediately placed into the fallopian tubes. (GIFT) was developed in 1984 for women with unexplained infertility. Zygote intra fallopian transfer (ZIFT), is a procedure where fertilized egg (zygote), in its pronuclear stage of development, is transferred into the fallopian tube. In-Vitro Fertilization and Embryo Transfer (IVF-ET). Under this technique, an egg is removed from one of the infertile woman's ovaries, fertilized outside her body, and then replaced in her womb. A baby that develops from IVF procedure is called test-tube baby (Shimakaa et al 2018).

Fertility

Fertility is the actual reproductive performance of an individual, a couple, a group or a population (Ode 2006). Fertility, in the context of human populations, refers to the ability of individuals or couples to conceive and produce offspring. It is a key biological and demographic measure that plays a critical role in shaping populations and societies. Fertility rates are commonly measured as the average number of children born to a woman over her lifetime, known as the Total Fertility Rate (TFR). A TFR of around 2.1 children per woman is considered the replacement level fertility, where each generation replaces itself without any

changes in population size. Fertility levels above this rate lead to population growth, while levels below it result in population decline (Adekunle & Oyewole, 2022).

Fertility patterns refer to the varying reproductive behaviors and decisions made by individuals, couples, and populations over time. These patterns encompass factors such as the timing of childbearing, the number of children desired or born, and the use of contraceptive methods, among others. Fertility patterns are influenced by a multitude of social, cultural, economic, and environmental factors, reflecting the complex interplay of individual preferences, societal norms, and external influences on family planning and reproductive decision-making (Adekunle & Oyewole, 2022).

The study of fertility patterns, trends, and determinants is a complex field that encompasses a wide range of socio-economic, cultural, environmental, and biological factors. These factors include access to education and healthcare, socio-cultural norms and values surrounding family size and childbearing, economic opportunities for women, availability of contraception and family planning services, as well as environmental and health factors that can impact fertility rates. Understanding fertility patterns and trends is essential for policymakers, demographers, and public health professionals to effectively plan for future population growth, aging populations, and the social and economic implications of changing fertility rates (Bello & Afolayan, 2020).

Health Information Technology (HIT) and Fertility Patterns

Health Information Technology (HIT) plays a crucial role in influencing fertility patterns among households by enhancing access to reproductive health services. Telemedicine and mobile health platforms have revolutionized the way individuals can interact with healthcare providers, enabling remote consultations, access to contraceptive prescriptions, and information about family planning options. This increased accessibility is particularly beneficial for individuals in underserved areas, where traditional healthcare services may be limited, ultimately empowering individuals to make informed choices about their reproductive health (Otieno, 2019).

Adepoju & Oluwatayo (2019) argued that in addition to improving access to reproductive health services, HIT also contributes to education and awareness about family planning methods. Online resources, mobile applications, and interactive tools provide individuals with valuable information about different contraceptive options, fertility awareness techniques, and reproductive health practices. By increasing knowledge and awareness, HIT empowers individuals to take control of their fertility preferences, make informed decisions, and effectively plan their families, leading to more intentional and desired fertility patterns among households.

Moreover, HIT facilitates data collection and analysis related to fertility patterns, offering valuable insights for healthcare providers and policymakers to monitor trends and tailor interventions. Electronic health records and digital health platforms can track fertility rates, contraceptive use, and maternal and child health outcomes, enabling evidence-based decision-making and targeted interventions to address specific challenges. By leveraging HIT for data-driven approaches, stakeholders can promote positive fertility patterns, improve health outcomes, and contribute to more sustainable and

equitable reproductive health practices among households (Odaman, 2005).

Assisted Reproductive Technologies and Fertility Pattern

Assisted Reproductive Technologies (ARTs) refers to all treatments or procedures that include the in vitro handling of human oocytes and sperm or embryos for the purpose of establishing a pregnancy (Ola, 2012).ARTs are also seen astechnological procedures that help infertile women to conceive (Ola, 2012).Therefore, ARTs are an assemblage of a number of techniques and procedures that allow a bypass of the obstacles to achieving pregnancy by the conventional methods (involving the use of drugs and/or surgery singly or in combination) to allow pregnancy and childbirth to occur where otherwise the chances of pregnancy and childbirth would have been zero. It also refer to any technological procedure that helps infertile couple to impregnate/conceive and bear a child(ren).It encompasses several techniques to by-pass the problems preventing conception through the normal sexual intercourse in a stable relationship (Kwaghga et al, 2018).The Centre for Disease Control (2007) defined "assisted reproduction technologies" as those that involve the handling of both sperm and eggs.

A study by Faddy, Mustapha (2018) has revealed that AI births in Belgium, Slovenia and Denmark represented 4.6%, 4.9% and 6.1% of total natality, respectively. If no further growth in fertility services occurs this century, the authors calculated 167 million people owing their lives to assisted reproductive technologies will have been born by 2100, and 157 million will still be alive that year – representing 1.4% of humanity based on the median estimate of 11.2 billion in the world. But according to present trends, services will continue to grow robustly and the number of births is likely to be much higher. If the average annual increase is 10,000 or 20,000 births the numbers of people alive that year will rise to 236 or 315 million, respectively. At 30,000 more births per year, 394 million people will be alive and represent over 3% of humanity.

Series of ARTs have been developed to assist in reproduction including Artificial Insemination; In vitro Fertilization; Surrogate Motherhood; Human Cloning; Gene Replacement Therapies; Artificial Embryo Donation; Ectogenesis; Embryo Adoption; and Egg Transfer etc. Gamete intra fallopian transfer (GIFT) refers to a method when eggs are retrieved but not fertilized. Instead, they are mixed with the sperm and immediately placed into the fallopian tubes. Zygote intra fallopian transfer (ZIFT) is a procedure where fertilized egg (zygote), in its pronuclear stage of development, is transferred into the fallopian tube. In-Vitro Fertilization (IVF) is a technique, where an egg is removed from one of the infertile woman's ovaries, fertilized outside her body, and then replaced in her womb.

Surrogacy is a method of reproduction whereby a woman consents to become pregnant using donated sperm and deliver a child for self or another party usually through a contractual arrangement. The sperm and egg of a married couple may also be fertilized in vitro, and subsequently placed in the womb of a surrogate mother as a gestational carrier who is paid simply for leasing her womb and giving birth to the baby. Artificial Insemination (AI) is the process by which sperm from a woman's husband (artificial insemination by Husband, AIH) or a donor (artificial insemination by a donor, AID) is placed into the reproductive tract of a female for the purpose of

impregnating her by using means other than sexual intercourse (Zakariya 2018).

A range of medical treatment options exist for infertility, which fall into two broad categories: Low-tech treatments, which accounts for more than 95 per cent of modern, medical infertility treatments. They are those that do not involve the retrieval of oocytes or fertilization outside the body, which often include the use of fertility drugs to stimulate superovulation, the development and release of more than one egg per ovulatory cycle, and intrauterine insemination, a process by which sperm are placed inside a woman's cervix to facilitate fertilization and pregnancy; and high-tech treatments (Ola 2012). The two sources of extramarital gametes that are commonly used are those donated by relatives or friends, or those from completely anonymous sources.

Virtually all forms of ART are now available in Nigeria and other sub regions namely: artificial insemination by husband (AIH), donor insemination (DI), in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT), zygote intrafallopian transfer (ZIFT), intracytoplasmic sperm injection (ICSI), embryo freezing and embryo donation, surrogate motherhood. The most widely practiced methods in sub Saharan Africa countries are AIH, DI, and IVF (Ola, 2012). Since the first 'test-tube baby' Louise Brown (whose parents were Lesley Brow and John Brown from Bristol City in the United Kingdom who could not conceive naturally throughout nine years of continous marriage due to bilateral tubal blocks) was born in Britain on July 25, 1978 at 11:47 PM (by a team of British Doctors :Robert Edward (died 2013), Patrict Steptol (died 1988) at Oldman General Hospital, Manchester City) IVF has spread to other parts of the World. In Nigeria, Oladapo Ashiru pioneered the in vitro fertilization (IVF) program in 1984 and his team successfully delivered the first IVF baby in 1989 On December 1998, the first set of IVF quadruplets in the world were born on January 6th 1984 at the Royal Women's Hospital, in Melbourne, Australia while the first set of octuplets in the world (6 girls and two boys) were born at St. Luke's Episcopal Hospital in Houston, Texas, USA. In 2009, Second octoplets were born to Nadya Suleman, a 33 year old Iraqi American womwn in Califirnia, USA (Karmel 2013).

Nigeria is a special case as the most under-served continent with the greatest potential for growing fertility services if economic conditions improve, because it has a young age profile and a widespread social stigma associated with childlessness. There is less sympathy for infertile people A study by Omokanye, et al (2017) on assisted reproduction technologys' perceptions among infertile couples revealed that the level of awareness in Ilorin was 87.3%, Lagos (51.8%), Ibadan (58.3%), Osun (48%) and Okija, and Nigeria (37.6%). A recent study revealed a 73.0% awareness level of AI in Benin City, Edo State. This proportion is similar to the one reported in 2010 in Zaria where they had an awareness level of 76.5%, but slightly higher than the previous studies reported in 2010 which reported 67.5% awareness level among women in Benin city, Osun State reported the awareness level of AI of 46.0%, with high accessibility rate of 71.6% to fertility clinics (Osian et al, 2019). A significant number of patients had heard of AI from mass media, friends, family members and the Internet.

Genetic Technology and Fertility Patterns

Genetic technology has a profound impact on fertility patterns among households, presenting both opportunities and ethical considerations. Advances in genetic testing and screening empower

individuals to make informed decisions about their reproductive health and potential genetic risks. Pre-implantation genetic testing (PGT) allows for the selection of embryos free from specific genetic disorders before implantation, reducing the likelihood of passing on inherited diseases to future generations. This technology has the potential to significantly impact fertility patterns by enabling individuals to proactively manage genetic risks and make choices that align with their family planning goals (Kamel, 2013).

Furthermore, genetic technology can influence fertility patterns through assisted reproductive techniques such as in vitro fertilization (IVF) and egg or sperm donation. Genetic screening and testing can be utilized during these procedures to identify potential genetic abnormalities or chromosomal disorders, helping individuals and couples make informed decisions about embryo selection. Additionally, the use of donor gametes in assisted reproduction allows individuals to overcome genetic infertility issues, expanding the options available for family building and impacting fertility patterns by providing alternative pathways to parenthood. Some of the genetic technologies in fertility according to Mustapha (2018) include:

1. Genetic testing: Genetic testing involves analyzing an individual's DNA to identify variations or mutations associated with specific genetic disorders or diseases. This technology can be used for diagnostic purposes, carrier screening, predictive testing, and pharmacogenomics, among others. Genetic testing plays a critical role in identifying genetic risks and informing medical decisions related to disease prevention, management, and treatment.

2. Pre-implantation genetic testing (PGT): PGT is a reproductive technology used during in vitro fertilization (IVF) to screen embryos for genetic abnormalities before implantation. PGT allows for the selection of embryos free from specific genetic disorders, reducing the risk of passing on inherited diseases to offspring. This technology is particularly useful for couples with a known genetic predisposition to certain conditions, offering them the opportunity to have children without the associated genetic risks.

3. CRISPR-Cas9 gene editing: CRISPR-Cas9 is a revolutionary gene-editing technology that allows for precise modification of DNA sequences within cells. This technology has the potential to correct genetic mutations, create genetically modified organisms, and study the function of genes in various biological processes. CRISPR-Cas9 has opened up new possibilities for gene therapy and personalized medicine, paving the way for innovative approaches to treating genetic disorders and advancing scientific research.

4. Genetic counseling: Genetic counseling involves providing individuals and families with information and support related to genetic risks, inheritance patterns, and available testing options. Genetic counselors help individuals understand their genetic test results, make informed decisions about family planning, and navigate the emotional and ethical implications of genetic information. Genetic counseling plays a crucial role in facilitating discussions about genetic risks, promoting informed decision-making, and empowering individuals to manage their genetic health (Mustapha, 2018).

However, the use of genetic technology in fertility also raises complex ethical and social considerations. Questions about the use of genetic information, concerns about privacy and data security,

and the potential for discrimination based on genetic traits all come into play. As genetic technology continues to advance, it is essential for policymakers, healthcare providers, and society as a whole to engage in discussions about the ethical implications of using genetic information in fertility decisions. Balancing the benefits of genetic technology in shaping fertility patterns with ethical considerations is critical to ensuring that individuals have access to comprehensive and responsible reproductive healthcare options.

Theoretical Consideration

Diffusion of Innovation Theory

The Diffusion of Innovation Theory, developed by Everett Rogers in 1962, posits that the adoption of new ideas, products, or technologies follows a predictable pattern through the diffusion process among individuals or organizations. The theory suggests that innovation adoption is influenced by various factors such as perceived benefits, compatibility with existing practices, complexity, trialability, and observability. Rogers identified different adopter categories based on their readiness to embrace innovations, including innovators, early adopters, early majority, late majority, and laggards. The theory emphasizes the importance of communication channels, social networks, and persuasive messages in facilitating the diffusion of innovations and driving their acceptance and implementation within a social system (Arsalan, 2016).

Strengths of the Diffusion of Innovations theory include its comprehensive framework for understanding the adoption and spread of new technologies or practices, its emphasis on the role of communication and social networks in diffusion, and its applicability across various contexts and disciplines. By identifying the factors that facilitate or hinder the adoption of innovations, the theory can inform strategies to promote successful implementation and integration of modern technologies in areas such as fertility and reproductive health in Nigeria (Shimakaa et al, 2018).

Applying the diffusion of innovations theory to technology adoption and fertility patterns in Lafia town, reproductive technologies like health information technology, IVF and Artificial Insemination and genetic technologies represent innovative approaches to addressing infertility and enhancing fertility pattern in Lafia town. Understanding the features, benefits, and success rates of these technologies is essential for assessing their adoption potential in Nigeria, where infertility rates may be high. The theory can be applied to explore the communication channels through which information about reproductive technologies is disseminated to individuals seeking fertility treatments in Nigeria. This could involve studying the role of healthcare providers, fertility clinics, online platforms, and support groups in educating and promoting awareness about these interventions.

Research utilizing the diffusion of innovations theory can track the adoption curve of reproductive technologies like IVF and Artificial Insemination among different segments of the Lafia town population over time. This would involve studying the progression of adoption from early adopters among urban elites to the late majority in rural communities, as well as identifying factors that influence the speed and extent of adoption. The theory is also useful in investigating the role of the social system in shaping the adoption of reproductive technologies in the study area. This includes examining cultural beliefs, societal norms, religious influences, and accessibility to healthcare services in influencing

individuals' decisions to seek fertility treatments using modern technologies in the area.

Methods

A descriptive cross-sectional survey design was used among residents in Lafia town. A sample size of 200 participants was obtained using purposive sampling method. Residents were selected based on their similar experiences to adoption of technology and fertility pattern. The instruments of data collection were questionnaire and Key Informant Interview (KII). Two hundred questionnaires were administered to residents of Lafia town. Those who could read and write in English were given the questionnaire to fill and return. Those who could not read and write the researchers assisted them in filling the questionnaires. Data collection lasted for 2 weeks and only 188 questionnaires were available for analysis as 12 questionnaires were rendered invalid. Data collected were analyzed using descriptive statistical tools such frequency and percentages to summarize the items of the questionnaire. Also, inferential statistical tool of Pearson Moment Product of Correlation Coefficient (Pearson's r) was used to test the hypotheses of the study. A five-point scaled item on the technology adoption and fertility pattern where strongly agree (SA), agree (A), undecided (UD), disagree (D) and strongly disagree (SD) was measured. The analyses were done with the aid of the Statistical Package for the Social Sciences (SPSS) version 23. Content analysis was used to analyse the quantitative data based on the themes of the study.

Results

Out of the 200 copies of questionnaires administered, twelve (12) were wrongly filled and invalidated. Thus, only 188 copies were presented for analyses as seen in tables below.

Table 1: Socio Demographic Characteristics of Respondents

Variables	Frequency (**N=188**)	Percentage **(%=100)**
Age Distribution	**Mean age=32**	
16-25	29	15.4
26-30	49	26.1
31-35	18	9.6
36-40	28	14.9
41-45	35	18.6
46 and above	29	15.4
Sex		
Male	60	31.9
Female	128	68.1
Nature of Occupation		
Civil service	69	36.7
Artisan	58	30.9
Business	32	17.0
Public service	10	5.3
Farming	12	6.4
Others	7	3.7

Marital Status		
Single	17	9.0
Married	107	56.9
Separated	15	8.0
Divorce	16	8.5
Widow	33	17.6
Religion		
Christianity	77	41.0
Islam	82	43.6
Traditionalist	29	15.4
Educational Attainment		
Non-literate	8	4.3
Primary	30	16.0
Secondary	78	41.5
Tertiary	72	38.3
Fertility Levels		
High	126	67.0
Average	46	24.5
Low	16	8.5

Source: Field Survey, 2024

The data presented on the socio-demographic characteristics of respondents revealed an average age of 33 years. This implied that there were more people of early-adult age who participated in the study. Also more women of reproductive age participated in the study. Most (68.1%) of the respondents were females. This showed that more females participated in the study since issues of fertility are better discussed with females. Data on occupation of respondents indicated that majority (36.7%) of the respondents where civil servants. This is typical of a state capital in Nigeria where a large proportion of the residents are civil servants. According to marital status, a majority (56.9%) of the respondents were married. This is important for the study since fertility pattern is fundamentally determined among married couples in a population.

Data on the religious distribution showed that a majority (43.6) of the respondents were Islams. This was given to their Muslim religious background. The people of Lafia town are predominantly. Most (41.5) of the respondents had secondary education. Also, it was found that a majority of the respondents were literate. This shows the relationship between literacy level and technology adoption in fertility. Fertility level was reported to be high with 67% respondents reporting its prevalence. The data in socio-demographic table was necessary in understanding the background of respondents and their relevance in providing useful information necessary in addressing the study objectives.

Table 2: Percentage Distribution of Health Information Technology (HIT) and Fertility Patterns among Urban Households in Lafia Town

Health Information Technology (HIT) and Fertility Patterns	SA	A	U	D	SD	TOTAL
Electronic health records provide my doctor with information for proper treatment outcomes.	47.3	15.4	11.2	18.6	7.4	100
Telehealth facilitates remote consultations for my household	75.5	8.5	5.3	7.4	3.2	100
Mobile health apps are relevant to improve reproductive health of my household.	40.4	13.3	34.6	7.4	4.3	100
Data analytics tools help analyze fertility data	54.8	12.8	21.8	8.4	2.2	100
Patient portals provides me access to my fertility-related health	67.0	21.3	9.0	2.7	0.0	100
I have safe delivery due to information technology	53.7	17.6	16.0	5.3	7.4	100
Information technology increases fertility monitoring	0.5	67.6	27.1	2.8	2.0	100
Information technology decreases treatment options	42.0	20.7	18.1	16.0	3.2	100

Source: Field Survey, 2024**.**

Data presented in Table 2 shows the influence of Health Information Technology (HIT) and fertility patterns among urban households in Lafia Town. The presentation shows that majority of the respondents (75.5%) strongly agreed that Telehealth facilitates remote consultations for their household, thereby improving their fertility situation. This was followed closely by the views of respondents on the influence of another HIT on fertility pattern where a majority (67.0) of respondents reported that patient portals provides them access to their fertility-related health issues in the area. A majority of the respondents (54.8%) also strongly agreed that data analytical tools help them analyze fertility data in the area. Similarly, (67.6%) of the respondents agreed that information technology increases fertility monitoring in the study area.

Table 3: Percentage Distribution of Assisted Reproductive Technology (ART) and Fertility Patterns among Urban Households in Lafia Town

Assisted Reproductive Technology (ART) and Fertility Patterns	SA	A	U	D	SD	TOTALL
My family used In vitro fertilization (IVF).	72.9	8.5	5.3	4.8	8.5	100
I adopt Intrauterine Insemination	4.8	0.5	6.9	6.9	80.9	100
Egg/Sperm donation is what I adopt	3.2	3.7	6.9	12.2	73.9	100
	6.9	6.9	6.9	14.9	64.4	

I use Intracytoplasmic Sperm Injection.	5.3	5.9	10.1	15.4	63.3	100
My doctor recommended Egg Freezing and I use it	1.6	9.0	5.9	29.3	54.3	100
I adopt surrogacy to reproduce	2.1	5.9	3.7	6.9	81.4	100
Gamete Intrafallopian Transfer (GIFT) increases my fertility chances	2.7	1.6	1.6	2.7	91.5	100
Zygote Intrafallopian Transfer (ZIFT) increases my fertility chances						

Source: Field Survey, 2024**.**

Data on Table 3 above reveals the influence Assisted Reproductive Technology (ART) on fertility patterns among urban households in Lafia Town. A majority of the respondents (33.1%) strongly agreed that their family used In vitro fertilization (IVF) to improve and determine their fertility pattern in the study area. However, a majority of the respondents strongly disagreed the adoption of various assisted reproductive technologies such as Intrauterine Insemination (80.9%), Egg/Sperm donation (73.9%), Intracytoplasmic Sperm Injection (64.4%),Egg Freezing (63.3%),surrogacy (54.3%),Gamete Intrafallopian Transfer (81.4%) and Zygote Intrafallopian Transfer (91.5%).

Table 4: Percentage Distribution of Genetic technology and Fertility Patterns among Urban Households in Lafia Town

Genetic technology and Fertility Patterns	SA	A	U	D	SD	TOTALLL
I go for CRISPR-Cas9 gene editing	3.2	2.7	5.3	18.6	70.2	100
I use DNA fingerprinting	2.1	5.9	7.4	14.9	69.7	100
I adopt preimplantation genetic testing	5.3	6.9	8.0	9.0	70.7	100
My partner advice we go for next-generation sequencing.	4.8	4.3	6.4	16.5	68.1	100
I adopt pharmacogenomics testing	2.1	5.9	3.7	6.9	81.4	100
Polymeras Chain Reaction increases my chances of fertility	2.1	7.4	3.7	6.9	79.8	100
Whole Exome Sequencing (WES)	2.7	3.2	7.4	8.5	78.2	100
Microarray analysis helps me to make fertility decisions	3.2	2.7	2.7	14.9	76.6	100

Source: Field Survey, 2024**.**

Data presented in Table 4 shows respondents' adoption of genetic technology and fertility patterns among urban households in Lafia Town. Data showed that genetic technology influenced fertility patterns. However, only a few respondents accepted the adoption of genetic technology in the area. A majority of the respondents strongly disagreed that they adopt pharmacogenomics testing (81.4%), Polymeras Chain Reaction increases my chances of fertility (79.8%), Whole

Exome Sequencing (78.2%) among other genetic technologies. This implies that residents of Lafia town are yet to adopt genetic technologies in handling fertility issues.

Test of Hypotheses

Hypotheses of the study were tested using Pearson Moment Product of Correlation Coefficient (Pearson's r). Qualitative data collected from Key informants were also presented to support the quantitative data.

Hypotheses One

Ho: There is no significant effect of Health Information Technology (HIT) on fertility patterns among urban households in Lafia Town.

Table 5: Pearson correlation between Health Information Technology (HIT) and Fertility Patterns

S/N	0	1	2	3	4	5	6	7	8
1	Electronic health records provide my doctor with information for proper treatment outcomes.	1							
2	Telehealth facilitates remote consultations for my household	-.081**	1						
3	Mobile health apps are relevant to improve reproductive health of my household.	-.140**	.772**	1					
4	Data analytics tools help analyze fertility data	.121*	.289**	.330**	1				
5	Patient portals provides me access to my fertility-related health	.506**	.472**	.572**	-.097**	1			
6	I have safe delivery due to information technology	.788**	-.006**	-.146**	.309**	-.505**	1		
7	Information technology increases fertility monitoring	.759**	-.060	-.130**	.249**	-.509**	.973**	1	
8	Information technology decreases treatment options	.738**	.199**	.044	.305**	-.509**	.973**	.838**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Given the findings above, it was inferred that Health Information Technology (HIT) as tested in the study was statistically significant as correlated at 0.05 and 0.01. Therefore, the null hypothesis which states that, there is no significant effect of Health Information Technology (HIT) on fertility patterns among urban households in Lafia Town was rejected while the alternative hypothesis which stated that; there is a significant effect of Health Information Technology (HIT) on fertility patterns among urban households in Lafia Town was accepted. Information Technology (HIT) and

fertility patterns were further buttressed by a 42 years old interview respondent in Lafia city who asserted that:

> I have seen firsthand how health information technologies have transformed the way individuals in Lafia Town approach their fertility journey. With easy access to online resources, telemedicine consultations, and mobile health apps, people are now more informed and empowered to make decisions about their reproductive health. This has been particularly helpful for individuals facing fertility challenges, as they can now access information, connect with healthcare providers, and track their fertility journey in a more convenient and efficient manner. Overall, I believe that the influence of health information technologies has been positive in shaping fertility patterns in our community, making it more accessible and inclusive for individuals seeking reproductive care.

