



**FEDERAL UNIVERSITY OF TECHNOLOGY,
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A Panacea for Sustainable Socio-Economic
Growth and National Development**

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**FEDERAL UNIVERSITY OF TECHNOLOGY,
MINNA, NIGER STATE – NIGERIA**

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**INNOVATIVE TECHNOLOGY A PANACEA FOR
SUSTAINABLE SOCIO-ECONOMIC GROWTH
AND NATIONAL DEVELOPMENT**

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ASSESSMENT OF LOGISTICS INFRASTRUCTURE AT THE INTERNALLY DISPLACED PERSON (IDP) CAMPS IN NORTH CENTRAL NIGERIA.

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ABSTRACT

The present study examines the type and condition of logistics infrastructure in place at the IDP camps in the rural and urban areas in North Central Nigeria. The study utilises a descriptive research design to describe the features of the respondents. The study utilises purposive sampling techniques to pick the state in the north central Nigeria which have about 71 IDPs camp. Taro Yemane formula was use to determine 397 questionnaires which was distributed to the IDPs at the IDP camp using random sampling techniques. The study uses frequency, percentages, and mean index score to analyse the data collected from the field survey. While the study hypothesis was analysed using Chi-square analysis. The study results show that Shelter facilities, Food and material warehouse, Water and sanitation facilities, Health clinics and Transportation facilities and Distribution equipment are among the available logistics infrastructure. In addition to the study finding reveals that the overall condition of the available logistics infrastructure across the IDPs camps are in poor condition. The study concluded that there is a significant deviation between the observed and expected frequencies, indicating that the type and condition of logistics infrastructure in place at the IDP camps in the rural and urban areas in North Central Nigeria are not independent.

Keywords: IDPs, IDP camps, Logistics Infrastructure, Nigeria, Relief materials, Shelters

1 INTRODUCTION

Conflicts caused by ethnoreligious, occupational, and boundary issues, as well as natural and human calamities, have become a burden in modern society (Guha-Sapir et. al., 2015; Smolka, 2006; IFRC, 2004). Conflicts and natural catastrophes occur at a high frequency and have a significant impact on host communities on a daily basis around the world. Numerous natural and man-made catastrophes can strike Nigeria, such as floods, cyclones,

thunderstorms, coastal erosion, drought, landslides, tidal waves, wildfires, infestations of insects and locusts, and more (National Emergency Management Agency (NEMA, 2013, 2018). Human-caused disasters have occurred in Nigeria on a number of occasions in the past. These include air crashes, water disasters (boat capsizing), rail accidents (derailment), road accidents, epidemics (COVID-19), buildings falling because of flimsy constructions, and administrative inaction. Other issues include civil war, fire outbreaks, pollution, desertification, kidnapping for ransom, bombing of buildings (such as the United Nations building in Abuja), vandalism of oil pipelines by bunkers, and conflicts arising from employment and ethnicity for political, economic, and religious reasons (Adegoke, 2015; Olanrewaju, 2018; NEMA, 2013, 2018).

Many people have died, many properties have been damaged, many people have been left crippled, children have become orphans, farms and markets have burned, and so on in Nigeria as a result of these disasters (Vigaud-Walsh, 2016). In a similar vein, a significant portion of the population frequently needs to evacuate conflict or catastrophe areas and relocate to safe zones when they occur (Gustavsson, 2003).

In Nigeria, disasters, economic disputes, and ethnoreligious strife have resulted in a number of internally displaced people and camps. Since 2017, the largest cause of fresh displacement in Nigeria has been the ethnoreligious conflict in North-eastern Nigeria caused by the terrorist armed group known as Boko Haram and the military operations against the group. The Internal Displacement Monitoring Centre (IDMC) reported that in 2019, there were 248,000 new displacements across 19 states, compared to about 417,000 new displacements in 2018. As an example, there are 26 million displaced people in Nigeria (IDMC-GRID, 2019). However, given the difficulties in other locations and accessibility concerns, it is anticipated that the aforesaid estimates are underestimated.