Furthermore, 53 years old woman from Lafia town, a medical personnel asserted that:

> The availability of electronic medical records, telehealth platforms, and fertility tracking apps has significantly improved the way we deliver care to individuals struggling with fertility issues. With the use of these technologies, we can now offer more personalized, evidence-based treatment options, monitor patient progress remotely, and provide timely support and guidance throughout their fertility journey. The integration of health information technologies has not only enhanced our ability to provide quality care but has also empowered individuals to take control of their reproductive health. I believe that these technologies play a crucial role in shaping fertility patterns in our community, offering new possibilities and hope for those seeking to build their families.

This showed that, Health Information Technology (HIT) influence fertility patterns among urban households in Lafia Town.

Hypotheses Two

Ho: There is no significant effect of Assisted Reproductive Technology (ART) on fertility patterns among urban households in Lafia.

Table 6: Pearson correlation between Assisted Reproductive Technology (ART) and Fertility Patterns

S/N	0	1	2	3	4	5	6	7	8
1	My family used In vitro fertilization (IVF).	1							
2	I adopt Intrauterine Insemination	.640**	1						
3	Egg/Sperm donation is what I adopt	.832**	.779**	1					
4	I use Intracytoplasmic Sperm Injection.	.098**	.529**	.263**	1				

5	My doctor recommended Egg Freezing and I use it	-.358**	-.548**	-.434**	-.480**	1			
6	I adopt surrogacy to reproduce	.187**	.010**	.224**	-.191**	.152**	1		
7	Gamete Intrafallopian Transfer (GIFT) increases my fertility chances	.265**	.432**	.548**	.487**	-.334**	.194**	1	
8	Zygote Intrafallopian Transfer (ZIFT) increases my fertility chances	.459**	.449**	.437**	.597**	-.429**	.053**	.567**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Based on the findings above, it was revealed that Assisted Reproductive Technology (ART) significantly correlated fertility patterns at 0.01 and 0.05. Therefore, the null hypothesis which stated that there is no significant effect of Assisted Reproductive Technology (ART) on fertility patterns among urban households in Lafia was rejected while alternate hypothesis which stated that the there is a significant effect of Assisted Reproductive Technology (ART) on fertility patterns among urban households in Lafia was accepted. Supporting the view on the influence Assisted Reproductive Technology (ART) on fertility patterns among urban households in Lafia Town, 38 year old woman from Lafia town had this to say:

> As someone who has personally experienced the challenges of infertility in Lafia Town, I understand firsthand the barriers that individuals face when considering assisted reproductive technologies. The high costs associated with procedures like in vitro fertilization and surrogacy make it difficult for many individuals and couples to access these treatments. Additionally, the lack of insurance coverage and limited financial support further exacerbate the financial burden, leading to a low adoption rate of assisted reproductive technologies in our community. Despite the advancements in fertility treatments, the reality is that many individuals are unable to afford these options, creating a significant gap in access to reproductive care for those in need.

In the addition, a 37 years old woman in Mararaba, Lafia town asserted that:

> As a healthcare provider specializing in reproductive health in Lafia Town, I have observed the challenges that individuals face when considering assisted reproductive technologies. While these treatments offer hope for those struggling with infertility, the ethical concerns and cultural beliefs surrounding procedures like in vitro fertilization and genetic testing can deter individuals from pursuing these options. Additionally, the lack of awareness and education about the benefits and risks of assisted reproductive technologies

contributes to the low adoption rate in our community.

The findings from KII therefore confirm that Assisted Reproductive Technology (ART) influence fertility patterns among urban households in Lafia.

Hypotheses Three

Ho: Genetic technology has no significant effect on fertility patterns among urban households in Lafia town.

Table 7: Pearson correlation between Genetic technology and Fertility Patterns

S/N	0	1	2	3	4	5	6	7	8
1	I go for CRISPR-Cas9 gene editing	1							
2	I use DNA fingerprinting	.-139**	1						
3	I adopt preimplantation genetic testing	.491**	-.005**	1					
4	My partner advice we go for next-generation sequencing.	-.197**	.446**	-.035**	1				
5	I adopt pharmacogenomics testing	.063**	.094**	-.030**	-.030**	1			
6	Polymeras Chain Reaction increases my chances of fertility	.224**	.100**	.177**	.127**	-.032**	1		
7	Whole Exome Sequencing (WES)	.545**	.011**	.885**	.040**	.064**	.276**	1	
8	Microarray analysis helps me to make fertility decisions	.180**	.406**	-.016**	.948**	-061**	.093**	.017**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Based on the findings above, it was revealed that the aspects of genetic technology significantly correlated fertility patterns at 0,01 and 0.05. Therefore, the null hypothesis which stated that genetic technology has no significant effect on fertility patterns among urban households in Lafia town was rejected while the alternate hypothesis which stated that genetic technology has no significant effect on fertility patterns among urban households in Lafia town was accepted. A key informant agreed to the assertion that genetic technology influence fertility patterns among urban households. To this effect, a 31 year old mother of three children had this to say:

> As a genetic counselor working in Lafia Town, I have noticed the apprehension and reluctance among individuals in adopting genetic technologies for fertility purposes. The low adoption rate can be attributed to the ethical dilemmas surrounding genetic testing, concerns about privacy and data security, as well as the lack of

> awareness and education about the benefits of genetic technologies in aiding fertility treatments. In a community where cultural beliefs and traditions play a significant role in decision-making, individuals may be hesitant to embrace genetic technologies due to fear of the unknown and unfamiliarity with the implications.

Another respondent in Lafia aged 31 years also responded that:

> As a fertility specialist in Lafia Town, I have observed the challenges faced by individuals in considering genetic technologies as part of their fertility journey. The low adoption rate of genetic testing and reproductive technologies can be attributed to a combination of factors, including limited access to genetic counseling services, concerns about the accuracy and reliability of test results, and the high costs associated with genetic procedures.

The findings from qualitative data collaborated with the result from the quantitative data. Result revealed that genetic technology influence fertility patterns among urban households in Lafia town.

Discussion of Findings

Health Information Technology (HIT) and Fertility Patterns in Lafia Town

Health Information Technology (HIT) and fertility were examined in the study area. The findings showed that, HIT such as Telehealth facilitates, patient portals and data analytical tools influence fertility patterns among urban households in Lafia Town. This implies that residents of Lafia town are yet to adopt genetic technologies in handling fertility issues. The findings were in agreement with the study by Otieno (2019) who found that Health Information Technology (HIT) plays a crucial role in influencing fertility patterns among households by enhancing access to reproductive health services. Telemedicine and mobile health platforms have revolutionized the way individuals can interact with healthcare providers, enabling remote consultations, access to contraceptive prescriptions, and information about family planning options. This increased accessibility is particularly beneficial for individuals in underserved areas, where traditional healthcare services may be limited, ultimately empowering individuals to make informed choices about their reproductive health. Findings above showed that, there is link between Health Information Technology (HIT) and fertility patterns among households in the study area.

Influence of Assisted Reproductive Technology (ART) and Fertility Patterns among Urban Households in Lafia Town

Findings on the influence of Assisted Reproductive Technology (ART) and fertility patterns among urban households in Lafia Town shows that, respondents were of the view that the assisted reproductive technology including In vitro fertilization (IVF), Egg/Sperm donation, Intrauterine Insemination, Gamete Intrafallopian Transfer and Zygote Intrafallopian Transfer affect fertility pattern. However, only a few percent of the respondents indicate the adoption of these technologies in the study area. These findings were in line with Ola (2012) who found that one major factor is the high cost associated with low adoption of reproductive technologies is attributed to the fact that many individuals and couples may not be able to afford the expensive procedures, which can include in vitro

fertilization (IVF), surrogacy, and genetic testing. Insurance coverage for reproductive technologies is often limited or non-existent, leaving those who are unable to pay out of pocket with few options. This financial barrier can create significant hurdles for those who are struggling to conceive and may deter them from pursuing treatment altogether.

Genetic technology and Fertility Patterns among Urban Households in Lafia Town

The findings on genetic technology and fertility patterns among urban households in Lafia Town shows that a majority of the respondents declined adopting genetic technologies to improve fertility. This implies that residents of Lafia town are yet do adopt genetic technologies in handling fertility issues. Thus, there is low level of utilization of genetic technology in the study area. The findings were in agreement with Zakariya (2018) who observed that a reason for low adoption of reproductive technologies is the ethical and moral concerns that some individuals may have. The use of assisted reproductive technologies can raise complex ethical dilemmas surrounding issues such as the status of embryos, the creation of multiple embryos, and the potential risks to the health of the mother and child. These concerns can lead some individuals to opt out of pursuing reproductive technologies, as they may feel uncomfortable with the procedures or believe them to be morally wrong. Additionally, cultural and religious beliefs may also play a role in individuals' decision to forgo reproductive technologies, further contributing to low adoption rates.

Conclusion

This study has shown that technology adoption such as Health Information Technology (HIT), Assisted Reproductive Technology (ART) and Genetic technology has to a greater extent influenced fertility patterns in Lafia town. Findings revealed significant barriers leading to low adoption rates of assisted reproductive technology and genetic technology. There is need to conduct assessment to develop tailored interventions addressing the specific challenges faced by urban residents in a bid to adopt reproductive technologies in the study area.

Recommendations

The study recommended that:

i. To address the issue of health information technology and improve fertility pattern, there should be implementation of community-based health information technology education program to increase awareness and knowledge among urban residents in Lafia Town. This program could include workshops, educational materials, and training sessions on the benefits and usage of technology in healthcare
ii. For assisted reproductive technology, there should be advocate for expanded insurance coverage for assisted reproductive technology procedures to make them more affordable and accessible for urban residents in Lafia Town.
iii. Government should establish a genetic counseling program to address ethical concerns and cultural beliefs surrounding genetic technology adoption in Lafia Town. Genetic counselors, in collaboration with healthcare professionals and community leaders, can provide information, guidance, and support to individuals and families considering genetic testing and other reproductive technologies.

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Media representation and lived Experiences of Sexual abuse among in-school adolescent girls during COVID -19 Pandemic, Delta-North Senatorial District, Delta State, Nigeria

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Abstract

The study media representation and lived experience of sexual abuse among in-school adolescent girls during COVID -19 pandemic clearly exposed the complexities of sexual abuse during COVID-19 pandemic. The study aim to assess how media represent incidents of sexual abuse involving in-school adolescent's girls during the pandemic, identify types of media stories that were used to draw attention to the rise in sexual abuse cases during the pandemic and examine the challenges journalist faced in eliciting sexual abuse information from in-school adolescent girls during the pandemic lockdown. An attempt to investigate the lived experiences, qualitative and quantitative methods were utilized to investigate media representation and lived experiences of sexual abuse among in-school adolescent girls during the COVID- 19 pandemic in Delta North Senatorial District. A cross-sectional face to face interview were conducted among in-school adolescent girls who were victims of sexual abuse. A structure questionnaire and in-depth interview guide with opened questions was utilized for data collection. The study revealed several critical insights that media represent the lived experiences of sexual abuse among in-school adolescent girls during COVID -19 lockdown due to the aggregate value of mean and standard deviation of 4.2754 and 0.7002 respectively. The qualitative result support the assertion that in-school adolescent girls experienced frequent sexual abuse during COVID-19 pandemic from their responses which is in-line with the quantitative result. The study affirmed that media campaigns or stories were used to draw attention to the rise in sexual abuse cases during the pandemic. Overall, journalist(s) faced challenges while eliciting sexual abuse information because adolescent girls restrained to tell their sexual abuse experiences as a result of culture stigma, societal taboos, fear, shame and blame, social exclusion from peers and threat from perpetrators with a gross mean of 3.9687. Based on the findings, there is need for continuous monitoring and evaluation of the effectiveness of interventions used in addressing sexual abuse among in-school adolescents.

Keywords: Abuse; Experiences; Lived; Media; Representation; Sexual

Introduction

Sexual abuse is ingrained in our society and COVID -19 lockdown measures have heightened the vulnerability of in-school adolescent girls to sexual abuse, perpetrated by non-strangers in their private homes. Recent study indicated that not much is known about adolescent sexual abuse experienced during COVID - 19 lockdown (Burz-yask & Contreras, 2020). Thus, providing the exact figure for the scale of

problem is difficult and is equally under estimated due to the difficulties families encountered in accessing hospitals and social structures (Mekaour *et al*., 2020). Findings have shown that sexual abuse is prevalent in all countries of the world and has significant impact on health and wellbeing of the children (Radiford *et al*., 2020; Singh *et al*., 2014). More so, in the wake of COVID -19 pandemic concerns have been raised that the pandemic may derail global effect against sexual abuse (Evelyn *et al.,* 2021). In addition, COVID -19 lockdown measures have exposed adolescent girls to more sexual abuse, emotional abuse and neglect due to isolation and confinement with potential perpetrators during COVID -19 lockdown measure. Significantly, COVID-19 pandemic lockdown measures have had adverse effect on public health and brought untold harm to in-school adolescent girls' sexual health but how do we know and who will tell? It's base on this backdrop the study seeks to examine the Media report on experiences of sexual abuse among in-school adolescent girls during COVID -19 Pandemic in lived Delta-North Senatorial District

Statement of the problem

Amidst the COVID-19 pandemic and the drastic lockdown measure one of the most concerning issues was the rise in cases of sexual abuse among the vulnerable groups like the in-school adolescent girls. Due to the key role of the media in shaping public discourse and raising awareness but, the extent to which the prevalence of sexual abuse is exacerbated is not known. Therefore, the study explores how media representation intersects with the lived experiences of in-school adolescent girls to gain insight and address the challenges they face.

Research Questions

1. How did media represent the lived experiences of sexual abuse among in-school adolescent girls during COVID-19 lockdown in Delta North?

2. What types of media campaigns or stories were used to draw attention to the rise in sexual abuse cases during the pandemic?

3.What challenges did journalist face in eliciting sexual abuse information from in-school adolescent girls during the pandemic lockdown?

Literature Review

Adolescent Sexual Abuse (ASA) is a critical issue and a global priority for achieving sustainable development goal for both children and adolescent worldwide. The This implies that any sexual activity involving a person less than 18 years of age is considered as sexual abuse. Also, a review study considered adolescent sexual abuse to be a risk factor for several other conditions like alcohol consumption, illegal drug usage, development of mental disorders and spread of sexually transmitted diseases which when pooled are accountable for over 20% of the world global burden (Bassani et al.,2014).Adolescent sexual abuse occurs in all settings and in various ways within the families, school, groups, institutions, playground, communities and where children spend their time (Deviries *et al*.,2015).Studies also revealed that sexual abuse are perpetrated by their peers, boyfriends, acquaintances, neighbors, or relatives (Daru *et al.,*2011;Akinlusi *et al*.,2014). Some scholars affirmed that sexual abuse perpetrators are persons close to the victims (Abdulkadir *et al*.,2011;Akhiwu *et al*.,2013) In a survey research in Minna, Abulkadir *et al.*,(2011)reported that all the participants both adolescent boy and girls acknowledge that their perpetrators were

male neighbor's .The study of Akhiwu *et al*.,(2013) shows that out of 1028 cases treated in police medical Centre, Benin,88 .8% of victims stated that their perpetrators were people they are familiar with. Findings from several studies shows that sexual abuse among adolescent girls are higher and frequent (Daru, *et. al.*,2011). European studies revealed that 6-36%of girls and 1-15% of boys had abusive sexual experiences before the age of 16. The actual prevalence rate is not known since the sexual crimes are not disclose making the exact figure and statistical data difficult to obtained because there is no in- depth information on abuse cases and disclosure. It has been documented by various researchers that victims of sexual abuse don't seek for redress or report their abuse or acts due to shame, stigmatization prolonged court cases, religion and negative assertions by others or distrust in their stories (McElvaney *et al*., 2014). More so, Delta state with diverse socio-economic resources may not be able to collect all the reports of sexual suspected sexual abuse cases. Studies shows that most sample presented were clinical records for example in the review studies of Bugaje *et al*., (2012); the number of abuse cases was 33 and only 20 were sexually abused cases. This is an indicator that hospital records do not present true abuse statistics because most adolescent sexual abuse victims do not disclose their abuse. (Adeosun, 2015). Egbon (2012) opined that stories on sexual abuse hardly make news headlines as 75% of 183 articles analyzed where published on inside page. Nwabueze & Oduah (2014) lend credence to the fact that sexual abuse cases are not treated with priority in Nigeria. Statistics indicate that a significant number of adolescent experiences some forms of sexual abuse or harassment during their adolescence period. A review of 217 studies conducted in2011, found out that 1 in 8 of the world children have experienced sexual abuse before the age of 18years (Stoltenborgh *et al,*.2011). Similarly, Roca *et al*., (2020) affirmed that 275 million children worldwide are exposed to physical, sexual and emotional abuse. Generally, recent findings show that sexual abuse has significant impact on health (Radford *et al.*, 2020; Singh *et al*.,2014). More so, Stoltenborgh *et al.*, (2011) sees adolescent sexual abuse (ASA) as power differential between the child and perpetrator along with the age difference. A survey from Action for Treatment Access (PATA) revealed that over 31.4% of girls reported that their first sex encounter was rape, forced or un-consented sex (Kawa,2013) Rape cases have been occurring before the emergencies of COVID-19 but studies have shown that sexual violence has taken a threatening dimension during the lockdown were victims and rapists are being trapped in the web of Covid-19 restrictions (Fraser, 2020; Lennard,2020). Though no statistics to show the crime extent but sources such as existing research, media reportage, telephone, interviews and official reports from law enforcement agencies like Nigeria Police Force (NPF) provide insight into the magnitude and reality of this rape phenomenon. Studies have shown that most perpetrators of Adolescent Sexual Abuse (ASA) are relations of victims' parent, aunts, uncles or friends with close family bond. Musbau (2013) affirmed to the accelerating rate of rape incidents in Nigeria society and calls for urgent attention. Rape is an evil crime against humanity. A crime committed intentionally and can be under the influence of drugs, alcohol and sexual desiring the nudity of a woman or teenage girl. Women over years have been sexually abused by rape, beaten, transgressed and murdered on daily basis (Achumike & Kitause, 2014). COVID -19 pandemic recorded a dreadful

spike in rape and other forms of abuses. Onuah (2020) bewailed at the alarming increase with three-fold increase in abuse. Deutsche (2020) & United Nations International Children's Emergency Fund, UNICEF, (2020) confirmed the increase rate of sexual abuse against women and girls. Reports from the Nigeria Police Force, a total of 717 rape cases were recorded in May, 2020 and July, 2021. More so, the minster of Women Affairs and Social Development, Senator, Paullen Tallen reported that each state of the federation recorded at least 100 rape cases during COVID - 19 lockdown July 13th, 2020 (Punch,2020). In June, 2020 a magistrate court sitting in Isiok remanded a 37 years old man, Sunny Onuegbu for using knife to rape a teenage girl in Rivers State. In June,2020 a 22-year-olduniversityfemale student, Uwaila Vera Omozuwa was raped in a church near her home in Benin- city and died due to the injuries she incurred (Egbejule,2020). Hamira, a five-year-old was drugged and raped by her neighbor in April, 2020, her injuries were so severe that she could not control her bladder. Barakat Bello an18-year-old female student was raped in his home in Ibadan, Oyo State. She was butchered with machetes by her rapists and died in June 1, 2020(Punch, 2020). More so, a thirteen-year-old Biose had been sexually abused by his father in Lagos State. More so, one Favour Okechukwu, 11years old girl was reported gang -raped to death in Ejigbo area of Lagos (Premium Times, 2020). Further, Isika (2020) reported that a lady was raped and killed in her home. A 12-year-old was raped by 11 men in Jigawa State, a 21year old girl was raped and murdered in Enugu on the 26th of March,2020. A 70-year-old woman was raped in Ogun State. In May, 2021; a six-year-old girl was raped to death in Kaduna State. This cause heart break and severe pain for her parents. The avalanche of rapes causes women to carry placard calling out for justice on the street Lagos (Fig.2).



Fig.1. Women protest against rape during COVID- 19 lockdown in Lagos.

A serial of sexual assault leading to the death of girls were reported during the lockdown (UNICEF,2020). Rape cases continue to traumatize young girls and leave women in pains and health dangers (Esere, Idowu, Durosano & Omotosho, 2019) and the numbers of victims remains unsubstantiated because of stigmatization and threat from the abuser. In a country where rape and other forms of sexual violence are highly

under reported (Aborisade, 2014; Aborisade & Vaughan,2014). This is alarming (Abrak,2020). Also, Ezeilo & Oriye (2020) acclaimed that it is becoming clearer that we are not just fighting corona virus pandemic in Nigeria but also rape epidemic happening simultaneously with COVID - 19 pandemic. Sexual abuse is pervasive in Nigeria including the six geopolitical zones. For example, in **North Central zone** cases of rape, child marriage and sexual assaults are high. Duru et al., (2011) attest that 90.1% of female victims of sexual abuse were mostly children under the age of 17years.Azeezat(2022) state that a 15year old girl was raped during a robbery in Kubwa a town in Abuja. The **North**-**East zone** face a significant challenge regarding sexual abuse due to Boko Haram insurgency many women and girls have been raped, abducted and forced into sexual slavery. Also, Aisha Umar a female internally Displaced Person (IDP) in Borno State was allegedly raped and killed by an official of international Non- Governmental Organization (Azeezat,2022). In the **North**-**West zone**, children and in-school adolescent girls have been sexually abused and forced into child marriage against their will. In the **South**-**East zone** sexual abuse victims often face challenges accessing justices and support services due to cultural and societal stigmatization. A review of study 'child sexual abuse among adolescents in the southeast Nigeria; A concealed public health behavioral issue' shows 40%of prevalence rates of sexual abuse among adolescent and 11.5% with male perpetrators (Manyike et al.,2015).More so, Peter Ezeala 61 years and Elochukwu Igwilo,27 years old were arrested by police in Anambra for defiling four minors in Umudim Nenewi (Azeezat,2022).In the **South South zone**, The international Federation of women Lawyers(FIDA)revealed that over 50 cases of teachers defiling their students had been reported and charged to court in Rivers State.(Azeezat,2022). Furthermore, in **South West zone**, Nuwel Ajagu 40 years, reported defiled the teenage daughter of his brother in Lagos. Oluwabamise Ayanwola,22 years was raped, killed and her private part' cut out'. A 45year old father Akinyemi Akinrotoye continuously rape his 12-year-old daughter every night in Ondo State (Azeezat, 2022)) The spike and dynamics of sex crimes during the period of Covid-19 lockdown prompt the study in examining the specific forms of abuse while contributing to the developing body of literature on vulnerabilities of in-school adolescents' girls sexual abuse and victimization during this exceptional period. Other cases of rapes were also reported across Niger Delta (Table 1) by Uzobo & Nwanwene (2021) and these portends danger to the vulnerable adolescence girls

Table 1: Selected reported rape incidence in Delta State, Nigeria (2020-2021)

Year of Incidence/ Report	Victim	Suspected perpetrator(s)	Outcome
2021	19-year-old girl	A member of the Delta State Anti-Cult Volunteer Corps	Arrested by the police
2021	15-year-old girl	Seven-man gang	No arrest was made
2020	19-year-old girl	A Clergyman	Arrested by the police

2020	14-year-old girl	A 51-year-old man	Arrested by the police
2020	12-year-old girl	A 38-year-old man	Arrested by the police
2020	14-year-old girl	Youth President of a community	Arrested by the police
2020	16-year-old teenage girl	Two armed-men robbers	

(Uzobo & Nwanwene, 2021)

Furthermore, given the fact that statistics do not reveal the exact figure of abuse victims, this invariably shows that sexually abused victims do not report their sexual abuse experiences to the authority which silence have made victims face the burden alone and with fear, subject themselves to secondary victimization and stigmatization (Aborisade & Vaughan, 2014; Awosus & Ogundama, 2015).The fact that girls do not report their abuse makes it a primary factor for their rapist to continue the abuse. More so, the heightened economic crisis and disrupted economic activities during the COVID -19 lockdown in Nigeria were glaring factors that rendered in – school adolescent girls, women and children vulnerable to face abuse. UNICEF (2020) attributed sit –at – home measure to the vulnerability of in-school adolescent girls to sexual abuse. Abrak (2020) on the other hand, regarded the closure of brothels as part of COVID -19 restriction mandates contributed to the spike in the number of cases of sexual abuse. More so, law enforcement officers have taking undue advantage of the power bestowed on them during the lockdown to sexually victimized women (Aljazeera, 2020). Speculations on police sexual violence against female citizens was widely spread in Nigeria (Aborisade, 2018; Aborisade & Oni, 2020).

Theoretical Framework

Narrative Theory

Narrative paradigm is a communication theory conceptualized by 20th century communication scholar Walter Fisher. The theory claims that all meaningful communication occurs via storytelling or reporting of event (Mello, 2001). Humans participate as storytellers and observers of narratives. This theory further claimed that stories are more persuasive than arguments. More so, the theory helps us to know how humans understand complex information through narratives (Mello, 2001).

Relevance of Narrative Theory

The theory highlights the importance of telling and understanding the experiences, impacts of in-school adolescent girls' sexual abuse during the Covid-19 pandemic. It explores the relevance of narrative theory in studying interpersonal communication and how telling may provide crucial insights into the experiences of in-school adolescent girls subjected to sexual abuse during the Covid-19 pandemic. The theory focuses on the construction of personal stories as a means of sense-making whereby in-school adolescent girl who have experienced sexual abuse may use narratives practices to help process their experience, regain themselves and find support. Telling their stories through interpersonal communication can help in their healing process. More so, the theory recognizes the importance of

storytelling and how personal narratives shape our understanding. Thus, sexual abuse victims use narratives as a means of self-expression, healing and reclaiming agency. Further, the theory underscores significance of sexual abused victim's narratives as a means of empowerment and building social support.

Methods

The study adopts a mixed research design, using a qualitative and quantitative method to investigate media representation and lived experiences of sexual abuse among in-school adolescent girls during Covid-19 pandemic in Delta North senatorial district**.** A cross-sectional face to face interview was conducted among in-school adolescent girl who are of survivors of sexual abuse. A structure questionnaire and interview guide with opened questions was utilize for data collection**.** The population for this is the in-school adolescent girls ages 10-16years who have experienced sexual abuse during covid-19 pandemic lockdown. The reason for the selection of in-school adolescents as participants for this study is because they vulnerable to sexual abuse and can easily be misled by their peers. Moreso, the study was carried in Delta North senatorial district featuring 4 local government areas and 8 selected secondary schools (Table 2), two each was purposely selected (Table 2).

Andrew Fischer's formula and value of 95 % confidence interval with Z-score of 1.96 and 5 % precision error was utilized to determine the sample size

$n = Z^2 P(1 – P) /d^2$

Where n = Sample size

Z =Z –score = 1.96, P = Proportion (Assumption of in-school Adolescent Sexual Abuse (ASA) 47.5 % (Assefa & Dessalegn, 2008) and d = margin error – 5 %

$n = 1.96^2 \times 0.475 (1 – 0.475) / 0.05^2$

$= 3.8416 \times 0.475 (0.525) = 0.957999/0.0025 = 383.$

Table 2: Sample size distribution across the selected 8 Secondary Schools in Delta North Senatorial District.

Delta North	Oshimili South	Government Secodary School, Asaba	30	7.83%
		Niger Mixed Secondary School, Asaba	30	7.83%
	Aniocha South	Ezemu Girls Grammar School, Ubulu –Uku	30	7.83%
		Nshiagu College Ogwahi –Uku	37	9.66%
	Ukwuani	Ebedei Secondary School, Ebedei	60	15.66% 14.88%
		Obiaruku Secondary School, Obiaruku	57	18.27% 18.01%
	Ika South	Marymount College, Agbor	70	

	Baptist Girls Secondary School, Agbor	‘Secondary 69

Source: (Odedede, 2024)

To obtain an understanding of in-school adolescent sexual abuse during COVID -19 pandemic lockdown, a sample size of twenty (20) participants was chosen purposely for this study. The

quantitative data were collected from twelve (08) secondary schools and was aided by research assistants who speak English Language fluently to help guide the in-school adolescent girls during data collection. More so, the questionnaire consists of simple question drawn from the study that requires “Yes or No” answers and a 5-point Likert Scale questions ranging from strongly agree to strongly disagree were adopted. In the qualitative approach, data collection involved the recruitment of two research assistants to participate in the interview process. Also, twenty (20) consenting participant of in-school adolescent girls who were sexually abused during the COVID -19 pandemic lockdown were purposively considered useful for this study. However, a face-to-face interview, note taken and recording of interpersonal interactions and responses were adopted.

Data were analyzed using descriptive statistical methods of mean, standard deviation, frequency and percentage to describe the findings. The quantitative data of this study were performed using the conventional qualitative content analysis (Hsieh & Shannon, 2005). The result of this analysis was congruent with the descriptive nature of the study by exploring the objectives of interpersonal communication and experiential account of sexual abuse in-school adolescent girls during COVID – 19 pandemic. Finally, the results from qualitative and quantitative data were analyzed and integrated.

Discussion of Findings

Table 3: **Research Q1 How** did media represent the lived experiences of sexual abuse among in-school adolescent girls during covid -19 lockdown in Delta North?

S/N	Items	Mean	Std. Dev	Obs.
1.	Media represent the lived experiences of sexual abuse among in-school adolescent girls during the Covid-19 lockdown in Delta State?	4.1302	0.8388	384
2.	There were narratives or themes were most commonly represented in the media as it relates to sexual abuse among in-school adolescent girls during the covid-19 lockdown?	4.3046	0.6450	384
3.		4.3307	0.6483	384

4.	The voices of adolescent girls were represented in media reports on sexual abuse during Covid-19 lockdown I Delta State Were there challenges in accessing protection and support services during COVID-19 pandemic lockdown.?	4.3229	0.6700	384
5.	Were victims and perpetrators of sexual abuse involving adolescent girls represented in the media during the pandemic lockdown?	4.3489	0.6991	384
	Grand Mean-	**4.2954**	**0.7002**	
	Source:(Odedede, 2024)			

The result in Table 3 above revealed that all the 5-items scored above 2.00 cut-off point of the mean; however, majority of the respondents agreed that were reports no sexual abuse during lockdown, though varied by region (Mean = 4.3489). Overall, the values of the aggregate mean and standard deviation of 4.2954 and 0.7002 suggest that they were representation lived experiences of sexualabuse among in-school adolescent girls during Covid19 pandemic lockdown.

Using the results obtained from the IDI support the above assertion, that they were report of lived experienced of sexual abuse during Covid-19 pandemic.

In line with this, one of the IDI said that:

> *'In my community where I come from, we experience and see cases of sexual abuse and the cases are always frequent. I was 13years of age, when I was sexually abused; the incident occurred because I allowed someone to touch my breast in a sexual way; although taking-off my clothes was rare; however, there was a time someone took it off at night; that was when it happened.* ***I feel sick when I think about this experience.*** *(IDI 2: 18years; Christian/Urhobo – Unemployed Parent).*

In support, another respondent stated as follows:

> 'I was sexually abused at age 12. My dad did it to me; he frequently touches me in sexual ways and this incident occurred because my mum is dead. My dad usually takes off my clothes and exposes his sexual organ to me. The experience I must tell you. **I felt pained about it** (IDI 11: 16years; Christian/Ukwani– Employed Parent).

In support, three (3) respondents shared their views as follows:

> 'I was sexually abused at 11years of age. Objects and fingers were not often inserted in my vagina but my clothes were taken off sometimes. The truth is that **I felt scared** when I was sexually abused at that tender age (IDI 7: 15years; Traditional Worshipper /Ukwani – Unemployed Parent).
>
> 'I was sexually abused at age 13; an experience I can easily not forget. I can hardly forget it because my dad

frequently touches my body in a sexual way; he always sneaks at night into my room to do this. When I was sexually abused, **I felt unspeakable**. (IDI 14:18years; Christian/Urhobo – Unemployed Parent living with Step Moth?

Table 4: Research Q2 What types of media campaigns or stories were used to draw attention to the rise in sexual abuse cases during the pandemic?

S/N	Items	Mean	Std. Dev	Obs.
1.	There were awareness campaigns in the rise of sexual abuse among in-school adolescent in social media platforms during the pandemic.	3.9531	1.0183	384
2.	There are real-life survivor stories reporting on alarming statistics from support organization.	3.9687	1.0930	384
3.	Media campaign faced challenges to reach out to vulnerable populations like the in-school adolescent girls in low- resource settings.	3.8229	1.1402	384
4.	Digital media were used to spotlight sexual abuse cases during the pandemic?	3.8802	1.1130	384
5.	The media focus on personal narratives of in-school adolescents' girls to create awareness on sexual abuse issues.	3.8098	1.1430	384
	Grand Mean	**3.8869**	1.1015	

Source: (Odedede, 2024)

The result in Table 4: revealed that all the 5-items scored above 2.00 cut-off point of the mean; however, most of the respondents said that there was awareness in the rise of sexual abuse in-school adolescent during the pandemic (Mean = 3.9687) and international media campaign differ from local media campaign in addressing sexual abuse issues during the pandemic (Mean = 3.9531). In addition, respondents consented that there were challenges to research out to vulnerable population like in-school sexual abuse Overall, the values of the grand mean and standard deviation of 3.8869 and 1.1015 indicate that media used personal narratives of in-adolescent to create awareness on sexual abuse issues.

The results obtained from the IDI supports the above assertion that media creates awareness of adolescent sexual abuse through their lived experiences of sexual abuse narratives

'I experienced sexual abuse without penetration. I experienced the challenges that inhibited me from disclosing my sexual abuse experience and this made me not to tell anyone about it. One of the reasons for not telling my sexual abuse experience is the ***fear of people not believing in my story and blames t****hey might put on me that I am the cause of the problem (IDI 5: 18years; Christian/Aniocha – living with Employed Parent*

'I experienced sexual abuse with penetration. I could not tell anyone because of ***feeling*** *of* ***shame*** *and* ***threat from my abuser*** *(IDI 6: 17years; Traditional Worshipper/Aniocha –living with Employed Parent step mother).*

My experience with my abuser was a forceful penetration of my vagina. I practically I was afraid to tell anyone simply because of ***threats from my abuser that he will kill me if I ever tell anyone'*** *(IDI 15: 18years; Christian/Urhobo – Unemployed Parent).*

Table 5. Research Q3 What challenges did journalist face in eliciting sexual abuse information from in-school adolescent girls during the pandemic lockdown?

S/N	Items	Mean	Std. Dev	Obs.
1.	Cultural stigmas and societal taboos affect journalist in eliciting sexual abuse information from in-school adolescents' girls	3.9270	1.0766	384
2.	Legal restrictions affected journalists' ability to report on sexual abuse cases during the pandemic.	4.0208	1.0667	384
3.	Health and Safety measures related to COVID-19 pandemic impacted journalists' ability to investigate and report on sexual case in-person.	3.6744	1.1497	384
4.	Journalists face challenges in ensuring that sexual abuse cases involving adolescents receive adequate attention as it relates to gender base violence reporting.	3.7239	1.1570	384
5	Journalists face challenges using digital tools in reporting sexual issues during the lockdown especially where there is limited network	4.0287	1.0789	384
	Grand Mean	**3.8749**	**1.1057**	

Source: (Odedede, 2024)

The result in Table 5 revealed that all the 5-items scored above 2.00 cut-off point of the

mean; also, most of the respondents agreed that Journalist face challenges using digital tools in reporting sexual cases during the lockdown especially where there limited (Mean = 4.0287) and legal restrictions affected the journalist ability to report on sexual abuse cases during the pandemic. (Mean = 4.0208). In addition, majority of the respondents agreed cultural stigma and societal taboos affect journalist in eliciting sexual abuse information from in-school adolescents (Mean = 3.9270). Overall, the aggregate mean and standard deviation values of 3.8749 and 1.1057 are clear indications that to a very large extent, Journalist face challenges in ensuring that sexual abuse cases involving in-school adolescents receive adequate attention.

The results obtained from the IDI support the assertions that

'**Cultural or societal norms** affects how sexually abused adolescent girls communicate simply because sex in the place where I come from is a strong t**aboo**; so, discussing anything that has to do with sex is difficult for abuse victims to tell experiences. (IDI 1: 15years; Traditional Worshipper/Isoko – Employed Parent).

In similar vein, other respondents remarked that:

'. whether you are a Christian, Muslim, or Traditional Worshiper, discussing issues relating to sexual abuse is inviolable; thus, the experience of sexual -abuse victims affect communication patterns and conversational willingness.

*'*Shame **and judgment issue** makes (WE) the abused victims not to tell experiences; this affects communication patterns and conservational willingness. Again, because sex is a strong taboo in some culture, people find it generally difficult discussing it; this makes I difficult for abused victims to tell experiences. If you must help them, you need healthy relationship among adolescents **(**IDI 19: 17years; Traditional Worshipper/Ukwuani – Employed Parent).

Findings

The quantitative result established that media represent the lived experiences of sexual abuse among in-school adolescent girls during covid -19 lockdown in Delta North? due to the aggregate value of mean and standard deviation of 4.2754 and 0.7002 respectively (Appendix 1). To probe further the qualitative result (the in-depth interview) support the assertion that in-school adolescent girls experienced frequent sexual abuse during covid-19 pandemic from their responses which is in-line with the quantitative result. Several studies gave credence to the research findings. Azeezat (2022) study divulged that a 22years old Oluwabanice Ajawole was raped and killed. Odunsi (2020) study tells how Maureen was raped by her father during Covid-19 pandemic lockdown. Also, the study findings also revealed that media campaigns or stories were used to draw attention to the rise in sexual abuse cases during the pandemic Consequently, the findings agree with the results of Azeezat (2022); Odunsi (2020) and Egbejule (2020) revealed that sexual abuse stories were used to create awareness in the rise of sexual abuse during COVID-19 pandemic covid-19 lockdown. In-addition, the study findings shows that journalist face challenges in eliciting sexual abuse information because adolescent girls restrained to tell their sexual abuse experiences as a result of cultural stigma, societal taboos, fear, shame, and blame, social exclusion from peers and threat from perpetrators with a gross mean of 3.9687(Table 3).

Conclusion

This study provides valuable insights into the lived experiences of in-school adolescent girls who have been victims of sexual abuse during the COVID-19 lockdown. The study findings indicate that the pandemic intensified existing vulnerabilities among adolescent girls, exposing them to heightened risks of sexual abuse due to lockdown. Furthermore, the research suggests the needs in strengthening effective policies and intervention programs that do not limit in-school adolescent girls to tell sexual abuse experiences due to cultural stigma, societal taboos, fear, shame, blame, social exclusion from peers, threat from perpetrators and mitigate its impact in times of crisis.

Recommendations

Base on the study findings there is need for continuous monitoring and evaluation of the effectiveness of interventions used in addressing sexual abuse among in-school adolescents; this can be achieved by establishing partnerships with external agencies such local NGOs, child protection services and law enforcement to ensure a coordinated responses to cases of sexual abuse.

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Impact of Leadership Styles on Employee Engagement in the Nigerian Oil and Gas Industry

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Abstract
There is substantial evidence that leadership behaviours have on employee motivation, commitment, and satisfaction in businesses, this literature review critically investigated the relationship between leadership styles and employee engagement. The review synthesized findings from several studies to show how different leadership methods impact employee engagements and outcomes, drawing on a range of theoretical frameworks such as the Leader-Member Exchange (LMX) Theory and transformational versus transactional leadership models. In addition to highlighting the value of strong leader-follower connections in promoting engagement, it points out research gaps and offers directions for further investigation. The ultimate goal of the knowledge acquired is to educate organizational leaders on how to improve employee engagement through focused leadership interventions, especially in intricate industries like the oil and gas sector in Nigeria. This review concludes that transactional leadership guarantees compliance but falls short in terms of intrinsic involvement, whereas transformational leadership greatly boosts employee engagement through vision and tailored support. The requirement for flexible techniques that take into account moderating elements including corporate culture, labor demographics, and industry dynamics is highlighted by laissez-faire leadership, which is harmful to engagement in high-stakes industries.

Keywords: Impact; Leadership; styles; leader-follower and relationship

Introduction

Leadership style is an important determinant of the level of employee engagement that an organizational employee is likely to have. This is why Voon et al. (2011) identified leadership as the behaviours and attitudes adopted by organizational leaders that are likely to influence the motivation, commitment, and satisfaction of employees at work. This insight helps in understanding how employee engagement will be impacted by a productive working environment in the organization. This literature explores the idea of leadership style in a variety of ways and how it relates to employee engagement. This is because the level of employee engagement is significantly influenced by the leadership style. The literature also offers proof of how crucial a role leadership may play in influencing workers' attitudes, actions, and output. This literature review's primary goal is to critically assess the studies done on the relationship between employee engagement and leadership style. Through synthesizing findings from several studies, the review tries to bring to light the mechanisms through which different leadership styles influence the outcome of employee engagement. This review aimed to

identify gaps in the literature and propose avenues for future research to contribute to a greater understanding of this complex relationship. With an emphasis on the Nigerian oil and gas sector, the review attempts to investigate the effects of three distinct leadership philosophies—transformational, transactional, and laissez-faire—on worker engagement. To improve engagement and performance, it places a strong emphasis on comprehending how leadership styles interact with corporate culture, workforce traits, and industry dynamics.

Definition of Leadership and Leadership Style:

A leader's influence over the culture and tone of an organization is significant. Northouse, (2021) defined leadership as the process by which an individual influences a group of people to accomplish a common objective. Effective leaders can guide their followers toward achieving organizational objectives. Scholars have sought to differentiate between managers and leaders, with Kotter (2008) suggesting that managers maintain order and consistency, while leaders drive change and motivate employees. Bhalla (2023) views leadership in organizations as a guiding force that provides direction and purpose, leading to enhanced performance. This perspective aligns with Bass's (1985) argument that effective leadership confers competitive advantages on organizations. Both Bass (1985) and Yukl (1998) describe leadership as a process in which a leader influences employees to behave and perform in desired ways. The style of leadership directly impacts employee attitudes, behaviors, and feelings, which in turn affects the organization (Çetin et al., 2012). Factors such as characteristics, abilities, personality, experience, and environment all influence leadership style (Bass, 2008). Developing a strong leader-follower relationship necessitates that leaders recognize and respect the personal values of those who contribute their energy and talents to achieving common goals (Bass, 1985). Leadership style is a core concept in organizational behavior, and various authors have provided different definitions to capture its complexity. Over time, numerous leadership theories have emerged, highlighting the diverse characteristics, traits, and styles of leaders (Bass, 1985). According to Jay, (2014), leadership style is the way a leader exercises his authority and makes decisions in influencing followers within an organizational set-up. He went further to explain that the concept encompasses behaviors, attitudes, and traits that leaders must possess to handle the affairs of their team in pursuit of common objectives. Although, leadership style is a concept that has conventionally attracted attention in the broad subject of industrial-organizational psychology and management literature. From this perspective, many theoretical frameworks have tried to classify and understand different leadership styles.

Northouse (2018) defines leadership style as the behaviors and actions leaders use to influence their followers. He emphasizes that leadership style is not a fixed trait but a dynamic and adaptable set of behaviors that can vary depending on the context and the needs of followers. This definition underscores the flexibility of leadership styles, suggesting that effective leaders must be able to adapt their approach to suit different situations. Contrarily, Lewin et al. (1939), in their seminal work, categorized leadership styles into three distinct types: authoritarian, democratic, and laissez-faire. They posited that each style has a distinct set of characteristics and impacts on group dynamics and performance. For instance, authoritarian leaders make decisions

unilaterally, which can lead to quick decision-making but may stifle creativity and reduce job satisfaction among employees. Democratic leaders, on the other hand, encourage participation and collaboration, which can enhance job satisfaction and innovation but may slow down decision-making processes. Laissez-faire leaders provide minimal guidance, which can lead to high levels of autonomy but may result in a lack of direction and accountability. According to Lewin et al., (1939), this tripartite model provides a clear framework for understanding the different approaches leaders can take, but it has been critiqued for being overly simplistic and not accounting for the nuances and complexities of modern organizational environments.

Burns, (1978) introduced the concepts of transformational and transactional leadership styles, offering a more nuanced understanding of leadership. Vij, (2022) identified that Leaders who exhibit transformational leadership encourage and motivate their followers to put the organization's needs ahead of their own. O'Reilly and Chatman, (2020) and Vij, (2022) see these leaders as visionary and charismatic, fostering an environment of trust, admiration, and loyalty. On the other hand, transactional leadership concentrates on the interactions between leaders and followers, wherein conformity is attained through rewards and penalties. Burns' definitions highlight the motivational and relational aspects of leadership, suggesting that transformational leadership can lead to higher levels of employee engagement and performance compared to transactional leadership. However, some critics argue that this dichotomy oversimplifies the spectrum of leadership behaviors and does not fully capture the complexity of how leaders operate in real-world settings (Bass & Avolio, 1994). Further expanding on transformational and transactional leadership, Bass and Avolio, (1994) introduced the Full Range Leadership Model, which includes a continuum of leadership behaviors from laissez-faire to transformational leadership. They argue that effective leaders use a combination of these styles depending on the situation, suggesting that flexibility and adaptability are key components of effective leadership. This model addresses some of the critiques of earlier definitions by acknowledging that leaders often need to employ multiple styles rather than adhering to a single approach.

Transformational Leadership:

This approach places a strong emphasis on creativity, vision, intellectual stimulation, and personalized attention. This type of leadership fosters trust and admiration by coordinating employee goals with company objectives and offering individualized support. Positively correlated with increased levels of engagement and intrinsic drive. Enhances job satisfaction and corporate commitment by fostering creativity, innovation, and a sense of purpose. Especially successful in demanding and dynamic settings where creativity and agility are essential, like the Nigerian oil and gas industry. Employees are inspired and motivated by transformational leaders who match their personal aspirations with those of the company. Higher levels of employee engagement, dedication, and performance result from this style's cultivation of trust, admiration, and loyalty. According to the review, transformational leadership improves the quality of leader-member exchange (LMX), which is essential for encouraging participation.

Transactional Leadership:

This approach focuses on measuring performance, formalized meetings, and the use of incentives and enforcement to ensure

compliance and achieve goals. To ensure that tasks are completed on time and according to plan, such a system formulates the roles and rewards very specifically. For predictable outcomes, it is effective in highly regulated industries like oil and gas. It fails, however, in its ability to nurture creativity or innovation, since it lacks the emotional bond and internal motivation needed for sustained, deep engagement. Transactional Leadership focuses on structured interactions with rewards and penalties. They can also induce high-quality leader-member exchange interactions by establishing clear expectations and providing contingent rewards. By establishing consistent interactions and reiterating performance expectations, this leadership approach enhances employee engagement even if it might not have the same profound effect as transformational leadership.

Laissez-Faire Leadership:

This approach, which is characterized by little oversight, direction, or involvement, enables staff members to function autonomously with little to no advice from the boss. Due to a lack of direction and assistance for staff, this laissez-faire attitude produces LMX connections of poor quality. Because the absence of leader support and ambiguity, frequently result in low morale, disengagement, and dissatisfaction. It frequently results in uncertainty and unmet demands among employees, which eventually lowers engagement levels. Lack of proactive leadership involvement impedes the growth of respect and trust, which are necessary to cultivate an engaged workforce.

Authoritarian Leadership:

Unilateral choices made by authoritarian leaders can produce results quickly, but they can also inhibit creativity and lower employee work satisfaction. Because it restricts employee involvement in decision-making, this approach may have a detrimental effect on engagement. Especially successful in demanding and dynamic settings where creativity and agility are essential, like the Nigerian oil and gas industry.

Conceptualization of Employee Engagement:

One definition is that employee engagement is a multidimensional construct demonstrating the relationship that workers have with their work and company on an emotional, cognitive, and behavioral level (Saks, 2006). Kahn, (1990) argued that it goes beyond mere job satisfaction and encompasses a sense of purpose, involvement, and commitment to organizational goals according to Macey and Schneider, (2008) and Saks, (2006), engaged workers are dedicated to their jobs, show high levels of energy, and are motivated; they demonstrate commitment to the goals and values of the organization.

Scholars have made several conceptual developments in the definition of engagement, with common elements including job involvement, organizational commitment, and psychological empowerment (Rich et al., 2010). Job involvement is when one's needs are highly involved with his or her work (Kanungo, 1982); organizational commitment embodies loyalty and attachment to the organization (Meyer & Allen, 1991); psychological empowerment is feelings of competence, autonomy, and impact in one's job role (Spreitzer, 1995).

Kahn, (1990) made a significant early contribution by characterizing engagement as the fusion of the personal and professional lives of organizational members, in which people express

themselves physically, mentally, and emotionally while performing their roles. He posited that personal engagement is influenced by job characteristics, interpersonal interactions, and the organizational environment. Kahn argued that engaged workers embody the qualities of self-employment and self-expression in their work by bringing their ideas, beliefs, feelings, values, and creativity to their work (Kahn, 1990). Following Kahn's foundational work, other scholars developed additional conceptualizations of employee engagement (EE), each framed within different theoretical backgrounds and measured by various scales (Christian et al., 2011; Shuck et al., 2017). Initially, EE was studied as the opposite of burnout. Maslach & Leiter (2008) defined EE through the antitheses of burnout variables like fatigue, cynicism, and a loss of professional efficacy—that is, via the lenses of energy, participation, and efficacy.

According to their perspective, engagement and burnout represent two sides of the same coin, which together define overall employee well-being. Contrary to this duality, Schaufeli et al., (2002) argued that EE should be regarded as a separate concept, characterizing it as an optimistic, gratifying, work-related mental state marked by energy, commitment, and absorption. High levels of energy, a willingness to put effort into one's task, and perseverance in the face of difficulties are characteristics of vigor. Enthusiasm, motivation, pride, and a sense of challenge are all parts of dedication. When someone is completely focused and absorbed in their task, time flies by and they find it difficult to step away from it. This is referred to as absorption (Schaufeli et al., 2002). Schaufeli's model is widely accepted and cited in both psychology and management literature.

Saks, (2006) later defined EE to include two types: work engagement and organizational engagement. Job engagement refers to the individual and the job's features, whereas organizational engagement refers to the larger organizational context and structure. Saks pointed out that the theories given by Kahn, (1990) and Maslach & Leiter, (1997) simply addressed the psychological factors that underpin engagement, not why people engage at different levels in response to those conditions. To bridge this gap, Saks based his concept on social exchange theory (Cropanzano & Mitchell, 2005; Cropanzano et al., 2003), which suggests that engagement is driven by reciprocal interactions between employees and their employers.