Thus, logistics management plays a crucial role in delivering humanitarian relief to thousands of internally displaced people and refugees who are either in situ or on the move (Banomyong et al. 2009). Since it is obvious that improving logistics is essential to maximising humanitarian aid through better preparedness for the crisis, TDM of relief and life-saving supplies is required to maximise the timeliness and efficacy of response activities.

The development of the logistics strategy can be based on logistics, which can also greatly lessen the impact of the disaster (Koseoglu & Yıldırım, 2015; Leiras, *et al.*, 2014; Gill, 2012; Kowacs & Spens 2007).

Because it allows humanitarian relief workers to focus on their primary responsibilities and enhances the conditions of disaster victims, logistics management is therefore seen as a workable solution for managing disaster relief supplies and staff working hours (Koseoglu & Yıldırım, 2015; Rutaba, 2023). Thus, comprehensive logistics management during calamities is required.

The logistics infrastructure found in IDP camps consists of a number of components that are essential to the survival of displaced people. Research highlights the significance of robust shelter structures that can endure extreme weather conditions (Liu *et al.*, 2018). Strong transport systems are also necessary to enable the prompt delivery of relief supplies and to give people access to necessary services. The health and welfare of displaced people and their families also depend on having enough storage space, adequate water supplies, and sanitary systems.

The provision of logistics infrastructure for IDP camps is difficult despite its vital relevance. Infrastructure development initiatives are frequently hampered by a lack of money, bureaucratic roadblocks, and limited resources (Abdulrahman, *et al.*, 2014). Particularly in camps with high population densities, overcrowding and a lack of adequate shelter space increase health risks and vulnerabilities (Abdulrahman, *et al.* 2014). The misery of displaced communities is further exacerbated by poor road networks and transportation facilities, which impede the provision of relief goods and access to healthcare.

Innovative solutions and cooperative alliances are required to address the issues related to infrastructure provision. According to research, displaced communities should be included in the design and building of shelter facilities through the use of participatory planning techniques (Campbell *et al.*, 2021). By promoting sustainability and ownership, these strategies guarantee that infrastructure satisfies the unique requirements of internally displaced people. Moreover, the enhancement of relief operations' effectiveness and the

improvement of access to vital services depend heavily on investments made in transport infrastructure upgrades, such as the extension of distribution networks and road repairs (Campbell, *et al.*, 2021).

The kind and state of the logistics infrastructure have a big impact on how well humanitarian efforts at IDP camps work. Infrastructure that is well-planned and kept up improves access to healthcare and education, expedites the provision of basic services, and improves well-being overall (Liu *et al.*, 2018). On the other hand, poor infrastructure increases the likelihood of disease outbreaks and security events, causes delays in the delivery of relief, and hinders logistics, all of which highlight the urgent need for infrastructure improvements (Liu *et al.*, 2018).

Examining infrastructure needs, obstacles, and ideas for improvement, the evaluation emphasises how crucial strong infrastructure is to aiding relief efforts and advancing the welfare of displaced people. In order to meet the demands of internally displaced people and guarantee their respectable living conditions in humanitarian settings, it is imperative that infrastructure construction and maintenance continue. It is therefore against the backdrop that the present study examined the type and condition of logistics infrastructure at internally displaced persons camp in the northcentral Nigeria.

2 LITERATURE REVIEW

2.1 Concept of disasters

There is no single, accepted definition for the term "disaster," which has been interpreted in a variety of ways by academics and professional associations (Alexander, 2002; Schenker-Wicki, Inauen & Olivares 2010). A disaster is defined as a severe catastrophic event that impairs a society's ability to function and results in losses in terms of people, property, and the environment that are greater than what the affected population could reasonably recover from on their own (EM-DAT, 2015; Asian Disaster Reduction Centre 2005; OCHA 2004, 2008; United Nations 2004, 2006). However, according to Oloruntoba (2006), a disaster is an unanticipated event that results in significant harm, devastation, suffering, or even death for a large number of people. As a result, the local communities are unable to respond to the

situation and must urgently request external assistance at the national, regional, and international levels. Therefore, the present study describe disaster as an event which occur over a period of time resulting to loss of life, properties and displacing people from their comfort zones.