Generally, the conceptualization of employee engagement has been focused on the development of a work environment that engenders positive emotion, meaningful work experience, and feelings of belongingness among employees (Bakker and Demerouti, 2008). Engaged employees will more likely exert their full potential to the organization, which can result in better performance, innovation, and organizational success (Baengagemetkker et al., 2011). Different leadership styles manifest various outputs within the ranks (employees), high engagement, creativity, and innovation with commitment are some of the manifestations of transformational leadership. Task-oriented engagement is noticed in transactional leadership which employee focus and expectations are in exchange for rewards, compliance and engagement are mostly driven by external motivators rather than psychological or emotional commitment. Employees' lookout is bleak and uncertain because of minimal support and supervision, the presence of low morale, and low productivity. In rare cases, some employees may thrive independently, but

overall engagement suffers from unclear expectations, these are manifestations associated with Laissez-Faire Leadership

Theoretical Framework

Graen and Uhl-Bien, (1995) developed the Leader-Member Exchange (LMX) Theory, which is a crucial framework for examining how leadership philosophies affect workforce engagement. According to the LMX hypothesis, leaders and subordinates form distinct, dyadic interactions that can differ in quality. Mutual trust, respect, and obligation are hallmarks of high-quality LMX interactions. These connections have been shown to promote employee engagement, work satisfaction, and organizational commitment, among other favorable results (Graen & Uhl-Bien, 1995; Liden, Wayne, & Stilwell, 1993). Transformational and transactional leadership styles have been shown to foster high-quality LMX relationships through different mechanisms. Transformational leaders are characterized by traits including idealized influence, intellectual stimulation, inspirational drive, and individualized consideration, engaging employees by aligning their goals with those of the organization and providing personalized support (Bass & Avolio, 1994). This alignment and support cultivate strong LMX relationships, enhancing employee engagement (Breevaart et al., 2014). Transactional leaders, on the other hand, focus on clear structures, rewards, and performance monitoring. By setting clear expectations and providing contingent rewards, transactional leaders establish predictable and reciprocal exchanges that can also lead to high-quality LMX relationships and thereby increase employee engagement (Judge & Piccolo, 2004).

In contrast, laissez-faire leadership, which is characterized by a hands-off approach and lack of active engagement with subordinates, typically results in low-quality LMX relationships. This style is often associated with ambiguity, lack of support, and unaddressed employee needs, which can lead to decreased employee engagement (Skogstad et al., 2007). The absence of leadership input and feedback in laissez-faire leadership hinders the development of trust and respect, essential components of high-quality LMX relationships (Harris & Kacmar, 2006).

Empirical research supports the connection between LMX quality and employee engagement. For instance, Breevaart et al., (2014) found that high-quality LMX relationships mediated the relationship between transformational leadership and employee engagement, highlighting the critical role of strong leader-follower interactions. Similarly, Martin et al. (2016) demonstrated that high-quality LMX relationships were associated with increased job satisfaction, organizational commitment, and reduced turnover intentions.

In the context of the Nigerian oil and gas industry, applying LMX theory can illuminate how different leadership styles affect employee engagement. Given the sector's complexity and the critical importance of employee motivation and retention, understanding the mechanisms through which leadership styles influence engagement is essential. By fostering high-quality LMX relationships, transformational and transactional leaders can enhance employee engagement, driving better organizational outcomes. Conversely, the detrimental effects of laissez-faire leadership on LMX quality and engagement highlight the need for more proactive and supportive leadership approaches. This theoretical framework underscores the importance of effective leader-member exchanges in fostering an engaged

workforce. It suggests that leadership development programs in the Nigeria Oil and Gas industry should focus on cultivating transformational and transactional leadership behaviors that promote high-quality LMX relationships, thereby enhancing employee engagement and organizational performance.

Leadership Styles and Employee Engagement

Organizational psychology and management literature have addressed the topic of leadership style and its effect on employee engagement in great detail. According to Thanh and Quang, (2022), the two concepts place much emphasis on proper leadership in the formation of organizational culture, behavior, and performance. Different streams of studies have been conducted on different styles of leadership such as transformational, transactional, charismatic, and laissez-faire, about the concept of employee engagement. At the same time, numerous studies have been conducted under various lenses on factors that influence employee engagement; among these influencing factors, the styles of leadership cropped up as significant predictors. Studies have examined the leadership positions of charismatic (Babcock-Roberson & Strickland, 2010), authentic and transformative (Breevaart et al., 2014; Zhu et al., 2009), and "team-supportive" (Xu and Cooper, 2011) leadership philosophies. These investigations have yielded inconsistent findings, while some have been reported. For example, Papalexandris and Galanaki (2009) noted that one such knowledge gap is in the connection between employee engagement by subordinates of entrepreneurial CEOs and the "good management and mentoring" style. Furthermore, job performance, contentment, and dedication to the company are predicted by a leader's capacity to foster employee engagement, which is demonstrated by respect and care for the growth and well-being of the workforce (Alimo-Metcalfe et al., 2008). Employee development, power sharing, and effective communication techniques are a few examples of what is considered good management and mentoring leadership (Papalexandris and Galanaki, 2009). Additionally, studies backed by several engagement measures, such as Britt et al. (2006) and Schaufeli et al. (2002), showed conflicting results about the connection between transformative leadership and employee engagement (Wefald, Reichard, and Serrano, 2011).

Leadership Style and Employee Engagement: Empirical Evidence

Transformational Leadership on Employee Engagement

Higher levels of employee engagement are consistently correlated with transformational leadership, which focuses on inspiring motivation, intellectual stimulation, communication, individual consideration, and visualization. For example, Herminingsih, (2020) specified a significant positive correlation between transformational leadership and the engagement of employees since these leaders can engage others' commitment and enthusiasm. In the study by Albrecht and Andreetta, (2011), it was determined that transformational leadership provides a beneficial influence on job satisfaction, organizational commitment, and discretionary effort, which are the key dimensions of employee engagement. Transformational leadership posits intensive research and is one approach that has proved to have positive consequences on employee engagement. Transformational

leaders inspire and motivate employees using vision, intellectual stimulation, and individualized consideration to a higher level of commitment and engagement with an organization. Much research supports this finding: employees working under transformational leaders have more job satisfaction, organizational commitment, and discretionary effort than those of other leaders do (Tims, Bakker, and Xanthopoulou, 2011). More so, the transformational leadership style is much more effective in dynamic and turbulent environments—for example, the Nigerian Oil and Gas sector—because it calls for a great level of adaptability and innovation (Ajonbadi, 2015). However, to some critics, the idealized influence part might be a locus of the leadership dependency feeling that can restrain personal initiative, and although the favorable aspects of transformational leadership are much researched, the success can only depend on the organizational culture as well as the thorough motivation of employees, based on their inner motivation, which is likely to explain why there is no best or universally applied style of it. Hence, though the approach of transformational leadership highly increases the commitment level of employees, its way of application needs to be altered by organizational contexts and individual employee needs to attain maximal effectiveness. These findings underline the transformational effects of leaders in inspiring and empowering followers to achieve common goals, with a sense of purpose and fulfillment in the workplace.

Transactional Leadership on Employee Engagement

Although transformational leadership is often the focus of research, transactional leadership also influences employee engagement, albeit to a lesser degree. Transactional executives emphasize performance monitoring and expectation clarification, employing contingent rewards and punishments to drive their workforce. According to research by Podsakoff, MacKenzie, Moorman, and Fetter (1990), transactional leadership practices including dependent incentive and active management by exception, were positively associated with employee engagement, particularly in terms of task performance and goal attainment. However, transactional leadership alone may not be sufficient to foster deep emotional and psychological engagement among employees, as it primarily focuses on task-oriented exchanges rather than building meaningful relationships and inspiring intrinsic motivation.

An analytical perspective on transactional leadership reveals a more nuanced and complex relationship with employee engagement. Transactional leadership, which relies on contingencies such as rewards and management by exception, is effective in driving performance through clear expectations and rewards for compliance (Olayisade and Awolusi, 2021). However, it often falls short of fostering deep, intrinsic engagement and long-term commitment among employees. Herminingsih, (2020) suggests that while transactional leadership can lead to short-term organizational involvement and task completion, it does not typically inspire the higher-order psychological involvement characteristic of transformational leadership. In the context of the Nigerian Oil and Gas industry, the regulated nature of the sector makes transactional leadership appealing for achieving immediate performance goals. Nonetheless, the inherent volatility and complexity of the industry also necessitate adaptive and inspirational leadership approaches to

sustain long-term employee engagement. Therefore, while transactional leadership can be highly effective in certain scenarios, it lacks the depth to uncover true motivational drivers and the capacity to cultivate a resilient and innovative organizational culture.

Laissez-Faire Leadership on Employee Engagement

Laissez-faire leadership is characterized by being laid back, low on guidance, and the leaders leaving the employees to decide for themselves (Jin and Men, 2023). There is a lack of direct supervision and an almost total absence of any assumptions of leadership responsibilities, conditioning uncertainty in employees and consequently disengagement. According to Northouse (2018), laissez-faire leadership practice to be least effective in molding positive employee engagement. This explains why Jin and Men, (2023) indicated that the behavior usually evokes feelings of under- and mal-utilization that will then result in high levels of dissatisfaction and low levels of employee engagement. In fact, on a broad spectrum, (Olayisade and Awolusi, 2021) argued that interaction with laissez-faire leadership is viewed negatively, particularly in high-stakes sectors such as the Nigerian oil and gas industry. According to Dare, 2022), this would be because Laissez-faire leadership, which is characterized by being non-directive and a leader's proactivity to not give due support and direction, does not give appropriate support and direction for employees to feel valued and motivated. Similarly, Skogstad et al., (2007) in their studies indicated that Laissez-faire leadership does not give appropriate support and direction for employees to feel valued and motivated. However, Jin and Men, 2023) indicated that in environments where safety, regulation, and operations are critical, the absence of effective leadership often exacerbates existing issues and significantly lowers employee morale and overall performance. Akyereko, (2021) also identified that this leadership does not only cause disengagement at a single level within the organization but at all levels. Furthermore, since the Oil and Gas industry remains one of the riskiest business ventures in terms of uncertainty (AlNoaimi & Mazzuchi, 2021), it thus requires some more supportive and structured leadership mechanisms (Bass and Riggio, 2006). Consequently, Abasilim et al., (2018) and Yasir et al., (2016) noted that laissez-faire leadership would bring about more employee frustration, relatively low productivity, and high levels of turnover; hence, it would not support a committed and engaged workforce in such dynamic and challenging contexts.

Cross-Cultural Perspectives on Leadership Style and Employee Engagement

For example, cross-cultural studies have developed an understanding of the link between leadership style and engagement in employees. According to Hofstede's cultural dimensions theory, 1980, cultural values or norms could shape the effectiveness of leadership styles in motivating and engaging an employee. For instance, House et al., (2004) found that transformational leadership was stronger in its relationship with employee engagement in high collectivism and high uncertainty avoidance cultures than in low culture variations. Conversely, transactional leadership worked effectively in those cultures that were lower in their power-distance ratings and high in their individualism. This highly suggests that any judgment about the impact of the leadership style on employee engagement has to factor in cultural considerations: what works within one cultural context might not be appropriate or feasible in another altogether.

Conceptual Model: Factors Moderating the Relationship between Leadership Style and Employee Engagement

Organizational Culture and Climate

It cannot be overemphasized that organizational culture and climate determine the relationship between leadership style and engagement at work. Organizational culture has been defined by Schein, (1984) as shared norms, values, and beliefs that direct conduct among members of the organization. Climate, on the other hand, can be perceived as an atmosphere or moods that are manifest in the organization. Research has also demonstrated that organizational culture and climate can positively or negatively moderate the attitudes and behaviors of employees in an organization, further underlining the importance of a favorable environment in the issue of engagement. For instance, an organizational culture that is open, free of information exchange, and empowers its employees would most likely reinforce the positive impacts of transformational leadership on employee engagement (Avolio, et al., 2009). However, a rigid, hierarchical, change-resistant culture may dampen the effect of even the most charismatic leaders (Schein, 2010). It is therefore incumbent on the organizations to develop an engaging environment and culture that are in line with creating an effective leadership style to help increase the engagement of employees.

Employee Characteristics

Employee characteristics are further moderators of the relationship between leadership style and employee engagement. Since personality characteristics, values, and preferences are all unique to each individual, the type of leadership approach that becomes effective might be contingent upon these individual differences themselves (Judge et al., 2002). For instance, an employee who needs significant personal freedom and independence may respond well under conditions of transformational leadership, which carries high levels of power delegation and independence with leaders relative to other approaches (Bono & Judge, 2003). On the other hand, transactional leadership that is more articulated on the guidelines of tasks and procedures is likely to have a conducive effect on employees who may be perceived to enjoy such a working environment characterized by rewards and incentives in achieving specified targets. Other demographic factors that might affect employees' perceptions of the effectiveness of different leadership styles are based on age, gender, and tenure among others (Eagly et al., 2003). Understanding employee demographics thus remains a relevant variable towards ensuring an appropriate linkage of leadership style with engagement outcome measure.

Contextual Factors

Other contextual factors, such as organizational structure, industry dynamics, and external market conditions, will further moderate the relationship between leadership style and employee engagement. The nature of the industry as well as the competitive landscape may dictate what type of leadership approach is most effective for driving engagement (Dumdum et al., 2013). In industries characterized by the rapid rate of change and innovations, such as technology or new ventures, it is possible to enhance creativity and flexibility within transformational leadership among employees (Eisenbeiss, et al., 2008). Conversely, in highly regulated sectors with rigid standards, the need for transactional leadership would be strong in affecting compliance and managing risks (Avolio, et al., 2018). Moreover, the difference may lie

in organizational structure about the classification as either centralized or decentralized in terms of decision-making, which could be the reason for the difference in employees' level of autonomy and empowerment across various styles of leadership (House et al., 2004). This is the reason leaders might need to take into account the subtleties of the context in which their organizations are positioned compared to the industry when adopting and applying leadership styles best placed to increase their staff members' engagement.

Conceptual Model Diagram:

This conceptual model takes into account the moderating influences of organizational culture and climate, personnel attributes, and contextual factors to give a detailed framework for understanding how different leadership styles influence employee engagement in the Nigerian Oil and Gas business.

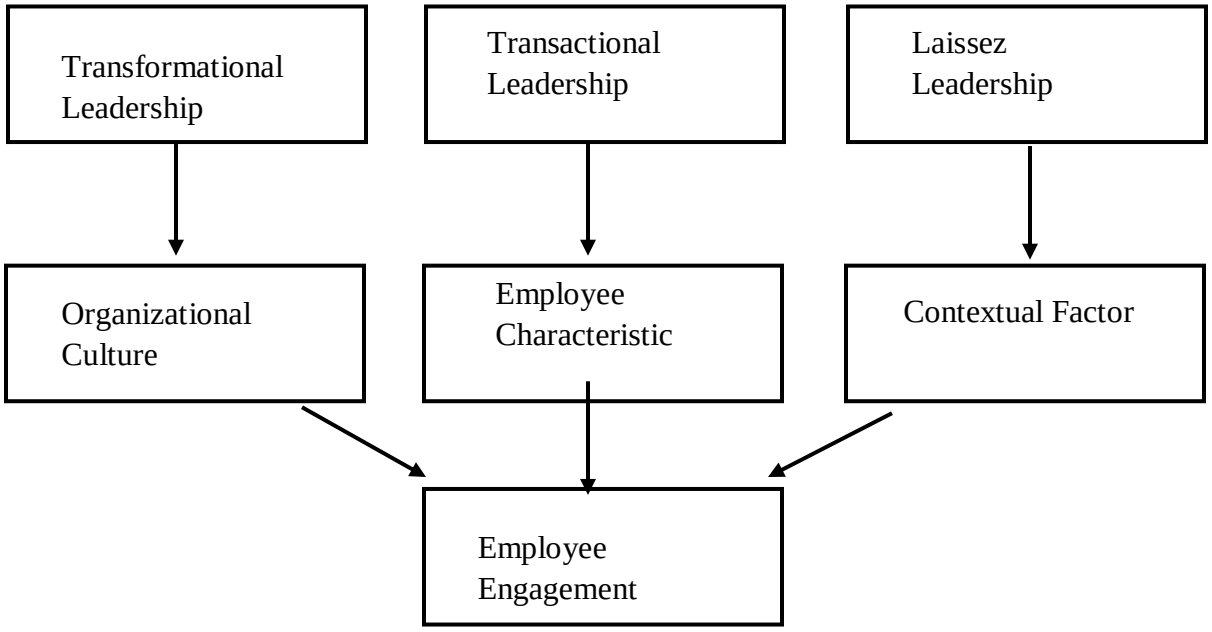


Figure 1: Conceptual model

Theoretical Integration and Conceptual Synthesis

The integration of the most important results of previous research on the correlation between leadership style and employee engagement provides insight into a rather complicated interplay of factors that activate organizational success. Transformational leadership is associated with intellectual stimulation, personalized attention, idealized influence, and inspirational drive; it has been positively linked to followers' engagement (Bass, 1985). This style gives the workers a sense of belongingness in which their dreams get intertwined with the organization's vision as a whole (Bass & Riggio, 2006). Additionally, a transactional leader although not as motivated as other leaders for a long-term commitment can still offer structure and clarity which would ultimately make levels of

working on tasks higher in terms of performance, and compliance.

Therefore, it would be imperative to build in the diversity represented by these different leadership theories toward the development of a broad model regarding how leadership style could impact employee engagement: The scope of such a model will have to include all the contextual variables, namely organizational culture, industry dynamics, and employee demographic profile, that may interact with leadership style to impact engagement. The other area that needs to be considered is the quality of leader-member exchange, psychological empowerment, and job characteristics linked to an outcome about shaping employee engagement outcomes.

From the literature, all-inclusive models should be drawn from the various parts of transformational, transactional, and situated theories of leadership with more prominence within adaptive leadership behaviors among diverse contexts (Northouse, 2018). The framework should also importantly pick up organizational values, communication practices, and performance management systems as contributing factors in shaping leadership effectiveness and employee engagement (Lowe et al., 1996). While it is possible that through the synthesis of key insights and development of some nuance of understanding—it brings the possibility of how leadership may influence engagement—this organizational leadership development initiative may provide alignment with the engendering of employee motivation, commitment, and performance.

Research Gap

Although some research has been done regarding the impact of various leadership styles on employee involvement in other industries, there is a significant vacuum in terms of research focusing on the Nigerian oil and gas sector (Olabode, Bakare, and Iheonunekwu 2018). Furthermore, despite the critical importance of leadership in the Nigerian oil and gas sector, there has been a paucity of studies addressing the current workforce dynamics, particularly the influx of newer generations, such as Millennials and Generation Z, and their responsiveness to different leadership styles (Umuteme 2020; Min 2023). These younger employees often exhibit different expectations and values compared to their predecessors, favoring inclusive, flexible, and empowering leadership approaches. However, the existing literature has predominantly focused on older leadership models and their effects on traditional workforce structures, leaving a significant gap in understanding how contemporary leadership styles—transactional, transformational, and laissez-faire—resonate with the evolving demographics of the current workforce. This oversight necessitates a comprehensive investigation into how these various leadership styles within the unique context of the Nigerian Oil and Gas industry, better align leadership strategies with the expectations and engagement needs of the modern workforce.

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Rethinking dispute resolution: the role of adjudication in communal conflict resolution in Gwer-east Local Government Area of Benue State, Nigeria

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Abstract

Different societies have adopted different ways of resolving conflict among themselves and communities. Among the Tiv people of Benue State, resolution of conflict is done through traditional methods among which is adjudication. This involves an authority taking a final decision or judgment in communal conflict among individuals and communities whom are in conflict. With the persistence of communal conflicts in Benue State, the role of adjudication has been interrogated by scholars. It was following from here that this study was undertaken to investigate how adjudication is used in Gwer-East Local Government Area to resolve communal conflict. The study adopted the Social Control Theory as theoretical frame while cross-sectional research design was utilised. Sample size was determined by Cochran's (1977) formula for sample size determination for known population. A multi-stage sampling procedure was adopted. The data was collected using structured questionnaire and in-depth interview guide. A self-developed "Traditional Mechanisms for Communal Conflict Resolution" (TMCCR) structured questionnaire was used to elicit quantitative primary data while in-depth interview guide was utilized for qualitative primary data from the respondents. Meanwhile, the study adopted a mixed method (triangulation) in data analysis. Results revealed that access to fair and impartial judicial system was crucial for achieving justice and resolving communal conflicts, prosecution was considered a last resort for resolving communal conflicts after all other options such as negotiation and mediation have been exhausted, settlement outcomes were transparent and accessible to all stakeholders involved in communal conflicts and it ensured accountability and fairness, consideration of the communal conflict matters was treated as fair and just to achieve lasting peace, the steps involved in resolving conflicts were clear to everyone in the community and opinions of all parties were considered during conflict resolution. It was

suggested that Local courts, legal literacy programmes, neutral panels, enforcement mechanisms and integration of alternative dispute resolution (ADR) within traditional legal systems should be established for more accessible resolution options. The purpose should not be to render judgement but to reconcile the conflicting parties.

Keywords: Dispute Resolution, Adjudication, Communal Conflict Resolution

Introduction

Conflict is an inevitable social phenomenon that exits in all human societies overtime. Consequently, different societies have adopted different ways of resolving conflict. Conflict resolution is the process by which two or more parties involved in a disagreement come to an amicable agreement on how to proceed (Rafferty, 2017). Scholars have over time debated regarding the most effective methods of conflict resolution. Other school of thought insisted that conflict can better be resolved through adjudication method. Adjudication therefore, involves a neutral authority making a final decision or judgment in communal conflict resolution within the framework of traditional institutions. This process is possible through the establishment of local courts, legal literacy programs, neutral panels, enforcement mechanisms and integration of Alternative Dispute Resolution (ADR) within traditional legal systems for more accessible resolution options.

In Europe, United States of America, and other developed countries, adjudication as dispute resolutions is well-known and documented. Various Native American tribes in North America have adopted this mechanism for conflict resolution. In Asia, mediation and other cultural models are employed as traditional communal conflict resolution mechanisms. From East Asia, Mainland China and Hong Kong show history of traditional models and the incorporation of mediation. The Chinese have very few court litigations. All disputes if any, is mediated. In the South East Asia, Myanmar also requires the intervention of locals for conflict resolution, especially those that involve land disputes (UNDP, 2022). Communal conflict resolution in Asia often involves the active participation of traditional institutions that have deep roots in the social and cultural fabric of the respective societies.

In most African societies, the resolution of conflicts or disputes through peaceful method in line with the values of any given community is preferred rather than violence (Aluaigba, 2011). African traditional institutions have been the ready medium of conflict resolution and management. Gever (2016),posits that three key factors help explain why most Africans in general continue to look to adjudication to resolve and manage disputes: the vast majority of Africans continue to live in rural villages where access to the formal state justice is extremely limited; the type of justice offered by the formal courts may be inappropriate for the resolution of conflict between people living in rural communities or even those in urban areas can cause conflict within the community and affect economic co-operation on which the community depends; and state justice systems in most African countries operate with an extremely limited infrastructure which does not have the resources to deal with minor disputes in the villages.

Aluaigba (2011) posits that, the north-central geopolitical zone of Nigeria where Benue State is located has witnessed unprecedented ethno-religious conflicts. Often, the explanation adduced for this phenomenon is that the region houses a very large number of ethnic groups and thus identity conflicts and contestations over residency or citizenship are regular and fierce. Benue State, from the post-independence era to the present, there have been an avalanche of conflicts among the Benue people themselves and also between the Benue and other ethnic

groups in central Nigeria, as well as other region with the attendant consequence of colossal loss of lives and property (Omotola 2006).

Recently, due to the persistent increase in the occurrence of communal conflicts in Benue state, the role of the adjudication has been called to question by scholars. There is a premise in some scholarly quarters that the hold of the traditional institution on the people have deprecated significantly with the formal authorities bestowed upon the responsibility of dispute and conflict resolution (Baldwin, 2014). There have been conflicts among Benue people themselves and also between other ethnic groups in the north central Nigeria, with the attendant consequence of colossal loss of lives and property (Omotola 2006). Studies have shown a preponderance of intra-ethnic conflicts in Benue State involving the Mbagen and Etulo, Ikurav-Tiev and Kusuv, Mbagen and Utange, Gaav and Ukan, Tsambe and Mbara, Mbagbera and Ningev, Uyoo-Nanev and Nyiev, Usar and Mbayegh, Igede and Ishangev-Tiev, Gwer and Oju, Otukpo and Ohimini, Otukpo and Obi, Mbaivur and Mbasombo, to mention a few. Up to year 2023, Benue state has been ravaged by internal conflicts bordering on land disputes and political differences mentioned as follows; Konshisha (Tiv) and Oju (Igede) local government areas (Charlse, 2020), Mbaivur (Tiv) and Mbasombo (Tiv) Clans of Gwer-East local government area (Charles, 2023), the Agila community (Idoma) Benue state and Ngbo community (Igbo) of Ebonyi state (Eze, 2020). The situation escalated to a level where houses and crops were destroyed worth billions of naira, the list of crises is endless.

Efforts by the government through its security outfits to restore normalcy in the local Government have met with daunting challenges as cases of attacks and counterattacks continue to make banner headlines in our national dailies and occupy the airwaves of our broadcast media. Several scholars have carried out research on traditional mechanisms of resolving communal conflicts in Benue State (Kwanga &Kerenku, 2007). However, no study has clearly dwelt on traditional mechanisms and communal conflict resolution in Gwer-East. It is therefore glaring that there have been little or no clear-cut studies dwelling on traditional mechanisms and communal conflict resolution, especially in Gwer-East where there have been series of communal conflicts. It is against this standing academic reality that this study was designed to be carried out in the area to investigate how adjudication is used by the traditional institution to resolve communal conflict.

Research Hypotheses

Ho: There is no significant relationship between adjudication and communal conflict resolution

Hi: There is a significant relationship between adjudication and communal conflict resolution.

Literature Review and Theoretical Framework

Conflict

Conflict refers to the contradictions inherent in power relations and which manifest themselves in individual and with nature in the pursuit of limited resources or opportunities. It can be creatively transformed to ensure equity, progress and harmony; or destructively transformed to engender acute insecurity (Tsuwa & Adorawa, 2023). However, conflict connotes a wide range of understandings of a situation or a behaviour in which the interests, needs, goals, or values of involved parties interfere with one another or are perceived to interfere with one another. Conflict is a disruption caused by different of ideas or actions often related to the selfish pursuit of needs that ends in state of unrest (Tsuwa & Adorawa, 2023).

Anene and Duru (2019), describe conflict as a condition identifiable group of human beings tribal, ethnic, linguistic, religious and socio-political or cultural groups in conscious opposition to one or more other identifiable human groups because these groups are seeking

for better incompatible goals. Conflict is a particular relationship between states or rival factions within a state, which implies subjective hostilities or tension manifested in subversive economic or military hostility. Conflicts that end up with negative outcomes are regarded as dysfunctional conflicts (Alimba, 2014). Conflicts exist whenever an action by one party is perceived as preventing or interfering with the goals, needs, or actions of another party. Conflict can arise over a multitude of organisational experiences, such as incompatible goals, differences in the interpretation of facts, negative feelings, differences of values and philosophies, or disputes over shared resources. As defined above, conflict tends to be associated with negative features and situations that give rise to inefficiency, ineffectiveness, or dysfunctional consequences. But in some cases, it can actually stimulate creative problem-solving and improve the situation for all parties involved.

Adjudication and Communal Conflict Resolution

In traditional African society, adjudication involves bringing all disputants in the conflict to a meeting usually in the chambers or compounds of family heads and palace courts as the case may be. Dialogue is linked with adjudicatory processes in a traditional setting (Anene & Duru, 2019). Adjudication is the most significant aspects of conflict resolution. It is the end product of adjudication, after the disputants have been persuaded to end the dispute, peace was restored. This restoration of peace and harmony is always anchored on the principle of give a little and get a little (Anene & Duru, 2019). In adjudication, traditional tribunals are commonly used because they are "simple, understandable, flexible and popular, speedy inexpensive and accessible" (Aiyedun & Ordor 2016). They play an important role in reducing litigation through the formal courts in African developing countries.

In corroboration, Adom (2023) acknowledged that, in fulfilling their roles as judges in Tiv Traditional institution, Clan heads of a community ask questions and weigh evidence and causes in the light of cultural values and norms and the merits of individual cases. Wrongful acts result in disputes '*ijir'* which are brought before the Clan head the disputes are resolved on an individual basis according to the values held by the entire community (Bennett 2012). Customary law practices are not written in stone and vary from community to community they are "neither homogenous nor static" (Aiyedun & Ordor 2016).

There are various views concerning the foundation of adjudication. In traditional Nigeria society and Benue State in particular, adjudication involves bringing all disputants in the conflict to a meeting usually in the chambers or compounds of family heads, quarter heads and palace court as the case maybe. Dialogue was linked with the adjudicatory processes in traditional societies. In corroboration, Adom (2023) note that, in order to control conflict and ensure peace and stability in the community, Tiv traditional institution like the *ityo* (elders) met regularly to deliberate on matters of the community and during the meetings dialogues are carried out. However, Maritz (2007) is of the opinion that the main aim of adjudication is to bring parties to a table and agree on the terms and conditions. On the conflicts between nomads and cattle herders, different strategies are also suggested by different communities, governments, and researchers to improve their relationship. For instance, Blench (2004), in research conducted in Kebbi and Plateau States, found that most of the conflicts are settled directly between the two parties. However, if not, then it is usually carried to a meeting between the Ardo (head of the herders) and the village head of the farmers. Similarly, if the dispute is not settled, it would then be taken to the district head in some rare cases. The last resort is to go to the police, which is usually done

by the farmers. It further explained that herders declined going to the police for conflict resolution because they were always made scapegoats.

In his contribution to literature of adjudication Bambale (2006) posit that, adjudication is a non-violence method of conflict management. It involves the use of the courts and litigation processes. Parties to a dispute may choose not to use any of the methods discussed here, they may choose instead to take their case to a court of law, before a judge of competent jurisdiction where legal counsels may represent then. At the end of the process, the court gives a judgment and is legally binding on both parties. The judgment will be further enforced, where necessary, by law enforcement agencies of the state (Bambale, 2006).In the same vein, Mollel (2009) examines the impact of adjudication to resolving conflicts in the great lakes of Africa with particular emphasis on the Democratic Republic of Congo.

Theoretical Framework

Social Control Theory

Social control theory is one of the fundamental theories in criminology. According to social control theory, behaviour is controlled and regulated by our social bonds. Individuals are less motivated to participate in deviant or criminal behaviour when their social bonds are strong. This is demonstrated in their attachment with other members of the community, engagement in social activities, and belief in social norms and values. Social control theory does not address the causes of crime, but rather focuses on why people obey the law. In other words, it explains conformity rather than deviance. Social control theory is primarily associated with the work of Travis Hirschi (1969), an America social scientist who proposed that people generally conform to social norms due to strong social bonds. Conversely, they engage in delinquent acts when these bonds are broken or weak. The key components of social bonds are:

i. Deviant behaviour is minimized when people have strong social bonds. The bonds encourage conformity to social norms and discourage deviance.
ii. Society maintains order by punishing deviant behaviour and reaffirming its commitment to social rules.
iii. The criminal justice system protects the power and privileges of the capitalist class.
iv. The primary participant in deviant and criminal behaviour are people in the lower social classes.

In relation to the study, people who are closely attached to others, like friends and family and belief in common societal values might be more concerned about their opinions, and therefore, conform to norms to gain approval. The belief in common social norms and values could translate to belief in the mechanisms that may be instituted to address social issues including the resolution of communal conflicts in Gwer-east. Traditional institutions in Gwer-east have their peculiar mechanisms of communal conflict resolution whereby traditional leaders and rulers persuade, mediate, negotiate, reconcile and adjudicate conflicting parties. And as a result of the social bonds, beliefs and values shared by members of the community, they tend to adhere to decisions taken and mechanisms stipulated by the traditional institutions, thereby paving the way for effective communal conflict resolution in the state.

The social control theory is not without criticisms. The theory places too much importance on social bonds relative to an individual and society, but it does not consider other concepts such as autonomy and impulsiveness. Also, it examines criminal behaviour by emphasizing deterrents rather than motivators. Despite these criticisms, the

social control theory is relevant to the study because the theory reinforces order and stability in the society, which is the hallmark of traditional conflict resolution mechanism such as adjudication which applied by traditional institutions in Gwer-east. Importantly, the theory explained the relevance of traditional mechanisms for communal conflict resolution in the Area.

Methods

The study adopted cross-sectional research design. The cross-sectional research design is an observational study design where the investigator simultaneously examined both the outcome and the exposures in the study participants. Gwer-East LGA was created in 1976 with its headquarters in Aliade. It has a total population of 243,500 (2022 projection), and landmass of 2,276 Km2. Gwer-East has 14 council wards and shares boundaries with Gwer-West, Tarka, Konshisha, Gboko, Oju, Otukpo and Makurdi LGA respectively. Major tribes that occupied the area are the Tiv and Igede and the major religions are Christianity, Traditional and Islam. The study is designed in its setting to cover Gwer-East LGA. The justification for using the LGA as study setting is due to the persistent communal conflict in the area, which have displaced a lot of people, destroyed uncountable worth of properties as well as lives. The targeted population of the study was the entire population residing in the LGA.

In order to determine the sample size for this study, Cochran's (1977) formula for sample size determination was adopted. It is adopted because, the targeted population of the study being residents of Gwer-East from the age bracket of 18 years and above was not known. Although, the total population of the Local government was known but, the exact number of people who used traditional mechanisms for conflict resolution was not known. Therefore, this formula was used. The Cochran formula enabled the calculation of an optimal sample size based on the desired level of accuracy, the desired level of confidence, and the expected portion of the attribute in the population. The formula is represented as thus;

$$n_o = \frac{z^2 Pq}{e^2}$$

Whereas n_o = Sample size

z = the selected critical value of desired confidence level (2.58)

p = the estimated proportion of an attribute that is present in the population (0.5)

q =1-p

e = the desired level of precision (0.03)

In this case, the calculation was based on a sample size of a large population whose degree of variability was not known. The assumption was that the maximum variability was equal to 50 %(p=0.5) and taking 95% confidence level with ±5% precision, the calculation for required sample size was as follows:

P=.5

q= 1-.5=.5

e = .03

z = 1.96 (the critical value of the selected confidence level)

$$n = 1.96^2 \frac{0.50\ (1-0.50)}{0.03^2}$$

$$n = 1.96^2 \frac{(0.50)\ (1-50)}{0.03^2}$$

$= 3.8416\frac{(0.50)(0.50)}{0.0009}$

$= 3.8416\ \frac{0.25}{0.0009}$

= 3.8416 x 277.78

= 1067

However, in order to effectively take care of the attrition rate, 10% of respondents were added to the computed sample size to give 1067+ 107 = 1174. Therefore, the sample size for the quantitative study comprised 1,174 and 6 respondents for qualitative data, making an overall total of 1,180 respondents for the entire study which was used for both quantitative and qualitative data. In this study, a multi-stage sampling procedure was adopted to select the required number of respondents. This study adopted a mixed method, which make use of both quantitative and qualitative data. The data was collected using structured questionnaire and in-depth interview guide. A self-developed "Traditional Mechanisms for Communal Conflict Resolution" (TMCCR) structured questionnaire was used to elicit quantitative primary data from the respondents. It was divided into six (6) sections as thus: Section A captured socio-demographic variables of respondents, section B to F contained questions base on the objectives of the study as thus: B persuasion and Communal Conflict Resolution, Section C deal with data on mediation and Communal Conflict Resolution, section D deal with data on reconciliation and Communal Conflict Resolution, section E captured negotiation and Communal Conflict Resolution, while section F deal with adjudication and Communal Conflict Resolution. An in-depth interview (IDI) guide was employed to gather data from 6 respondents. The IDI guide was divided into two (2) sections. Section A was basically the interviewee consent form while, section B contained questions based on the research objectives. This study adopted a mixed method (triangulation) in data analysis. This was because, triangulation or integrative method enabled the researcher to bring data collected through questionnaire and interview together to produce perfect, reliable and valid results.

The quantitative data was analyzed at the univariate and bivariate levels. At the univariate level, frequency distribution table was used. The responses were reported in counts and percentages especially socio-demographic data and other quantitative variables. The univariate analysis involved the use of descriptive statistics to examine the background characteristics of the respondents. Mean and standard deviation were used, the statements with the mean scores of 2.50 and above were accepted and those otherwise were rejected. The bivariate analysis was done using inferential statistical measures whereby Pearson's r correlation was used. Analysis of qualitative data were done using manual content analysis, where thematic narratives and direct quotation of respondents' views and opinions as expressed during the discussions and interview sessions were reported in line with the objectives of the study.

Results

One thousand, one hundred and seventy four (1174) structured questionnaire were administered and one thousand, one hundred and sixteen (1116) were found usable. This number represented 95.0% of return rate and was considered adequate for analysis and results in this report were based on this number in addition to the six (6) in-depth interviews conducted among the community leaders.

Socio-Demographic Characteristics of the Respondents

Table 1 displayed data on the socio-demographic characteristics of respondents. From the table, majority of the respondents (62.3%) were males. This implied that men

who are usually the head and decision makers in the community participated majorly in this study. The age pattern of the study respondents revealed that majority (29.4%) of them were between the ages of 42-53 years. This implied that majority of the respondents were aged people and had more experience on issues of communal conflicts and traditional ways of resolving them. Data on the educational qualification of the respondents indicated that (36.6%) have Senior School Certificate Examination (SSCE), followed by those with First School Leaving Certificate (FSLC). The implication is that many of the sampled respondents have lower academic certificates and this further justifies why they reside in the rural areas to engage in farming activities. The involvement of this category of people into farming leads to high contestation over land ownership, triggering communal conflicts in the area. In terms of marital status, majority of the respondents were married. Thus, this implied that majority of the sampled respondents were mature and have much experience of communal conflicts and traditional ways of resolving it in their various localities. On religious affiliation, findings from the study revealedthat majority of the respondents are Christians and further confirms the assertion that, Benue State generally is dominated by Christians of different denominations with numerous Churches. The result also confirmed the true religious life of Benue people.

Regarding the occupational distribution of the respondents, findings of the study revealed that many of the respondents (36.8%) were farmers. Farmers attach much value to landand this often results to high contestation over land ownership and use. This could be the reason why there have been incessant communal conflicts in the study area. In view of the monthly income of the respondents, the study discovered that many of the respondents (35.7%) earned from 46002-55001 naira. This means that majority of the sampled respondents earned very meagre amount of income considering the present economic situation. This may also be a reason for instigating communal conflict for selfish interests. Regarding the place of residence of the respondents, the study found that majority of the respondents (64.4%) lived in the rural area. This implies that majority of the respondents were drawn from the rural setting where land is the source of livelihood and could lead to high tussle over its ownership and use, leading to communal conflicts in the area.

Table 2: Percentage distribution of respondents by socio-demographic characteristics

Variable	Categories	Frequency (N=1116)	Percentage %
Sex	Male	695	62.3
	Female	421	37.7
Age	18-29	201	18.0
	30-41	308	27.0
	42-53	328	29.4
	54 +	279	25.0
Educational attainment	No formal	91	8.1
	Primary	363	32.5
	Secondary	408	36.6

	Tertiary	254	22.8
Marital status	Single	215	19.3
	Married	598	53.6
	Divorced	67	6.0
	Widowed/widower	101	9.0
	Separated	135	12.1
Religious affiliation	Christianity	905	81.1
	Islam	53	4.7
	Traditional religion	158	14.2
Occupation	Farming	411	36.8
	Public/civil servant	179	16.0
	Trader	301	27.0
	Students	37	3.3
	Applicant	145	13.0
	Artisans	39	3.5
	Others	4	0.4
Monthly income	500-10001	45	4.0
	10002-19001	52	4.6
	19002-28001	61	5.5
	28002-37001	86	7.7
	37002-46001	97	8.7
	46002-55001	398	35.7
	55002 +	377	33.8
Place of residence	Urban	397	35.6
	Rural	719	64.4

Source: Field Survey, 2024

Data on Table 1 showed the relevant demographic characteristics of respondents covered in the study. This was necessary in understanding the nature of respondents and their relevance in providing useful information necessary in addressing the study's objectives. It also had implications on the findings and it generalisations. Analysis of these characteristics showed the suitability of respondents and validity of findings.

Adjudication

Data were collected on adjudication and communal conflict resolution. From the data, majority of the respondents agreed thataccess to a fair and impartial judicial system is crucial for achieving justice and resolving communal conflicts and prosecution should be considered as a last resort for resolving communal conflicts after all other options, such as reconciliation, negotiation and mediation have been exhausted. Most of the respondents said alternative dispute resolution mechanisms, such as community courts or tribal councils, should be integrated into the decision process for

communal conflict resolution and settlement outcomes should be transparent and accessible to all stakeholders involved in communal conflicts to ensure accountability and fairness. Again, consideration of communal conflict matters should be treated as fair and just to achieve lasting peace and the steps involved in resolving conflicts are clear to everyone in the community. Other respondents were of the opinion that the process of deciding disputes is efficient and timely and the rules for resolving conflicts are applied consistently. While most of the respondents submitted that the opinions of all parties are considered during conflict resolution.

Table 2: Respondents' rating on adjudication

S/N	Items	Yes	Not sure	No	Mean	Standard Deviation
1	Access to a fair and impartial judicial system is crucial for achieving justice and resolving communal conflicts	1114	2	0	2.9	.04231
2	Prosecution should be considered as a last resort for resolving communal conflicts after all other options, such as negotiation and mediation, have been exhausted.	1011	91	14	2.8	.34707
3	Alternative dispute resolution mechanisms, such as community courts or tribal councils, should be integrated into the decision process for communal conflict resolution.	1113	1	2	2.9	.08973
4	Settlement outcomes should be transparent and accessible to all stakeholders involved in communal conflicts to ensure accountability and fairness.	1093	19	4	2.9	.17551
5	Consideration of Communal conflict matters should be treated as fair and just to achieve lasting peace	1115	1	0	2.9	.02993
6	The steps involved in resolving conflicts are clear to everyone in the community.	1011	89	16	2.8	.35419
7	The process of deciding disputes is efficient and timely.	879	209	28	2.7	.48400
8	The rules for resolving conflicts are applied consistently.	796	316	4	2.7	.46195
9	The opinions of all parties are considered during conflict resolution.	678	399	39	2.5	.56117
	Cluster mean				2.7	

Source: Field survey, 2024 (N=1116).

Data in the table above revealed the significance of adjudication in communal conflict resolution in Benue State, Nigeria. All the means were above the accepted point of 2.50, signifying acceptability of the adjudication in resolving communal conflict. The values of standard deviation were between 0.0 and 0.5 which show how close the values are to the mean.

Test of Hypotheses

Ho: There is no significant relationship between adjudication and communal conflict resolution in Benue state, Nigeria

H1: There is a significant relationship between adjudication and communal conflict resolution in Benue state, Nigeria.

The hypothesis tested was "there is no significant relationship between adjudication and communal conflict resolution in Benue state, Nigeria". Findings on the correlation of adjudication and communal conflict resolution revealed a significant relationship at 0.01 and 0.05 level. This implied that there is significant relationship between adjudication and communal conflict resolution in Benue state, Nigeria.

Table 3: Pearson correlations between adjudication and communal conflict

		1	2	3	4	5	6	7	8	9
1	Access to a fair and impartial judicial system	1								
2	Prosecution should be considered as a last resort for resolving communal conflicts	.907**	1							
3	Alternative dispute resolution mechanisms	.619**	.511**	1						
4	Settlement outcomes should be transparent and accessible	.644**	.688**	.335**	1					
5	Consideration of Communal conflict matters should be treated as fair and just	.301**	.332**	.115**	.622**	1				
6	The steps involved in resolving conflicts are clear to everyone in the community.	.426**	.352**	.788**	.231**	.079**	1			
7	The process of deciding disputes is efficient and timely.	.882**	.959**	.469**	.714**	.345**	.323**	1		

8	The rules for resolving conflicts are applied consistently.	.566**	.623**	.215**	.663**	.788**	.148**	.648**	1	
9	The opinions of all parties are considered during conflict resolution.	.356**	.294**	.658**	.192**	.066*	.911**	.270**	.124**	1

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

The result in Table 3 revealed a significant correlation between adjudication and communal conflict resolution at 0.05 and 0.01 levels. Therefore, the null hypothesis which stated that "there is no significant relationship between adjudication and communal conflict resolution in Benue state Nigeria" was rejected and the alternate accepted to read "there is significant relationship between adjudication and communal conflict resolution in Benue state Nigeria. The results from IDI corroborated the findings from the quantitative data. An informant had this to say:

Similarly, an informant averred that:

> At adjudication stage, we know that all the necessary approaches use for conflict resolution traditionally have been employed and all the conflicting parties and other members of the both communities who are not part of the conflicts are now fully aware of who is at fault and what it takes to resolve the conflict. At this moment, we pronounce the transparent judgment which is fair to everyone depending on the available evidence to us (**IDI, 20thAugust, Male, Elder, Aged 61, Mbalom, 2024**).

Again, one of the informants said:

> Adjudication normally takes place in the public where everyone in the community is free to witness it as it is very transparent. Sometimes, they go to the scene of the crime to resolve the issue. The traditional method is more effective in resolving issues instead of taking it to court. It helps, less spending and it is not time consuming (**IDI, 7thSeptember, Female, woman leader, Aged 40, Mbavyur 2024**).

During the adjudication process, the both parties were proven to be stubborn as they were not satisfied with the judgement passed by the traditional councils. As they were not satisfied with the judgement and wanted to behave otherwise, the traditional councils were compelled by their behaviour to go and plant trees at the demarcation of the conflicting land and issued a statement that any party that felt the councils was wrong by planting the trees should come forward and that was how the conflicts come to an end and peace was restored in the two communities and up till now, those trees are there.

Similarly, an informant averred that:

> Adjudication has been very effective in resolving communal conflicts. This is because by bringing the both conflicting parties together, all the means employed previously in resolving communal conflict of that same nature would be explained and

> the land conflicting for may be divided equal or unequal depending on the available facts surrounding the communal conflict and this process has been yielding positive result in communal conflicts resolution (**IDI, 15thAugust, Male, Kindred Head, Aged 58, Mbasombo Council Ward, 2024**).

In the same vein, another informant asserted that:

> The adjudication process has been very effective in resolving communal conflicts because during this process, all the parties involved in the conflicts are present and the judgement would be passed in transparent manner. In fact, there was a scenario that took place during Mbasombo and Mbavyur communal conflicts in Gwer-East Local Government Area. During the adjudication process, both parties were proven to be stubborn as they were not satisfied with the judgement passed by the traditional councils. As they were not satisfied with the judgement and wanted to behave otherwise, the traditional councils were compelled by their behaviour to go and plant trees at the demarcation of the conflicting land and issued a statement that any party that felt the councils was wrong by planting the trees should come forward and that was how the conflicts come to an end and peace was restored in the two communities and up till now, those trees are there (**IDI, 20thAugust, Male, Elder, Aged 63, Mbabur , 2024**).

In the same vein, another informant had this to say:

> Adjudication has been effective in resolving communal conflict because when those conflicts are resolved, it is very difficult for them to come up again. Because I strongly believed that the decision taken by traditional leaders to resolve the conflicts do not have loopholes (**IDI, 19thAugust, Male, Youth Leader, Aged 37, Mbayom Council Ward, Gwer East Local Government Area, 2024**).

Adjudication process has been very effective to resolve issues whenever they arise because right from time, the welfare of community members has been our top priority. Therefore, community leaders and council of elders do meet to solve issues bothering their communities from time to
Findings from the in-depth interview corroborated the various ways of adjudication in communal conflict resolution. According to the findings from KII, adjudication has been effective mechanism traditional rulers who involved in conflicts resolution employed because most at times, during adjudication process, all the parties involved in the conflicts are present and the judgement would be passed in transparent manner. In fact, there was a scenario that took place during Mbasombo and Mbavyur communal conflicts in Gwer-East Local Government Area.

Discussion of Findings

Findings of the study on adjudication and communal conflict resolution, the study revealed access to fair and impartial judicial system as crucial for achieving justice and resolving communal conflicts (M-2.9). This is because when the parties involved in the conflicts are allowed to express their feelings and such feelings are taken into consideration

with impartial judicial minds, it quickens the conflict resolution process and provides ever lasting solution to the conflicts. These corroborated Mollel (2009), who examined the impact of adjudication in resolving conflicts Democratic Republic of Congo, the findings of the study indicate that adjudication is an effective means of resolving communal conflict. In other words, when justice system is not more of imposition and feelings of the conflicting parties are properly considered with due respect, it makes the adjudication process more impacting on the conflict resolution.

Similarly, the study discovered that prosecution should be considered as a last resort for resolving communal conflicts after all other options, such as negotiation and mediation, have been exhausted (M-2.8). This is because development in general cannot take place in the atmosphere of violence and as such, peace must reign and peace must not be compromised. So, after employing all the possible means to resolve conflicts and they do not still work, the traditional council would have no choice than to resort to action to restore peace. Traditionally, this prosecution in most cases has to do with the confiscation or taking over of the conflicting land by the traditional councils from the conflicting parties or communities to end the conflict.

Similarly, the study found out that alternative dispute resolution mechanisms, such as community courts or tribal councils, should be integrated into the decision process for communal conflict resolution (M-2.9). This would be effective in conflicts resolution process too because in many cases, parties involved in the conflict find it difficult to accept the adjudication of the traditional councils. Hence, inclusion or introduction of the community courts or tribal councils would go a long way to complement the adjudication process in the conflict resolution. Furthermore, findings of the study revealed that settlement outcomes should be transparent and accessible to all stakeholders involved in communal conflicts to ensure accountability and fairness (M-2.9). That is, after the whole processes of conflicts resolution have been employed, the result should be clear and made known to the parties involved in the resolution processes and also be accessible by all and sundry. In other words, the outcome of the adjudication should be impartial and responsible for lasting solution to the conflict. In the same vein, the study discovered that consideration of the communal conflict matters should be treated as fair and just to achieve lasting peace (M-2.9). That is, when conflict matters are treated as unbiased and objective, the conflicting parties themselves would see no reason to proceed or go ahead with the conflicts because they would be convinced with the facts to accept peace and give up with the conflicts.