2.2 System theory

The system theory idea is applicable to a wide range of disciplines, including sciences, humanities, and social sciences, because there is evidence of a system in every civilization and scientific subject. The system is a framework that allows the researcher to explore a phenomenon from a holistic perspective, and the thinking stems from a shift in focus from the part to the whole (Capra, 1997). A system is a self-contained, cohesive entity (Ng, Maull, and Yip, 2009). However, in all systems, according to Remeida (2015), three fundamental components are crucial: the environment, the subsystems, and the element. No individual, organisation, nation, entity, or event can function properly without contact with the environment/society. Human beings, organisations, nations, and events are all components of the system, which is also referred to as a subsystem or an element. However, logistics system of internally displaced person consists of components such as infrastructures, communication, control and so on which operate together to ensure that relief items are supplies at the right time. Failure of one of the subcomponents may result to inefficiency of the relief materials supply chain.

2.3 Review of related literatures

The Boko Haram insurgency has been recognized for bringing about a decade of conflict, mass displacement, and extensive damage to basic infrastructure in Northeast Nigeria, as stated by Abdullahi et al. (2020). This has resulted in over 2 million internally displaced persons (IDPs) enduring poor living conditions, malnutrition, and disease in camps or with host communities. Health facilities have been significantly affected by the conflict, exacerbating challenges in addressing infectious diseases like tuberculosis (TB) and HIV

among IDPs. While international aid supports some health interventions, locally derived solutions are lacking.

In their study, Abdullahi et al. (2020) evaluated the impact of an active case finding (ACF) intervention for TB and HIV testing in IDP communities across three states in Northeast Nigeria. The intervention involved collaboration between government, civil society, and IDP community partners, including mapping IDP populations and health services, supporting existing health facilities, and organizing community outreach. Over the intervention period, ACF was conducted in numerous IDP camps and host communities, resulting in significant screening encounters and tests conducted for TB and HIV. The study detected a considerable number of TB and HIV cases, with successful linkages to treatment services. Importantly, the intervention substantially increased TB case notifications, indicating its effectiveness in addressing TB within IDP populations.

However, the study acknowledges limitations such as non-random selection of areas and potential underestimation of TB cases due to the absence of sensitive screening tools. Despite these limitations, the findings underscore the importance of engaging IDP communities, local governments, and civil society organizations in efforts to combat TB and HIV among vulnerable populations in conflict-affected regions like Northeast Nigeria.

Butt et al. (2020) noted that while the Belt and Road Initiative (BRI) has garnered considerable attention in economics and political sciences, there has been a lack of research examining its impact on supply chain management. Given the scale of the BRI as a logistics infrastructure project, it is evident that it will have significant implications for supply chains. This study aimed to address this gap in the literature by investigating the potential challenges and threats that the BRI may pose to supply chain management. Through 20 semi-structured interviews with supply chain managers in South Asian countries along the BRI route (such as Pakistan, India, Bangladesh, etc.), the study identified six distinct implications of the BRI for logistics and supply chain management. The article concludes by discussing its contributions to both theoretical understanding and practical applications, as well as outlining limitations and suggesting directions for future research.

In a separate study, Khan et al. (2016) examined the long-term and causal relationship between environmental logistics performance indicators (ELPI) and growth-specific factors across 15 globally ranked logistics countries from 2007 to 2015. This study is unique in its incorporation of various logistics performance indicators, including logistics competence and infrastructure, along with sustainable factors such as carbon dioxide (CO₂), fossil fuel, and greenhouse gas (GHG) emissions within a region. The findings indicate that CO₂ emissions and GHG emissions affect per capita income, industry, manufacturing, and service contributions to GDP. Logistics competence and infrastructure contribute to economic growth and sectoral value added, while energy demand and foreign direct investment (FDI) inflows are essential for sustainable agriculture. The causal relationships suggest that increased energy demand leads to higher economic growth, industry value added, and service sector expansion (referred to as the feedback hypothesis), while a sustainable supply chain system enhances energy demand, FDI inflows, economic growth, and sectoral growth (known as the conservation hypothesis) across the panel of countries.