Similarly, findings of the study revealed that the steps involved in resolving conflicts are clear to everyone in the community. This is because when steps involved in resolving conflicts are well known or made known to the parties involved in the conflicts, they would have more confidence in it and would be more willing to surrender and embrace peace than when those steps are very strange to them. Again, findings of the study indicated that the process of deciding disputes is efficient and timely. That is, an adjudication process apply on Mr. A. should also be applied on Mr. B in a similar situation. In other words, standard should be maintained for adjudication process and should not be influenced by anyone to favour a party during and after conflict resolution. In the same vein, findings of the study revealed that the opinions of all parties are considered during conflict resolution. This is because when opinions of the parties are considered before adjudication process, it would be easier to resolve conflicts as every party would be satisfied with the final decision as they would felt carried along and regarded. Thus, these findings are in line with that of Anene and Duru, (2019) which states that adjudication is the most significant aspects of conflict resolution after the disputants have

been persuaded to end the dispute, peace was restored.

Conclusion/Recommendations

Adjudication of communal conflict influenced access to fair and impartial judicial system was crucial for achieving justice and resolving communal conflicts, prosecution was considered as a last resort for resolving communal conflicts after all other options such as negotiation and mediation have been exhausted, settlement outcomes were transparent and accessible to all stakeholders involved in communal conflicts and it ensured accountability and fairness, consideration of the communal conflict matters was treated as fair and just to achieve lasting peace, the steps involved in resolving conflicts were clear to everyone in the community and opinions of all parties were considered during conflict resolution.

Adjudication of communal conflict cases should be encouraged than litigations. By so doing, neutral authority should be involved in making final decisions and or judgement and this could be within the framework of traditional institutions. Local courts, legal literacy programmes, neutral panels, enforcement mechanisms and integration of alternative dispute resolution (ADR) within traditional legal systems should be established for more accessible resolution options. The purpose should not be to render judgement but to reconcile the conflicting parties.

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Insecurity and the Future of University Education in Nigeria

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Abstract

Since 2009, Nigeria has played host to terrorists, insurgents, bandits and kidnappers, all elaborating and emerging new security challenges of the 21st century. From rural to urban spaces, these groups have orchestrated their activities with little or no challenge from state security institutions. Utilizing iterative and discursive qualitative methods, it is established that security structures and public institutions have borne the brunt of terrorists' and insurgents' activities and universities have had a fair share of these attacks on campuses or directly on students and academic staff. It is concluded that these attacks on universities assumed an important dimension in comparative targets analysis of trends. The experience of universities in northeast Nigeria and general insecurity in the country has accelerated the localization and nativisation of these institutions thereby invidiously undermining the universality that is their traditional character. Holding the military accountable and the rapid turn to innovative technologies for teaching albeit virtually holds the promise to mitigating the effect on universities' capacity to deliver on their mandates and live out their universality and as an academe.

Keywords: Universities, insecurity, universality, terrorism, insurgency

Introduction

Human existence and the life of any society, organization or country have come under complex sets of threats since the end of the 1980s. The transformation of the traditional notion of security being military threat of one country against another to a human or global security has been founded on variegated forms of threat to human existence (Mandel, 1994). These include health pandemics, environmental degradation, terrorism and insurgencies or organized crimes like drug and human trafficking or hunger (Buzan, 2004). For example, the Covid-19 pandemic had enduring effect as a security threat to humanity than anything in recent history. Despite the phenomenal development in technology, the pandemic wrecked unprecedented damage to the entire human race. The pandemic death toll continued killing 246,000 in 2022, though a dropped was recorded to 76,000 globally in 2023 (Anderer, 2024). For example, between 1990 and 2017, the number of people in extreme poverty had declined from two billion to 689 million. Unfortunately, Covid-19

dramatically reversed this progress by pushing an estimated 110-150million people back into extreme poverty which represents the first global rise in steep deprivation since the 1990s (Jilani, 2021). According to the Worldometers of Johns Hopkins University, more than 85.56million people had been inflicted by Covid-19 disease and 1.85million had died of the pandemic in 218 countries and territories by 4th January, 2021. These counts rose to 3, 436,980 in 220 countries and territories by 20th May, 2021 and were still rising and no one could have safely predicted when it could halt. The infection and death numbers were still suspected to be underestimates because some countries were hiding numbers including China and Pakistan (Barai and Dhar, 2021).

Like HIV/AIDS, Covid-19, hunger, poverty and supposedly muted violence within countries represent the emerging complex dynamics of contemporary security threats to societies and countries. The magnitude of political and social changes since the end of the cold war have been significant and sweeping enough to cause the transformation in security threats in an increasingly anarchic world (Correia, 2022; Watz, 2014). The post-cold war new world order is characterized by anarchic multipolarity with increasing number and importance of transnational and subnational political actors. Due to globalization, there is increasing intertwining of a complex web of economic interdependence as well as "an escalating set of environmental and resource pressures affecting rich and poor nations" (Mandel, 1994, p. xiii).

The anarchic multiporality generated by the transformation of the cold war era involves three critical stages with import on the changing nature of security. These stages include the decline of national sovereignty, the escalation of global interdependence, and the proliferation of anarchic conflict (Nye, 1993). The first stage that deals with the decline of national sovereignty marks a sharp diminution of state or government control of activities within its borders and under its jurisdiction. While states have not disappeared or have not ceased to perform their traditional functions, they have emerged new actors that have chirped and cornered state powers marking some significant transformation in the nature of sovereignty. While states in the developed world had firm control of their societies during the cold war era, most developing countries hardly did and the capacity is on the decline. Non-governmental actors have assumed greater social and security responsibilities, with subnational and transnational groups usurping greater state powers. Ethnic separatist and warlords have emerged across different countries in the Southern hemisphere contesting authority with the state over territories and populations (de Boer and Bossetti, 2015). Borders of such countries have become highly permeable with accompanying influx of immigrants with questionable motives. With increasing lower safe sufficiency, wide spread dispersion of technology to be used for both licit and illicit means, subnational and transnational criminal gangs have accentuated the diffusion of power to the detriment of the state. The traditional state's hegemonic control of all that transpires within its borders including the monopoly use of force has declined significantly.

The second stage being the escalation of global interdependence appears just natural as a response to the diminishing force of national sovereignty. The level of diffusion of power seemed high and elaborate and interdependence becomes a buffer for security assurance as every state becomes increasingly dependent on another. This

interdependence has appeared in overlapping context that are multiple in types and layers. While the post-cold war world is obviously unipolar, it is in many ways multipolar. New centres of power expression along regional lines have appeared with corresponding economic blocks. Thus, the collapse of the bipolar world has given rise to regional, economic and political arrangements in Europe, East Asia, and North America. Old regional attempts have been reinvigorated while new ones with specific interest alliances have been formed. These regional revivalist tendencies points to increasing regional competition rather than the promotion of global integration (Rothgeb, 1993). What is more obvious is the palpable vulnerability of states that have not belonged to any such regional groupings or belong to weaker ones.

The third stage in the global transformation of security context is the proliferation of anarchic conflict which has arisen from the near absence of effective structures in managing the decline in national sovereignty and the complex emergence of a new multi-level and multi types of interdependence in the international system (Wendt, 1995). Neo-realist argument about global anarchy has been vividly amplified in the new security challenges with the emergence of a huge variety of conflicts. Many nations have become more vulnerable to internal violence (Mullins and Wither, 2016). Since 1989, there have been sporadic conflicts involving smaller groups organized around individuals pursuing personal interests or in some cases group interests. While large scale inter-state wars on ideological grounds or territorial claims have declined and their cost escalated as the Russo-Ukraine and Isreali-Palestinian-Hezbollah conflicts have revealed (UN, 2024), civil wars have expanded with evidence in Sudan and South Sudan and Ethiopia (Nyadera & Osedo, 2023) even as states must increasingly confront terrorist challenges and insurgencies. Added to these vulnerabilities are banditry and kidnappings. These have evolved networks with organized crime syndicates (Sloan and Cockayne, 2011). Despite the divergent strategic interests of terrorists, criminals and insurgents, all have collaborated at different times for mutually inclusive benefits that include financing terrorism, protecting crime and securing political control.

Since 2009, Nigeria has played host to terrorists, insurgents, bandits and kidnappers, all elaborating and emerging new security challenges of the 21st century. From rural to urban spaces, these groups have orchestrated their activities with little or no challenge from state security institutions. Countless times, Boko Haram has attacked state institutions, worship centres, markets and economic institutions resulting in loss of hundreds of lives and millions worth of property. Between January and March, 2021, armed groups have attacked and destroyed more than 25 Police Divisional Stations and some correctional Centres in South East and South South. This is in addition to the killing of 497 police officers from 554 incidents since 2017 (Ishaka, 2021, p.16). Security structures and public institutions have borne the brunt of terrorists and insurgents. Universities have had a fair share of these attacks on campuses or students and academic staff. Attacks on universities may have assumed a more recent dimension, the experience of Universities in Borno and Yobe and Adamawa states even without physical attacks on their infrastructure since the early years of insurgency on their ability to exercise their mandate can better be imagined.

The university as a community of scholars is a special institution of higher learning that raises individuals to an advanced level of intellectual development in all fields and also promotes high level research. In its three fold functions: education, research and contribution to society, the university serves as a source of universal knowledge and highly skilled human power for the professions and society (Alemu, 2018; Assie-Lumuba, 2005). This description of the university resonates with its status as an ivory tower "serving the elite and national culture as part of territorial consolidation". The status of an ivory tower was simply due to the reason of providing education to the best social and intellectual sections of the nation and is a recent title associated with the university from as recent as the late 19th and early 20th centuries. It is argued here that unsecured universities are incapable of acting out their noble triple functions and hence the reversal of development in its entirety. The absence of a serene environment undermines intellectual work which universities are created to perform. Insecurity therefore threatens the very existence of universities and by extension the foundations of any country. This paper highlights the transformation of security in conceptual and theoretical formulations in the second section and contextualize insecurity in Nigeria in the third section. An exposition on the future of universities in the face of insecurity is explored in the fourth section while policy options in response to the challenges confronting universities are tied in the conclusion.

National Security: Conceptual and Theoretical Notes

Security is a complex concept hence it is amenable to various meanings. Security at its most basic implies freedom from threats. It is however seen as an essentially contested concept (Buzan, 1983; Smith, 2005) for the reason that it is not objectively definable hence it is inherently disputable (de Bhal, 2014). Wolfers (1952) had argued similarly that the security concept is dangerously ambiguous by being insufficiently explained and blurry. To improve on this explanation Wolfers (1952, p. 484) asserted that security "points to some degree of protection of values previously acquired". Leaning on this notion that underlines core values of a state, Baldwin (1997, p. 13) provides a comprehensively broad definition of security that allows its use in a variety of circumstances, but which underscores the impossibility of a total absence of any threat thus conceives security as "a low probability of damage to acquired values". This lays emphasis on the preservation of acquired values. This is a general definition for all purposes of security especially when it can be calibrated in two dimensions set forth by Baldwin (1997) by raising the questions "security for whom" and "protection of which values"? These fundamental questions of the dimensionality of security set it as an objective phenomenon but in an abstract state and its application highly subjective (Fobes-Mewett, 1996). Security is strictly an abstract construct with a subjective perspective. Understanding of this abstract nature of security is essential for the grasp of security entails. Wolfers (1962) accepted the objective and subjective premises of security asserting that it is in "an objective sense, measures the absence of threats to acquired values, in a subjective sense, the absence of fear that such values will be attacked". Baldwin provides a logical chart to approach security from a subjective angle by dealing with questions of how much security….from what threats….by what means …..at what cost… and in which time period? Security is in this sense considered

in degrees. How much security available to a state is relative to other entities? This perspective allows the consideration of security in terms of how much security is been sought with regards to what values of which actors are exposed to what threats.

The traditional conception of security had focused on military capability thus making it an issue of high politics. The referent point for security was the state in the Westphalian tradition. In the dominant era of realism, the security of the territorial sovereignty was the primary concern of political leaders and military capability to ward off threats from other states was the focus of state policy (Moller, 2000). Securing the state sovereignty logically meant the survival of the state. In an anarchic world (Waltz, 2014) with each state pursuing its national interest equated with power, states are inherently insecure even with the arms race to achieve military superiority.

Concern here is post-cold war sense of security and its national dimension. Realist preoccupation with the survival of the state endangered citizens who were humans living within the territorial space under the control of the state. The pursuit of power by states often led to war in which lives were lost. War became a threat to citizens' security. The state centred security approach by realism amounted to neglect of the people, the individual well-being that leads to survival (Moller, 2000; Hall, 1999). Hence individual security maybe harmed by unrestrained pursuit of state security which is defined as sovereignty and territorial integrity (Walker, 1999).

Post-cold war returned security focus on the people as a primary duty of the state thereby situating it as a core value in human society. To be secure is not to be troubled by danger or any perceived fear. Thomas Hobbes had stressed early enough that without security "there is no place for industry…no arts, no letters, no society; and which is worst of all, continual fear, and danger of violent death; and the life of man, solitary, poor, nasty, brutish, and short" (Hobbes, 1946). Humans desire security as a defensive and self-protecting response to threat of harm from other human beings. There are four key assumptions of security akin to Baldwin's (1997) logical questions on subjective security. These assumptions appeal to questions of security in (or of) what, from what, for what, and by what means?

Security 'of what' assumption recognizes human vulnerability of people who are inhabitants of social circumstances (Dunne, 2004). Isolated individuals for instance are not open to harm by others but once they are reintegrated into human society, they are susceptible to threats from them. Security therefore needs to deal with potential or actual harmful acts of others who maybe citizens or foreigners. Individuals desire safety from these. Security therefore should be of life and well-being of humans.

The second assumption of security deals with the question of security 'for what'? Human beings need to be secured from some threat. In Hobbes state of nature every person was a potential threat to the other in the struggle for survival in a world of scarce resources where a constant "war of all against all" was the only certainty (Hobbes, 1946). The fear of human beings by others is inherent in the nature of the being that does not exude complete trust necessary for mutual security. In this sense all humans are exposed to others to some degree who maybe careless and unreliable while others are simply malevolent and mean. Given the inherent flawed nature of humanity, perfect security is impossible hence some measure of insecurity is always present (Jackson-

Preece, 2011). It is the security from human threats that make people to have burglary proofs or extra locks on the doors or fix alarms on the cars.

Security by 'means of what' relates to the measures and instruments deployed for securing people and property. Human safety is protected by erecting barriers, bulwarks, ramparts, establishing a defense or security outfit like the police and the military or even para-military organizations to help keep people out of harm's way. In the absence of safety, people are vulnerable to danger. Ordinarily, safety should be achieved when everyone respects each other's freedom and would leave them alone. People are unfortunately not ready to forgo their wants or ambitions if insisting on them violates others well-being. Where people cannot restrain themselves and cannot be restrained by others insecurity ensues. Faced with this dilemma Schelling (1980) prefers to adopt deterrence than diffidence.

The last assumption deals with the question of security 'for what'? What do people need security for? Human beings desire to live in society with others yet reducing the risks. Very few people would choose a solitary life without communication, interaction and cooperation. Such a life affords one no opportunity to enjoy human compassion, kindness, companionship or love and family. As has been argued by Fukuyama, (2022, p. 42) "the pro-social side of human life" was revealed during the Covid-19 pandemic where "intense agony and depression was felt by isolated people" that were "forced to distance themselves from their friends, colleagues" and families. In human relations, security is a core value. Individuals would like to live together and be vulnerable to each other without being hurt. While people cannot be completely safe, security is necessary for a flourishing society hence the need for effective security policies that involve maintaining a police and military forces trained and equipped to carry out that security function for public good.

The assumptions of security resonate with its three paradigms: national, international and human. The first two are state centred and confers a moral primacy on the state as a necessary precondition for human flourishing. Without the state life would be nasty for the individual. It was for this Hobbesian state of nature that the Leviathan was created to guarantee security for everyone. The third approach is human centred and prime human beings and the community of humans over and above the state. Following the end of the cold war, the primacy of national security in the realist tradition that focused on state survival through military might was dismantled. National security then assumed a new meaning. Described as a common or public good for the very reason that it is too costly for individuals to provide their own security, the state is the made to bear the responsibility for security of its members as a primary institution. Mandel (1994, p.18) notice a difficulty with this in the sense that

> The larger, less cohesive, and more heterogeneous the group, the greater the likelihood that the security providing structure would be (1) out of touch with the security needs of the individual members and (2) more interested in protecting and preserving itself than the safety of its members (particularly when the interests of the security –providing structure and the individual members conflict).

It was in search of answers to this difficulty that post-cold war national security was broadened beyond military considerations to cover issues such as epidemics, organized

crime, environmental pollution and climate change. A broad comprehensive definition of national security is thus offered by Mandel (1994, p. 19) that "entails the pursuit of psychological and physical safety, which is largely the responsibility of national governments, to prevent direct threats primarily from abroad from endangering the survival of these regimes, their citizenry, or their ways of life". The definition emphasizes psychological and physical safety to largely prevent the flourishing of national fears. The state is expected to guarantee safety of the individual which encompasses both the survival of the citizenry and the protection of their lifestyles because of the need to span the fears of the rich and the weak. The expectations of what should be protected have been expanded beyond the state. Threats are emphasized by this definition because there may be no overwhelming enemy, but threats have become ubiquitous in the post-cold war era which could be environmental/resource, economic, political or cultural dangers that are potentially threatening the survival of a government, its people, or its national way of life.

The renewed emphasis on the safety of individuals is embedded in the concept of human security which is attributed to the United Nations Development Programme (UNDP) in its 1994 report. The core idea enshrined in the human security concept is that the security of the person, the security of the state and the security of the society of states are all fundamentally connected. Where one man or woman or child is unsafe it means no one is safe. The state exists because of the human assets within it and without securing the assets the state itself will not be secure. Until the human assets in the state are protected, their aspirations met, and their freedom ensured, a state cannot be expected to remain secure (Tadjbakhsh and Chenoy, 2009).

Human security is focused on the security of individuals from danger, damage, loss, and criminal activity. It entails the protection of the individual and assurance of wellbeing of individuals by responding to ordinary people's basic needs in dealing with sources of threats. It involves not just protection but empowerment. The concept of human security stresses that the state should be able to ensure that people have the opportunities to meet their basic needs and to be able to contribute to the development of the community and society. It is a long-term security strategy that should seek to reduce physical, health and education related legal, social and politically associated insecurities. According to the UNDP (1994), human security is an expansion of the security concept to include multiple elements such as the safety of individuals and groups from threats of hunger, disease, political stability, and protection from sudden and hurtful disruption in the patterns of daily life.

Human security is a people centred approach to security and includes major components that are inter-related: economic, food, person, environmental, health, community and political security. The concept though people centred, it is not just about individuals and community, it is about global security and places responsibility on states and the international system. As new approach to security, human security is a measure of deepening understanding of global vulnerabilities in a manner that challenge the cold war notion of national security. It is a people-centred view of security in which individuals are to be free from physical, sexual and psychological abuse, violence, persecution or death (Alkire, 2003). Human security deals with the capacity to identify threats, eliminate them or minimize their effect and help victims to cope with the consequences

of widespread insecurity. Protecting the individual is the primary duty of the state and the responsibility for human security rest squarely with the state with active cooperation from the individual. For the universities as major centres of human congregation, its security is really critical in the context of human security framing and for the development of societies these institutions serve.

The Universality of Universities: Transformation of Roles

Universities are highly differentiated and that makes for their definition difficult. This differentiation has arisen from the proliferation of universities that are involved in a diverse range of functions, purposes and values (Altbach, 2006). But it is rather easier to describe what their purposes are which may be broadly referred to a preoccupation with "education and scholarship through teaching, research and public services" (Alemu, 2018, p. 212).

The idea of a university is rooted in the philosophy of education which has followed different epochs. Right from the Aristotelian era, education was designed to facilitate the satisfaction of material need of society by producing learned citizens. This was derived from the philosophy of education which was to organize and sustain instruction in a systematic way that communicate simultaneously knowledge, skills and understanding essential for a valuable life in society (Jarvis, 1995; Frijhoff, 1997). The universities were designed to provide knowledge that enabled people become fully integrated in society and with skills necessary to participate in societal life in a manner that they can generate harmony.

A university forms an integral part of any given society's economic and political life in any era. It is in this sense that medieval universities taught and trained students in the service of the church. Being one of the most powerful institutions of the time, the church needed learned individuals in law, medicine and church administration. In this context, universities of the era were mere vocational institutions that enabled students to acquire relevant skills necessary for employment within the prevailing socio-economic order (Clark, 1981). This tendency reflected the times the universities found themselves but were also projected to the future and later became more competitive and technical in professions.

The era of Plato evolved the university purpose as the pursuit of the truth in learning and commitment to the development of knowledge and the training of scholars for the sake of acquiring knowledge and for improvement of the life of the individual and society. Jawaharlal Nehru will be quoted by Tilak (2015, p. 56) to support this search for the truth purpose of universities that they "stand for humanism, for tolerance, for progress, for the adventure of ideas and the search for truth. It stands for the onward march of humans towards ever-higher objectives. If universities discharge their duties adequately, then all is well with the nation and the people". Jaspers (1965) also intoned that universities are centres for the search for truth which can be generated only through a systematic method of inquiry. The search for truth was considered as the foremost purpose of the university.

The second purpose is then teaching as a necessary activity after research so that the product of research can be transmitted and the best way to do this is through teaching. The third purpose is that of culture. It is through universities that culture receives refinement and regeneration as a centre of diversity. Universities were however, still involved in vocational training for skill

acquisition and the training of the mind. The universities began to train individuals for critical thinking through teaching and research. Critical thinking was imperative to facilitate efficient use of resources to improve the human condition through application of intelligence for good judgment that enables people to cope with unforeseen circumstances (Aremu, 2018).

For much of history, universities have been known to perform three interlocking roles of teaching new generations; preserving and discovering knowledge; and contributing talent, ideas, advice, and challenge to the wider society. In exercising these roles in contemporary times, universities are under pressure for uniformity which they must resist to be able to optimize their functions in contributing to an intergenerational dialogue that requires diversity and strong disputation (Toope, 2014). One of the most contested purposes of the university is research. Newman (1996) had argued that universities should be concerned with liberal education and called for the establishment of a separate institution for research. Teaching and research he argued are two separate abilities and are entirely separate gifts which cannot be found in one individual. This may be contested now due to technology that enhances acquisition of talents and skills beyond natural endowments. He contended that universities are for the diffusion of knowledge and should pursue its universality because all knowledge forms one whole. He challenged the idea of a university as a vocational institution promoting professions. In concert with Plato, Nehru and Jaspers, Newman noted strongly that the purpose of university education is the achievement of a particular expansion of outlook, turn of mind (critical thinking), habit of thought, and capacity for social and civic interaction (Kerr, 2011).

Having reviewed the purposes of universities from medieval to contemporary times, the idea of a functional university depends fundamentally on the level of socio-economic and political development of a society. this is why Medieval universities served as centres of learning, development of virtues and the institutions of utility at the time of limited industrialization and cosmopolitanism. They produced learned men and women, offered education in virtue and facilitated the satisfaction of material needs of society. Universities advanced knowledge and promoted moral values, religious conduct and trained individuals for higher office and for professions. Advancement in socio-economic and political changes in societies have caused a shift in emphasis on the purposes and functions of universities including their activities leading to diversification and proliferation of disciplines. These changes in roles have over ineluctably stretched their capacities.

Contemporary or modern universities are transformed institutions that are a major shift away from the original idea of a university. These transformations vary from region to region producing universities with expanded missions and functions from a simple knowledge generation to research, creating and applying knowledge. Modern universities no longer train and transmit knowledge but have collapsed these into knowledge production. Traditional universities that offered liberal education have disappeared and in their wake are modern universities that are research centred, professionalized and specialized. Specialized universities of science and technology, agriculture, law, and engineering have dominated the space for university education. Hardly can one find a university with only master's and students seeking competence in one field. Modern

universities are diversified institutions in functions, personnel and activities and held together by one name with different departments, libraries, institutes, laboratories, researchers and scientists. Many of these universities are engaged in inventions, the projects, initiatives, research, and teaching and community services (Simons et al., 2011). For example, University of Oxford is associated with the invention of COVID-19 vaccine-*Oxford-Astrazeneca* for instance. Instrumental to the transformation of the university is technology which has created modern universities that operate within the socio-economic, cultural and political structures of society. Kerr (2001, p.4) has described modern universities with their multiple functions as "secondary schools, vocational schools, teacher-training schools, research centres, uplift agencies, businesses", which has "cheapened, vulgarized and mechanized themselves". Most African universities are seemingly modern universities with effective take off dates in the late 19th century to the early 20th centuries. They are centres for knowledge, research, the provision of intellectual leadership, manpower development, promotion of social and economic modernization, and intercontinental unity and international understanding (Ndlovu-Gatsheni, 2017). In one sense African universities are developmental in structure and purpose. They are to galvanize the realization of modernity and have inevitably been overwhelmed with multiple functions.

From the mid-20th century, universities were seen as serving the elites as a way of promoting national cultures. In this sense, universities were accorded high status as ivory towers that were training social and intellectual segments of societies (Aremu, 2018; King, 2004). Contemporary universities have shifted from this ivory tower status to institutions devoted to the pursuit of knowledge, providing solutions to societal problems, and the training of individuals at a high level. Modern universities involve in inter institutional staff exchange; promote student mobility and interaction towards internationalization and a global perspective. This is achieved through a formulation of different rationales, objectives and actors (Aremu, 2018). Expectations of society have also changed about the university. In response universities have become "multiversities" with multiple purposes, perform multiple functions, and constitute multiple people from both within and outside the academia (Kerr, 2001). Modern universities have become commodified in terms of services rendered to society. Students are treated as customers or consumers and educators are classified as service providers. The hall mark of universities has become competition and are therefore required to generate revenue to sustain themselves and operate as strategic partnership for national economic competitiveness. Universities as economic entities with a competitive flair now seek for prestige in global ranking.

Two things have assailed modern universities compelling their transformation into economic entities in sync with contemporary realities. The first is the massification in "students enrollment, staffing, institutions, infrastructure and disciplines" (King, 2004). Massification of university education is a global problem with intensification in developing countries including emerging nations like China, India and Brazil. The rise in number of university students is estimated to hit 300million by 2025. In Nigeria with 272 universities (Dada, 2024, p.1), students' enrolment is estimated at 2.1million which the National Universities Commission (NUC) describes as a crisis for Nigerian universities (Premium Times,

2020). This figure is projected to rise to 5.6milion in 2050 (JAMB, 2024). The second has to do with the steady decline in public expenditure on universities especially in developing countries. The global picture shows a massive decline by 25.8 per cent from 1995 to 2000 (King, 2004). In response to massification of university education and the decline in public expenditure on universities, governments have approved private universities since the 1990s. From 30 in 1990, the number rose to 85 in 1999 and more than doubled to 176 in 2003 in just nine countries in sub-Saharan Africa (Varghese, 2006). Globally private universities had reached 468 by 2009 (Aremu, 2018). In terms of funding, new methods include corporatization, which involves marketing universities activities, and internationalization with the advantage of higher fees for foreign students. These tendencies are designed to keep universities competitive nationally, internationally, and globally for resources and prestige. These in many ways have transformed universities to depict them as responsive in a manner that they will remain relevant and continue to receive support from societies in which they are an intricate part of their socio-economic, cultural, and political milieu. It is complex ecology that Nigerian universities are caught up in the challenge of extremist violence.

Insecurity trends in contemporary Nigeria

The Nigerian state has almost gone full circle but without another civil war. From the picture of insecurity characterizing the country, the Nigerian state seem incapable of protecting its citizens and this is despite significant financial resources that have been supposedly sunk in military expenditure (Kolawole, 2021). With 6.145million small arms in the hands of non-state actors the deepening insecurity in the country that began in 1999 with the militancy in the Niger Delta may be understandable (Akinsanmi, 2021). These are impeccable figures released by SMB Intelligence and Open Society West Africa (OSIWA) on Small Arms, Mass Atrocities and Migration in Nigeria in 2020. With the scale of violence in the country orchestrated by criminal gangs and terrorists and insurgents through kidnapping, banditry, cattle rustling and attacks on security infrastructure, it appears that the hegemony of the use of force hitherto enjoyed by the state is being successfully contested by non-state actors (Amuta, 2021).

From militancy in the Niger Delta in 1999 through 2009, that involved bombings of oil facilities to kidnapping of expatriates, the crime of kidnapping has metamorphosed into a lucrative multi-million-naira entreprise. From the Niger Delta, it has spread right across the country, and it is one of the most paying crimes in Nigeria. While criminals make millions, victims suffer psychological torture and trauma and death in worse cases. As the country was focusing attention on kidnapping and the militancy in the Niger Delta through the Amnesty programme, the Boko Haram insurgency erupted in Borno state in 2009 and got to a head in 2011 (Okoli and Lenshie, 2021). The global popularity of the group surged with the bombing of the United Nations office complex and the Nigeria Police headquarters in Abuja in 2011 (Okoli & Lenshie, 2021). From an insurgent group, it transformed into a terrorist organization in 2013 (US, 2013; UN, 2013; FGN, 2013) with concentration of its terrorist activities in Borno, Yobe and Adamawa.

The phenomenon of armed banditry entered the fray of organized violence in rural Zamfara between 2009 and 2010. The activities of armed bandits have since spread to Katsina, Sokoto, Kaduna, and Niger states.

The epicenter of the attacks remains Zamfara in rural communities where artisanal mining activities occur with a heavy touch of cattle rustling and later kidnapping. There are over 30,000 bandits spread through 100 forests that have become un (under) governed spaces for field operations in Zamfara and neigbouring states. These forests include *Falgore, Kamara, Kunduma, Sububu, Kamuku* and *Kiyanbana* (Momale et al, 2019). These forests offer opportunity for attacks and quick retreat as well as buffer for attacks within areas of operation. The human, psychological and economic cost of these levels of organized violence is enormous. For example, the cost of ransom payments in unbudgeted public expenditure for Zamfara state government in eight years was put at N900million between 2011 and 2019. In terms of human cost, 2,619 persons have been killed while 1,190 persons kidnapped from 2011-2019 (Amuta, 2021). Between January and December 2019 bandits had killed 1,058 persons in Zamfara, Katsina, Sokoto and Niger states. In a report by the Committee headed by the Inspector General of Police, Mohammed Abubakar to resolve the crisis in Zamfara state, 6,319 deaths were recorded due to armed bandits' attacks on communities between June 2011 and May 2019 (WANEP, 2019). In Kaduna state, 262 persons were killed in 2018 due to bandits' attacks in the Southern part of the state (Nigeria Watch, 2018). The attendant scale of violence include destruction of farmlands and harvests, with nearly 50 villages razed involving food stores in addition to other valuables lost to bandits attacks. Hundreds of inhabitants and their families have been displaced. The causes of banditry and violent extremism range from weak state capacity, human rights abuse, unemployment, and poor social service provisioning (Abdullahi, 2019).

The period beginning from 2009 also coincided with the heightening of herder-farmer violence with increasing ferocity in worst affected states being Benue, Taraba, Nasarawa and Plateau. These spates of violence had begun to spread southwards by 2018. Between September 2017 and January 2018, over 1500 people were killed (ICG, 2018, p.1). In Nasarawa state 260 people were killed due to the clashes between herders and farmers from January to June 2018. These attacks have not only been sustained in north-central states but have spread to southeast and southwest in 2021.

This extreme violence meted on Nigerians has had significant implications on human security. Not only are people unsafe to the degree of death, but they also live under constant fear of attacks, harassment and extortion from security personnel or from makeshift vigilante groups that have been accused of human rights abuse, armed robbery and appropriation of valuable livestock. With constant attacks, people's livelihood especially rural inhabitants have been destroyed as farming and other economic activities are inevitably halted. The display of extreme violence has a more profound and strategic implication on education, the future of the country.

Insecurity and the future of University Education in Nigeria

The deleterious effect of extreme violence and general insecurity in Nigeria blights every sector but its bears more heavily on education in general and the universities in particular in a strategic sense. The future of the country as a modern state hinge on education and higher knowledge for that matter. The education sector has been hit hard by insurgency and bandit's attacks on schools and kidnapping of students and staff of educational institutions including universities. Insecurity has become the

major challenge confronting universities. While there had been education deprivation in northern Nigeria, armed banditry has worsened an already bad situation. Due to armed violence mass populations have been displaced thereby adding to the number of out-of-school children. For instance of the 10.5million out-of-school children in Nigeria, 30 percent are in Zamfara, Katsina, Sokoto, Kebbi, Kano all in the northwest and Niger state in the north-central (WENA, 2019).

Notable Kidnapping of school children began on 14th April 2014 with the abduction of 276 girls from Government Secondary School, Chibok. On 21st February 2018, the country was shocked by the news of the abduction of 110 girls from Government Girls Secondary School, Dapchi in Yobe state (Isiaka, 2021; Lawal, 2018)). The lull in the incidents of abductions of school children was shattered by the abduction of nearly 400 students at Government Science Secondary School, Kankara in Katsina state on 11th December, 2020. The abduction in Kankara was to trigger regular forced take away of students from schools in north-western states in Nigeria. In each of the previous abductions, negotiations with bandits resulted in heavy ransom paid before the release of the abductees. The December 2020 incident was to ignite the spike in kidnappings and abduction of students across states in northern Nigeria generally. For example, on 18th February, 2021, 42 girls were abducted from Government Science College, Kagara in Niger state to be quickly followed by the abduction of 279 girls from Government Girls Secondary School, Jangebe in Zamfara state on 26th February, 2021. These spates of abductions suggest the high level of vulnerability of students in Nigerian public schools to risks and danger to life and schooling. It further shows the incapacity of the Nigerian state and the lack of political will to protect the children who represent the future of the nation (Lakemfa, 2021). Within less than three months nearly 800 students were carted away from their schools by armed bandits and subjected to extreme conditions. Zamfara, Kano and Katsina states government responded to these incidents by ordering the closure of schools in addition to negotiating for ransom payments to facilitate the release of the students. From Borno, Yobe and Adamawa to Zamafara, Katsina and Niger states, many children could not attend schools for fear of attacks by bandits which clearly suggest that the future of millions of Nigerian children is in jeopardy. Many of these children who may eventually find their way to schools may miss classes and yet move on ill prepared for university education. Hard as the universities may try, many will barely graduate again not properly trained. The probability that these graduates may find their way into the system is high and hence the continued decline of quality of Nigerian graduates which appears to be becoming a vicious cycle.

With the upsurge in the kidnappings of college students by bandits in February 2021, the armed groups decidedly turned attention to higher institutions and universities on 11th March, 2021 with the abduction of 39 students of Federal College of Forestry Mechanization, Afaka in Kaduna and attempted another kidnapping of 307 students but for the timely intervention by a combined team of military forces (Erunke and Hassan, 2021; Aljazeera, 2021). Barely a month later, 40 students of Green Field University in Kaduna state were kidnapped. This was the first bandits' attack on a private university in Nigeria. This attack was followed by the abduction of three students of University of Agriculture, Makurdi while Lagos State University was reportedly attacked by hoodlums on 26th April, 2021. Before the attacks on universities assumed a

regular occurrence, the University of Maiduguri was attacked by suicide bombers from the Boko Haram insurgents on 14th September, 2009 and 20th May, 2017. In Jos, a female professor in the department of Microbiology, of the University of Jos and her husband were kidnapped on 18th May, 2021. All these paints a picture of a "booming kidnapping for ransom criminal enterprise" (Aljazeera, 2021).

The cost of this sustained violence to the universities is staggering. Since the insurgency, the University of Maiduguri for example has lost 70 professors to other universities within and outside the country considered safer for intellectual pursuit (Okowe, 2021). It is public knowledge how painstaking it is to produce a professor and to lose this magnitude under circumstances that makes attraction of same from other universities impossible is more disturbing. With increasing insecurity not only are Nigerian universities going to continue to lose qualified staff, but they will also not be able to attract similar caliber personnel with telling results on training of future academics. It is also difficult to attract qualified external examiners even from within Nigeria. The implication is to look around the neighborhood and resort to the most available even when they are not suitable. What insecurity has imposed on Nigerian universities is localism that threatens the cultural and intellectual diversity that is a most cherished value, essential for enriched academic endeavours. Insecurity has finally nailed internationalization and put paid to global prestige that is in hot pursuit by modern universities as an attractive value for resources generation and inter-university staff exchange.

Diversity in the university is being affected by insecurity not just in terms of inability to attract staff or retain them; candidates seeking admission are going to increasingly shrink to local prospective opening. For fear of the unknown, it is becoming more likely that parents would opt for children to take chances with a local university than one located in a risk prone area like Katsina or Borno or Yobe states. For reasons of intensification of regionalism, the tendency for candidates to seek admissions into the university from those located in their states had been building up since the 1990s but which has peaked with the worsening of insecurity in the country.

The implication of insecurity for university education in Nigeria is referent by the stealthy damage to universality of the university institution through intensification of localism. This would leave the university with little or no chances of admitting and recruiting the best for the system. As modern universities that price prestige and global ranking based on rigorous competition as corporate entities for resources in revenue and grants, the space is shrinking for the institutions being compelled to remain largely local institutions.

Conclusion

The future of university education is dangerously challenged by widespread insecurity propelled by extreme violence through kidnapping and banditry. With school stoppages by millions of children due to insecurity and accompanying psychological trauma for even those attending intermittently presents a challenge to quality delivery and products of school systems. Attacks on universities hurt the capacity of universities to remain universal centres for learning, research, teaching and provision of services. Non-universality of universities in turn would harm diversity, an ineluctable pool of value

and resources for enrichment of intellectualism. Being there in a hostile environment, the serenity universities need for academic endeavor is desecrated thereby destroying the possibility of meaningful intellectual pursuit. Insecurity more than anything, not even massification of education and declining public expenditure on universities undermines the strategic new roles of modern universities as corporate and global centres of knowledge production.

Access to universities by academics in many campuses in Nigeria has been heavily restricted. Academics in places like Maiduguri can no longer reach their offices freely and at any time of their choosing. This measure for security reasons maybe apt but undermine relevant time needed for research and intellectual enrichment for teaching. Addressing insecurity is more than urgent and imperative through a resort to technology-based solutions for military engagement with bandits and insurgents. Obtaining and deploying electronic surveillance, drones, satellite eaves dropping, and real time motion detection over wide and remote spaces including night vision surveillance will improve preparation and enhance tactical operations with precision.

An invaluable asset to the state and security forces in dealing with violence and simmered conflict is trust of the affected population. It appears that trust between citizens and the state or security forces in places where violent extremism is predominant have been totally lost in Nigeria. Reclaiming this lost value is extremely important if the military campaign against bandits and insurgents is to be decisive. One way to reclaim this trust of the citizens is to publicly hold accountable the military for resources spent on defence expenditures in the discharge of its mandate to defend the nation. This is also an attempt to shore up the legitimacy of the government necessary to elicit the cooperation of the people in the fight against insecurities. For universities to stay afloat while insecurity still prevails is to rapidly deploy educational technologies in teaching and research especially in non-laboratory-based fields by leveraging virtual opportunities to continue to deliver on their mandates and remain relevant to Nigerian society and economy.

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Emerging footprints of hate narratives and disinformation on insecurity in north-central Nigeria: Perspectives from journalists practicing in the region

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Abstract

This study examined emerging ways in which disinformation and hate narratives in journalism practice in north-central Nigeria imparted security in the region. The study was anchored on Field Theory by Pierre Bourdieu, to explain the sociocultural, ethical, and political influences on the journalists in the region, while they performed their duty. Literature materials and interviews were deployed for the interrogation. The interviews were conducted for 19 journalists, drawn from the region and analysed qualitatively through transcription and interpretation. The sample size of 19 was determined by the Taro Yamane Sample Size Calculator, from a population of 2,558 journalists, practicing in the region. The calculator was applied in two phases to yield a manageable sample size for an interview. Findings established that some journalists in the region were influenced by sociocultural, political, and economic factors, which constituted environmental influences on their news judgement. This induced some of them to weaponise hate messages and disinformation while they reported insecurity about the region. This was a strategy deployed to settle historical intergroup grievances and contestations, flowing from those environmental influences, for political correctness and tussles to control narrative. The study recommended that further studies on these variables be conducted on the same population, using broad-based quantitative approaches, such as surveys and content analysis, to have a broader perspective of this development.

Keywords: Disinformation, Hate, North-Central, Insecurity, Journalist.

Introduction

Debates on disinformation and hate contents seemed to have gained momentum in recent history following the 2016 United States' Presidential Elections, which ushered in the first term of Donald Trump's presidency of the country (Allcott & Gentzkow, 2017; Deac, 2018). President Trump had consistently accused some popular news conglomerates such as the Cable News Network (CNN) for spreading disinformation and hate about his activities and presidency (Pangrazio, 2018). Both he and his administration would later become immersed in fierce verbal exchanges (especially with CNN and *New York Times*) throughout the four years of his first term in office as president. Hence, even though the issues of disinformation and hate messages on the one hand, were talked about previously within the global journalism lexicon, from that point on, the industry became more critical of these phenomena as major issues in modern-day journalism (Beckett, 2017). Conversations around disinformation, hate messages and the merchants who propagated them, increased tremendously due to distrust in public institutions and the news media, and a gross decline in professional journalism (Clark & Marchi, 2017). Literature has demonstrated how the distribution of false information is done to deliberately mislead the public on political and other sensitive issues (Agrawal, 2016; Alabi, 2020; Bond & DePaulo, 2006; Borchers, 2017; Dewey, 2016).

In Nigeria, disinformation (often widely referred to as fake news) and hate contents (or hate speeches) were prominently registered in the country's psyche following campaigns launched against them by the Ministry of Information and National Orientation in 2017. Nigeria's information minister at that time, Lai Mohammed, described them as epidemics that were sweeping the world (Odebode & Fabiyi, 2017). Rising armed conflicts between farmers and Fulani herders in Nigeria's northern region, according to him, were fueled by online disinformation and hate machinery. In the same year, the mass media, both within and outside Nigeria, were awash with stories that the sitting Nigerian president at the time, Muhammadu Buhari, had died at a London hospital – reports which were later proved to be false and malicious (Ugwuanyi, 2017). In 2020 alone, the ministry allocated 336 million Nigerian Naira in its national budget, to combat disinformation and hate speeches in the country because the government believed that they had assumed serious national security threats (Akinkuoto, 2020). This was in addition to a list of sanctions, to be imposed on broadcast stations in the country, found wanting for spreading disinformation and hate speeches by the National Broadcasting Commission (NBC) (Olokor, 2020).

The Nigerian government declared hate comments as an act of terrorism, which needed to be tackled like every other security threat (Mohammed, 2019). In addition to making budgetary provisions in the national budget to fight the duo of disinformation and hate comments, the legislative arm of government considered a now infamous "National Commission for the Prohibition of Hate Speeches Bill, 2019", sponsored by Senator Sabi Aliyu Abdullahi at

Nigeria's National Assembly (Abdullahi, 2019). The bill which sought to eliminate hate messages in Nigeria and discourage harassment on the grounds of ethnicity, religion, or gender, prescribed stiff penalties for offences such as ethnic hatred (Olokor & Aborisade, 2020).

Further, growing social consciousness, increased political dialogues, and rumour mills empowered extreme and hitherto obscure entities to mobilise men and materials to flame the embers of insecurity in Nigeria (Isaac & Roose, 2018). The availability, access, and affordability of online platforms enhanced these possibilities. For instance, the monstrosities of separatist movements, banditry, kidnappings, and the killer-herder menace in Nigeria, are propagated using fluid spaces such as WhatsApp, Facebook, and Instagram. The sense of social cohesion in Nigeria has been grossly altered in the wake of these atrocities, manifested in mutual mistrust, and the erection of cleavages and parochial sentiments (Hassan & Hitchen, 2020). In all these, the mass media in Nigeria are not insulated. These realities seem to have put tough choices before them, to either become complicit or become laidback.

Being constitutionally empowered to be the custodians of the nation's information landscape in the journalistic sense, their continued relevance and legitimate functions have come, not only under unprecedented threat, but scrutiny (Odunfa, 2009). The monopoly they used to enjoy, might have been usurped by the huge volumes of disinformation activities carried out online. Narrative, authority, and meaning, as far as journalism was concerned, appear to no longer be the exclusive preserve of journalists (Singer & Brooking, 2018). These trends spur inquiries into how they affect journalists' attitudes and dispositions in the line of their duty and how public security is affected. Disinformation emanating from either conventional or nonconventional media sources and channels, and which use different approaches and tactics, leave real consequences on the real world (Skopeliti & Morrish, 2019).

The spread of insecurity in north-central Nigeria, has been associated with journalistic bias, related to intergroup relationships and contestations in parts of the region (Galadima, 2010; Danaan, 2017). The intergroup relations were situated within contentious religious, sociocultural, and political narratives. These developments necessitated the interrogation of the complex but dynamic intersections between the packaging, distribution, and consumption of journalistic messages of hate and disinformation, and their consequences on peace and security in north-central Nigeria. Specifically, the study interrogated the implications of disinformation and hate narratives in journalistic reportage of insecurity in north-central Nigeria, through a qualitative approach involving a review of literature and interviews.

Literature Review

Studies on hate messages and disinformation occurred in different contexts and settings. Some of them focused on either disinformation or hate speeches or their effects on the society in a generic sense (Skopeliti & Morrish, 2019; Ugwuanyi, 2017). Other literature treated hate messages and disinformation from the contexts of social media, governance, and elections (Pate & Ibrahim, 2020; Riley, Etter, & Pradhan, 2018; Singer, & Brooking, 2018; Smidi, & Shahin, 2017). Those literature situated within social

media studies, for example, went further to look at the roles of artificial intelligence in either detecting hate messages and disinformation, or as a tool for spreading hate and falsehood (Okoro, Abara, Umagba, Ajonye, & Isa, 2018; Pangrazio, 2018; Phillips, 2015; Tandoc, Wei Lim, & Ling, 2018). Also, extensive works on news framing by media institutions, with themes which interchanged fake news for misinformation, and referred to both as disinformation, exist (Ohieku & Sabo, 2019; Rapoza, 2017; Msughter, 2023a; Msughter, 2023b; Pate, Gambo, & Ibrahim, 2019). This study identified that religious persuasion and ethnic affiliation, and how they affected journalists in the background, in their bid to collect and package news for the public, were avenues requiring deeper interrogation within the context of north-central Nigeria. Hence, situating this study in north-central Nigeria, with attention on journalists as key actors in the dynamics that defined hate narratives and disinformation, marked a significant deviation from the generic focus on media institutions and politics in previous studies. This study identified these gaps in the context of subtle but salient elements such as personal sentiments, religion, ethnic cause, and professional ethics, which may interfere with journalists' attitudes toward the spread of hate contents and disinformation in north-central Nigeria. This constituted a significance to theory because of the pedagogic value it portended for journalism research in north-central Nigeria.

Ojebode (2018) dissected the evolving dimensions of hate messages and disinformation in Nigeria from the general point of view. The study looked at interpersonal, intercommunal, and mass communications dimensions of the issue. This study, however, investigated these variables from the perspective of journalists' activities and how hate and disinformation are reflected in their attitude toward security and safety in north-central Nigeria. This provided a deeper and nuanced understanding of how journalists' report insecurity and conflict in the region. As a way of furthering the modification of Johan Galtung's peace journalism by Danaan (2017), which advocated solutions journalism (SJ), this study strengthened the conversation on peaceful coexistence in the north-central region of Nigeria. This is against the backdrop of the peculiar securitised situation in the region (Ambe-Uva, 2010; Best, 2007; Krause, 2011).

The 1994 genocide in Rwanda (Meierhenrich, 2020), and the circles of killings in Benue, Nasarawa, and Plateau States in Nigeria (Ambe-Uva, 2010; Best, 2008), provided instances where bloody conflicts either emanated or escalated from the activities of journalists. This was significant because it explored journalists' idiosyncrasies and orientations toward security matters and the safety of society. Herewith, lied the significance of the study to journalism practice in north-central Nigeria and nationally. This study built on the body of existing literature which appreciated and appropriated the impacts of active disinformation and hate materials in contemporary Nigeria, and especially, north-central Nigeria. Individuals and groups, with set objectives, to mainstream narrow agenda, deliberately propagated falsehood and hate contents on public spaces. Hate narratives and disinformation have been blamed for either setting off violent conflicts or worsening them.

Gapsiso (2021) examined hate messages and disinformation metaphorically as non-armed threats to security in Nigeria, and noted that the two concepts were often improperly

contextualised by journalists and audiences in how they easily labelled factual news as disinformation during the 2020 #EndSARS protest in Nigeria. The study, which blamed the labelling on lack of verification, situated these conceptual mix-ups in how audiences understood media messages during the protest. The government had dismissed reports which showed images of unarmed protesters being gunned down by people alleged to be personnel of the Nigerian Army, as disinformation and hate messages (Idakwo & Onwe, 2021; Mohammed, 2020). But the protesters insisted that those events took place at the Lekki Tollgate in Lagos, prompting the Lagos State Government to set up a panel of inquiry to investigate claims made by parties in the incident (Akinyele, 2020; BBC, 2020; Busari, 2020).

Gapsiso (2021) also observed that disinformation and hate attitude fueled the #EndSARS protest which later degenerated to violence, wanton killing, and threat to national security, since the agents of government and the protesters could not find a middle ground. For two weeks, youths in Nigeria flooded major streets of cities like Lagos, Port Harcourt, and Benin, to protest police brutality, calling for police reforms and the proscription of the Special Anti-Robbery Squad (SARS), a unit of the Nigeria Police Force, which was allegedly notorious for brutality (Akinyele, 2020; BBC News, 2020; Busari, 2020; Ukpe, 2020). The protest was reportedly hijacked by hoodlums, resulting to killings, looting, destruction, jailbreaks, and instigation of ethnoreligious crises (Gapsiso, 2021). States which did not participate in the protest experienced violence and looting of both public and private property (Busari, 2020**).**

Pate and Ibrahim (2020), in a study, "Fake news, hate speech and Nigeria's struggle for democratic consolidation: A conceptual review", focused on redefining the concept of fake news in a critical review of literature. The study was inspired by political happenings in Nigeria during the buildup to the 2019 General Elections, the Brexit referendum in the United Kingdom, and the 2016 presidential elections in the United States. The crux of the study was to make manifest the weaponisation of fake news and hate speeches to instigate political instability in Nigeria, the UK, and the US, in events that were literarily unrelated, and in what the study called weapons of "mass democratic destruction" (p. 104). With emphasis on Nigeria, the study concluded that the Nigerian democratic process was under attack at the time, given the plethora of fake news and hate speeches that it examined during the 2019 General Elections.

In a mixed-methods approach, encompassing survey and content analysis, Ajakaiye et al. (2019) identified and analysed the factors that constituted hate messages and disinformation, as perceived my Nigerians. The study revealed that Nigerians perceived these phenomena as offensive and contributed to the volatility experienced in the country's sociopolitical space. It concluded that Nigeria needed stronger implementable legislations to tackle hate messages and disinformation for nation building.

Okoye and Oparaugo (2021), in an exploratory review, evaluated the role of broadcast media in mitigating hate messages and disinformation in Nigeria. The study found out that situating and understanding the dimensions of hate messages and disinformation in future events in Nigeria might become more difficult due to the complexities the phenomena brewed. Hinged on the Judgmental Theory, the study posited that broadcast stations in Nigeria should embed

advocacies in their contents to dissuade unsuspecting Nigerians from redistributing hate messages. The study added that legislations were required to curb the spread of hate messages and disinformation. Similarly, Alakali, Fage, and Mbursa (2017) examined the relationship between mass media roles and hate messages, and identified that foul language was replete on social media platforms because people who posted them did not understand their legal and moral implications. The study concluded that existing legislations against slander, incitement, verbal attack, ethnoreligious discrimination, and libel were not enough to deter people from posting hate on mediated spaces.

Pierre Bourdieu's Fields treatise as theoretical framework

Theories provide sound foundations in relation to existing principles, to give direction to studies. The term "theory" refers to "the body of rules, ideas, principles and techniques that applies to a subject, as distinct from actual practice" (Bainbridge, 2011, p. 225). It is a critical reflection of the world. The most suitable theories are reviewed with the aim to achieve a research's objective. Hence, a given study has a particular theory that is most appropriated for it (Obateru, 2022). This research relied on Field Theory. Pierre Bourdieu developed and advanced a paradigm for the sociology of journalism, centred around the concept of the media field. This paradigm evolved from the writings of Kurt Lewin on the journalism field and its environmental influences on the journalist's performance (Bourdieu, 1998). Bourdieu and his associates basically argued that the news media, while serving as agents of dominant power, are undermining the autonomy of other spheres of cultural production, and thus enabling a favourable condition to produce scientific knowledge and aesthetic creations (Bourdieu, 2005; Phillips, 2015).

Having been influenced by Maximillian Weber's sociology of religion, Pierre Bourdieu categorised the society into several semi-autonomous fields such as the political field, the economic field, the field of religion, the field of cultural (re)production, and more. He believed that each field is governed by its own "rules of the game", and prescribing its own exchange and reward systems (Benson, 2007, p. 464). The journalistic field is mostly inside the field of large-scale production. Field theory further locates journalism in its immediate structural environment, which is affected by the politics of the day, social sciences, and the prevailing culture.

Bourdieu believed that the fields are not only reflections and refractions of the overall class division in society, between the dominant and dominated classes, but also the split within the dominant class (Benson, 2013). These extend to divisions and power tussles along economic, political, and cultural lines. Society, according to him, is structured around a basic opposition between economic and cultural power, with the latter generally being weaker. In addition to the division between heteronomy and autonomy, the field of journalism (as with all other fields) is structured around the opposition between the old and the new. Through analysis of new entrants into a field, media field researchers also add an important dynamic element to the model, showing how the objective structure is related to the subjective perspectives of individual agents (Phillips, 2015). Objective structures and subjective experiences are not two competing explanations of the social world but are rather two intertwined aspects of reality.

Field Theory was considered important to this study because it enhanced an understanding of journalists' experiences in the line of their duty, especially when considered from specific circumstances and key variables in this study. These experiences, which may be positive or negative, create perceptions about them in the mind of the public as well as shape their own perspectives as journalists. Many variables tamper with the performance of their duties to society. The avalanche of disinformation and hate contents fall within this purview, and this study is concerned with empirically interrogating the depths and dimensions of journalists' emerging attitudes toward these phenomena in the line of their duty. Since this study was hinged on Field Theory, it explored and strengthened the debate about peace journalism in the region. Many armed conflicts have been directly and indirectly blamed on media reports both in north-central Nigeria and beyond. These conflicts were instigated by hate messages and disinformation from journalism stables.

Methodological approach

Methodology is a systematic way of producing knowledge, involving both the generation and analysis of data, and "a way of testing, accepting, developing or rejecting theory" (Bainbridge, 2011, p. 226). In other words, this process was deployed to resolve the research problem articulated by this study, through a procedural collection of information, analysing of the information, and inferring from the information, in relation to the research objective in the Introduction. The study adopted a qualitative approach, involving review of literature and interviews. The interview was to make room for inductive analysis of the subjects being investigated.

The area of this study is the north-central region of Nigeria, which comprises of Abuja and six states, namely Benue, Kogi, Kwara, Nasarawa, Niger, and Plateau (Galadima, 2010). They are self-governing entities within Nigerian's federal structure, having their autonomous legislative, executive, judicial arms of government (Constitution of the Federal Republic of Nigeria, 1999). It is a region characterised by multiplicity of languages, cultures, religions, and ethnic nationalities living very closely to one another.

The interest in this region is spurred by: its peculiar security challenges; the roles that journalists have allegedly played in exacerbating its security challenges; and the hope of obtaining peculiar outcomes from the region which may vary from those of other locations. Further, this is the only region in Nigeria that is strategically connected by land to all other regions of the country, as well as two international borders to the west – with Republic of Benin, and the east – with Cameroon, respectively Armed Conflict Location and Event Data [ACLED] (2023). The other regions are northwest, northeast, southeast, south-south, and southwest. The security of the north-central region is critical to the overall security of Nigeria because insecurity from any part of the region easily affects states in adjourning regions.

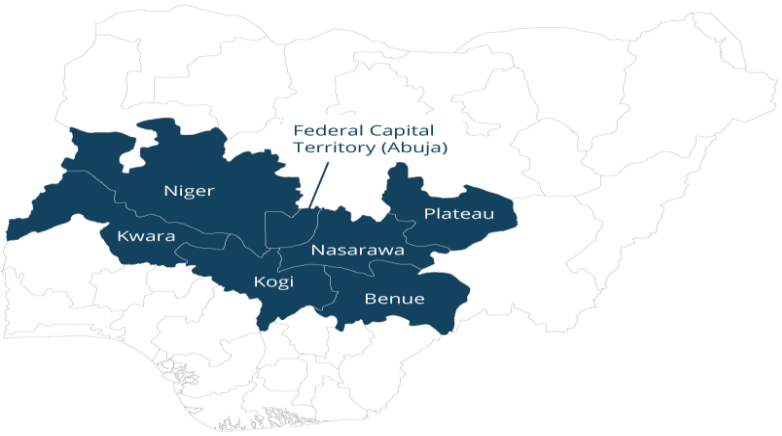


Figure 1: Map of Nigeria showing north-central states and Abuja
Source: Armed Conflict Location and Event Data [ACLED] (2023)

A security implosion in the north-central region could signal a great threat to the security of Nigeria, and those of the two neighbouring countries.

The population of this study was made up of journalists located in north-central Nigeria. This population is assumed to be a major player in the information ecosystem in any society. The interactions of journalists with different phenomena predispose them to becoming victims, sources, or channels of disinformation and hate contents. The study leveraged on the information and perspectives these journalists provided, which may not be conspicuous in their routine news delivery. From a 2023 preliminary data obtained from the secretariats of the Nigerian Union of Journalists (NUJ) in Abuja, Benue, Kogi, Kwara, Nasarawa, Niger, and Plateau, all located in the region, and from the NUJ Compendium of Members (http://nuj.org.ng/compendium.php), the total number of registered and licenced journalists in those councils was 2,558. A breakdown of this population and their percentage representations are provided on Table 1 in an alphabetical order.

Table 1: Journalists in Abuja, Benue, Kogi, Kwara, Nasarawa, Niger, and Plateau

S/No	Location	Number of Journalists	Percent
1.	Abuja	846	33%
2.	Benue	226	9%
3.	Kogi	205	8%
4.	Kwara	336	13.13%
5.	Nasarawa	318	12.4%
6.	Niger	335	13.1%

7.	Plateau	292	11.4%
	Total	**2,558**	**100%**

Sources: NUJ's Abuja, Benue, Kogi, Kwara, Nasarawa, Niger, and Plateau councils (2023); NUJ Compendium of Members (http://nuj.org.ng/compendium.php).

The justification for choosing the region for the study is that the region has suffered from many bloody conflicts and insecurity in the recent past, with many of them concerning journalists' activities. The study touched on the humanitarian dimension to securitised issues and the brand of journalism practiced in the region. The population for this study was partitioned into subpopulations according to physical locations of the respondents. In this case, the various state secretariats of the NUJ formed the partitions for the sampling. This enabled the researcher make the most of this relatively small population of interest to this study. Sampling is a process of taking a portion or subset of a population or universe a researcher is interested in studying (Osuala, 2007; Wimmer & Dominick, 2011). This was because all the elements or universe cannot be studied, hence the need to adopt a technique as is customary to research methods.

Probability sampling was adopted, and specifically, simple random sampling technique. In the simple random sampling, a portion of the population is drawn such that each member of that population has an equal chance of being selected for data mining. Osuala (2007, p. 115) said that "a sample drawn at random is unbiased in the sense that no member of the population has any more chance of being selected than any other member." Simple random sampling is also meant to obtain external validity for the research at reduced material and human costs in terms of money, time, manpower, and scope. These factors informed the choice of this sampling technique. Therefore, every member of the NUJ councils in northcentral Nigeria had an equal chance of being selected for sampling.

This research relied on the Taro Yamane sample size calculator to determine the sample size for the research. Since the population is finite and identifiable, this sample size calculator became most suited for the study (Yamane, 1967 cited in Adam, 2020). Since interview focuses on depth over breadth, and quality over quantity, the Taro Yamane Sample Size Calculator was applied twice to further reduce the sample size to a manageable proportion, in line with the requirement for an interview. The calculator was initially applied to 2,558 population of the journalists in north-central Nigeria, producing 345 as the result. This result was considered too high for an interview, necessitating a further application of the sample size calculator on 345. The result was 19, which seemed suitable for the qualitative depth being sought by the study through an interview. The formula for the calculation is provided below

:

$$n = \frac{N}{1 + N\,(e)^2}$$

Where:

n = sample size

N = population size

e = limit of tolerable error always assumed to be 5% or 0.05

1 = unity (always constant)

Hence,

$$n = \frac{2558}{1 + 2558\,(0.05)^2}$$

$$n = \frac{2558}{7.395}$$

$$n = 345$$

The second phase of the calculation is provided below:

$$n = \frac{345}{1 + 345\,(0.05)^2}$$

$$n = \frac{345}{18.25}$$

$$n = 19$$

Data presentation and analysis

The interview data were presented and analysed using a transcription and interpretation approach. Key aspects that were relevant to the study were extracted from the interview, transcribed, and adapted for in-depth and qualitative analysis. Hence, data were transcribed and interpreted qualitatively. Participants were coded R1 to R19 (R referred to "Respondent"). The first participant was coded R1 while the last was coded R19. The interview guide was made up of six interactive questions, developed from the research objective of the study. The interview allowed participants the latitude of space and time to express their perspectives on each question in a way that broad-based quantitative methods would not have allowed them. The questions and data generated from the interview were presented and discussed in the following paragraphs.

Question 1. How do journalists' cultural, political, and religious orientations influence their news judgement while reporting insecurity in north-central Nigeria?

Inasmuch as respondents shared diverse views on how their cultural, political, and religious persuasions influenced their news judgement, the common factor identifiable with their responses was that the variables played significant roles in shaping their news judgement as Nigerians, who belonged to different cultures, religions, and having political affinities. These variables drove some of them overtly

or covertly to express sentiments in their news judgement and reports on insecurity in the region. On this, R19 said that:

> It is natural that in one way or the other that such variables would definitely affect one's sense of news judgement and reporting of insecurity. This we have seen in many instances and with many media outfits in the region.

R2 could not agree more with R19 as he/she shared similar view, thus: "It affects them because they are part of the social system culturally, politically, and otherwise. Just like objectivity, they cannot be outrightly neutral". R15 however, situated these variables from the primary victims or sources of security related news that:

> Victims in areas covered would rather become subjective over objectivity or susceptible if they allow their emotions or cultural beliefs to play over their professional abilities. As journalists, they must remain fair, accurate, precise, and objective in their news judgement.

For R12, it is a call to journalists to return to the ideal rule of engagement in journalism practice. In his/her words, "As professional journalists, gatekeepers, and information managers, all these factors should not influence our judgement in reporting insecurity. We should always stand by the truth as factfinders." These intervening variables "lead to bias reporting", according to R13, "reflecting personal perspectives, which may distort facts and create unbalanced narratives". Relatedly, R10 alluded that, "these factors will always be there, but as journalists, we need to strike a balance in our reportage not to appear bias". R5 believed that the journalist must be detached from the news content, be fair, and objective. However, R9 had a nuanced perspective to how these factors influenced journalists in the region. To this respondent, these variables were an advantage where the journalists can derive from the morals and virtues in them to serve humanity better through journalism. He/she stated that "the cultural, political, religious orientations rarely influenced their reportage because these will distort facts. However, a journalist's cultural and religious orientations gave them better strategies on how to investigate, relate, and package news content because they understood the terrain". Supporting the perspective of R9, R7 thinks that these variables help journalists to make informed news judgement, and "guide their line of thought in positive direction". For R11, culture, religion, and politics were:

> …. major drivers and influencers of media contents in north-central Nigeria…. Most journalists see themselves first as vanguards of their religion, culture, and political affiliation before they are journalists. Or put it another way, they believe their journalism is a tool for defending those interests. Sad!

R11 above, stating that journalists in the region first consider their parochial affinities and loyalties before national patriotism, is instructive. This respondent related their position from the place of experience being a practitioner in that region for many years. He has witnessed the major sectarian crises in Benue, Nasarawa, and Plateau States, stating how journalists were alleged to have

contributed to instigating or worsening the crises which had religious, ethnic, and political dimensions. Journalists are ethically required to live above conflict of interests and sentiments. This development indicated that ethical provisions begin and end in the books, but what obtains on the field is different.

Question 2. What is your perspective on government's claims that certain news is disinformation and hateful?

The government is believed to be sometimes injured by the news angle, analyses, and interpretations some journalists give to government's activities. This was the position of R4, who stated that the government branded some media reports as hate and disinformation because:

> This may not be unconnected to the watchdog role of the journalist, who is always out to expose or check the excesses of those in governance. Journalists are no longer just reporters, but also analysts, whose write-ups could make government feel injured.

R17 believed that government only played the ostrich when it made such claims because "the government lacks the political will to address the issues which are often real, factual, and accurate." Contrasting these positions, R18 believed that the government was right when it made such claims because:

> …if you take into cognisance the philosophy or theory of responsible journalism, then you will realise that some certain news items lack such quality, as the message is intended to cause harm and disrupt the peace and working of society.

R11 had a different perception to this question, as he left the faults at the doorstep of the government as the guiltier party. In his words:

> Government is the major culprit when it comes to spinning news, masterminding propaganda, and hate comments. Current reports emanating from the oil industry, particularly the opacity in oil subsidy management, fake dates as to when the refineries would start working, etc., are clear examples of disinformation.

This respondent felt the government was the expert when it came to spreading hate and falsehood through its propaganda architecture, reflected in failed promises, failure to keeping its own part of the social contract with the citizenry, and perfecting the divide-and-rule tactic to keep the larger society under its control.

Question 3. What are the perceived threats of disinformation and hate messages to journalism in north-central Nigeria?

For R2, R3, R5, R10, R11, R13, R14, R15, R17, and R19, hate messages and disinformation were public enemies because they created religious, political, and communal crises. R11 stated that they "are drivers of destruction, acrimony, and mistrust. They are harbingers of conflict and crises. They engineer and propel bad governance, and bad citizenship. They entrench and emphasise division and discord". R19 alluded that the "consequences are numerous, some of which are disunity, threat to public peace and order, and the fuelling of ethnoreligious

crises in the region". But as touching journalism, R17 noted that "the proliferation of information outlets allows for greater access and ease to disseminate falsehood and hate messages than in decades past". For R14 and R15, disinformation and hate messages will make "… the journalism profession to lose its efficacy and credibility…" and "…difficult for the public to believe the reportage from journalists". R3 noted that the phenomena "heighten political tension and instigate civil unrest".

Question 4. How do journalists' view the link between insecurity in north-central Nigeria and disinformation and hate messages?

R3 stated that "information disseminated with stereotype bred conflict such as the farmer-herder conflicts with all Fulanis being branded as terrorists". R13 said they have led to the erosion of public trust in institutions, the media, and the government. R10 opined that "journalists are aware of the dangers inherent in the spread of hate messages and disinformation, but to draw traffic to their organisations, they rather engage in them". For R6, they have created fear in people and incited different groups against one another.

Question 5. In what ways do journalists believe disinformation and hate narratives are weaponised to settle old scores in north-central Nigeria?

All respondents save R1, R5, R7, and R10 believed that hate narratives and disinformation were weaponised for settling old scores by some journalists in north-central Nigeria. R5 specifically opined that "disinformation and hate narratives are not often times used as weapons by journalists but sometimes a diversion tactic for political and economic reasons, which are mostly used to attract sympathy". R14 shared a related perspective with R10, which viewed the ownership of many media houses by politicians and other elites as a way of creating avenues for self-censorship and editorialisation. R17, who held that hate contents and disinformation were weaponised, noted that "on many different occasions, we have seen and witnessed situations where media owners use their platforms to settle old scores especially through political jingoism and intemperate language among others". R2, R8, and R13 saw this approach as means for manipulating and distorting historical facts to justify recurrent political, religious, and communal conflicts and for economic advantages. Providing practical examples to this question, R11 alluded that this weaponisation occurred:

> Through religious indoctrination (extremist sermons, inciting remarks on pulpits) …. Through cultural misapplication: for instance, that "the Fulani man never forgives. Even the generation after him will revenge for him.…" Through links with international terror organisations like ISWAP, Hamas, Hezbollah, etc., as well as secret cult-like groups such as Sara Suka, the Jesuits, etc.

This weaponisation occurred through "tribalism, religion, and nepotism" (R14), and "political propaganda of by journalists, paid by the government to falsify news to gain sympathy and trust of the public" (R15). For R9, hate narratives and disinformation were used by some journalists to:

> … bring division; it affects the peaceful coexistence of Nigerians from different tribes. Disinformation is used

> to blacklist and assassinate the character of certain people vying for political leadership or carrying out development projects in a community.

Responses to the question seemed like a consensus because most of the respondents believed that journalists in the region weaponised their art to settle religious, political, and ethnic misgivings through the agencies of hate and disinformation. The feelings further obtained to this question was that some of these journalists carried out the scores settling as a personal and group vendetta to win arguments, control, and dominate the narrative about historical disagreements, which touched on land ownership, political, and economic controls within a geographical space and context. The interview responses were near unanimous that historical grudges, political divergence, and religious fanaticism influenced the weaponisation of hate messages and disinformation by some journalists.

Question 6. How do you perceive social media regulation in addressing hate messages and disinformation in Nigeria?

R1, R4, R5, R6, R7, R8, R9, R10, R11, R14, R15, and R17 believed that the social media should be regulated. While R11 and R15 saw it as a "welcome development" because "social media users will be held accountable for defamation if they make false and damaging statements about individuals and organisations…." (R11), and "will go a long way to reduce hate messages and disinformation…." (R15), R8 felt that such regulation should be enforced by "independent bodies". R10 said that social media should be regulated because "it is(sic) the main channel where hate messages and disinformation are spread. Their users should be made liable for disseminating hate messages". R9 said that "regulating the social media will address hate messages and disinformation if measures are put in place to punish offenders without stifling them". R14 lent a voice to support this that "regulating social media can curb the menace of disinformation and hate messages…," because "…. users mostly base their reportage on sentiments". R17 said that regulation should be in place to "reduce, if not, totally purge the media space of such unprofessional conduct and practice". R3, however, thought that "the regulation is unnecessary" if the government toed the path of "good governance, discipline, and patriotism".

Discussion

From the data analysed, hate narratives and disinformation are armed components of warfare, as far as security of life and property were concerned. Respondents alluded that whether literarily or metaphorically, hate and disinformation were lethal components of warfare, hence, they played significant roles in instigating and escalating insecurity in north-central Nigeria. This finding differed to Gapsiso (2021), who said that hate messages and disinformation were unarmed components of warfare. However, the findings aligned with Pate and Ibrahim (2020), who described the phenomena as "weapons of mass democratic destruction", and Ajakaiye et al. (2019) who concluded that hate messages and disinformation were offensive and volatile to Nigeria's sociopolitical space.

The weaponisation of hate messages and disinformation by some journalists for settling historical grievances, also presented a slippery experience in north-central Nigeria, given the near perennial security challenges in some parts of the region. Responses obtained from participants

revealed a pattern which indicated that many journalists in the region considered themselves, first, as vanguards of their ethnic groups, religions, and political affinities before national interests. Ojebode (2018) and Ajakaiye et al. (2019) articulated the normalisation of toxic narratives and disinformation on mediated spaces, which flowed from the cultural, religious, and political leanings of journalists into their regular duties. Ojebode (2018) described it as toxic journalism, which subtly and cumulatively morph into harbingers of large-scale violence and destruction of life and property over a given period. These are emergent.

Further, participants favoured some level of social media regulation. R7, R10, R13, R15, R17, R18, and R19 opined that a moderate but consistent legal framework, which were lacking, could address the spread of hate and disinformation over social media platforms. This study viewed these responses as emerging, considering the relatively recent resistances to proposals within government circles to regulate social media in Nigeria (Abdullahi, 2019; Mohammed, 2019). This development was a shift which this study noted. It was significant and interesting that this call came from journalists, who would normally have been uncomfortable that their freedoms would be altered. This position aligned with the views of Ajakaiye et al (2018) and Okoye and Oparaugo (2021), who said that the regulation of online spaces was necessary to check the spread of hate and disinformation, and to discourage people from gullibly redistributing hate and falsehood, through their mobile devices. The finding also aligned with Alakali, Fage, and Mbursa (2017) who advocated for monitoring mechanisms to understand how better to legislate on regulating mediated spaces against the spread of hate.

This study noted the influence of machine intelligence in the escalation of hate messages and disinformation in the 21st century, reflected in the use of artificial intelligence (AI). Okoro et al. (2018) advocated for more exploration into machine intelligence to potentially detect and stem the spread of hate and falsehood. Participants in this study suggested that more collaboration between journalism professionals, journalism researchers, and computing experts be promoted to humanise machine intelligence, using a hybrid approach, since the increase in this menace was facilitated by the cyberspace. In this wise, the machine intelligence would complement the human component and efforts to detect and stem hate messages and disinformation from moving from one computer device to another or the Internet. Hameleers (2023) conceptualised disinformation as a context-bound and an intentional act carried out within a participatory framework because victims intrinsically accepted a new piece of information as genuine, unless they were alerted by a suspicion. The study also noted that machine learning was needed to help humans detect disinformation.

Bourdieu's Field Theory helped to contextualise questions that arose from such trends as they touch on the social hazards of a field that Benson (2007) and Phillips (2015) separately explained. Their treatises held that the journalistic field is mostly inside the field of large-scale cultural expression and cultural (re)production in a dynamic society. This implied that Field Theory situates journalism in the society's immediate structural environment, which is influenced by the prevailing politics, social sciences, and culture of that society. This, Bourdieu (2007) explained, reflected not only the class divisions in that society between the dominant and dominated class, but more

critically the cracks and factions within dominant class, as captured by Benson (2013). These divisions and power tussles along economic, political, and cultural lines, are reflected in the complexion of journalism in north-central Nigeria, where many interests strive to mainstream their worldviews and narratives, with the aim to make them the dominant narratives and worldviews, in an otherwise diversified geopolitical and sociocultural setting. Benson (2013) further reiterated that society is structured around a fundamental opposition between cultural and economic power, with the latter generally being stronger. These theoretical explanations, from Pierre Bourdieu's Field Theory, find expression in the securitised patterns of communication and intergroup relations over mediated platforms in north-central Nigeria, within a spatiotemporal context.

Conclusion and recommendation

Environmental factors have significant influences on journalistic news judgement and gatekeeping. Journalists are members and citizens of the larger society they serve. They also subscribe to certain social, cultural, and political values. These values are domiciled within their environments, which are reflected in ethnic, religious, and political loyalties. Further, the subject of hate could not be interrogated within the context of intergroup contestations, such as were documented about north-central Nigeria, in isolation of disinformation. Data obtained and analysed from the field showed that hate influenced disinformation in securitised situations in the region and vice versa. The study therefore recommended that further studies on these subjects should be conducted on the population using broad-based quantitative approaches such as surveys and content analysis.

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