Nowicki et al. (2008) suggest that performance-based logistics (PBL) is gaining prominence as a preferred strategy for logistic support, particularly within the public sector like the Department of Defense. In a PBL framework, the emphasis shifts from purchasing specific resources to acquiring performance outcomes such as operational availability, mission readiness, and operational reliability. Despite the growing interest in PBL, the literature remains nascent, necessitating further research to optimize logistic resources like spare parts, equipment, facilities, and labour within a PBL context. This study aims to address this gap by developing an optimization model for spare parts provisioning under a multi-item, multi-echelon scenario, with the objective of maximizing profit to the supplier under a PBL contract.

Najafi, et al. (2014) argue that the unpredictable and devastating nature of earthquakes requires governments of disaster-prone regions to develop practical response plans to minimize damage and losses. Logistics management, particularly in terms of planning transportation for required commodities and evacuating injured individuals, is crucial for an effective response. This paper presents a dynamic model for dispatching and routing vehicles

in response to earthquakes, focusing on transporting commodities to affected areas and injured individuals to hospitals. The proposed model can adjust plans based on updated information, prioritizing speed to ensure timely arrival at hospitals for injured individuals and fulfilling commodity needs promptly. Experiments are designed to assess the impact of network topology on response speed, aiming to enhance the quality of earthquake response.

Startsev et al. (2022) emphasize the importance of ensuring security and reliability in military camps, which necessitates adapting appropriate measures to the specific conditions of each region. The organization and maintenance of field camps primarily revolve around security considerations, operating as integrated systems initially providing basic services and facilities with the ability to adapt over time. The camps consist of service and logistics infrastructure, with variations in duration of usage ranging from mobile (short-term) to typical (up to a year) and foreign garrisons (long-term). The key challenge lies in deploying combat units and equipment without extensive preparation of infrastructure. The article presents an analysis, principles, and approaches to constructing necessary infrastructure for field deployment of armed contingents of NATO armies during missions, including the structure of a modern universal mobile logistics support complex. It also discusses global developments in personnel location and life support systems during combat tasks, providing recommendations for improving logistical support in modern armed conflicts through modular field camp systems.

Yani et al. (2022) argue that in the realm of humanitarian aid for forcibly displaced populations, the establishment of camps is crucial for ensuring their protection, survival, and well-being. A significant challenge lies in determining optimal locations for setting up new camps for asylum-seekers, unrecognized refugees, or internally displaced persons (IDPs). This paper frames this issue as a variation of the facility location problem (FLP) with three objectives to optimize. Specifically, the authors demonstrate how artificial intelligence (AI) techniques and migration simulations can be leveraged to offer decision support in determining camp placement.

Daniel et al. (2015) assert that humanitarian logistics assessment is aimed at swiftly gathering precise information about areas affected by disasters, including details about infrastructure

and logistical resources necessary for humanitarian operations. Despite its importance, assessment practices have been scarcely researched. This paper organizes practical knowledge from the field and makes it accessible to the research community by examining assessment tools and guidelines used by humanitarian aid organizations regarding infrastructure and logistics. Using an inductive category development approach, the authors analyse these documents, categorizing them into comparable information fragments. Based on this foundation, they outline three assessment phases: preparedness, rapid response, and ongoing response, detailing the information to be assessed during each phase and how these assessments are interconnected. The findings provide a basis for developing comprehensive theories on infrastructure and logistic resource assessments and suggest avenues for standardizing assessment tools within humanitarian aid organizations to expedite assessment processes and facilitate information sharing.

Samar et al. (2017) express the United Nations High Commissioner for Refugees (UNHCR) estimate that the average period of forced displacement lasts 17 years, leading many refugees and IDPs to spend considerable time in camps. Consequently, camps are increasingly seen as potential long-term settlements rather than temporary relief measures, yet planning and resource allocation for camps have not kept pace with this recognition. Particularly in terms of shelter, a fundamental human need, there is minimal architectural infrastructure and short-term urban planning in place. As a result, camp residents often have to repurpose humanitarian storage facilities into essential dwellings, markets, and community spaces. This paper presents observations and survey results on shelter conditions from three camps in northern Iraq, illustrating the range of shelter types stemming from economic and political considerations and identifying opportunities for information and communication technologies (ICTs) to enhance the quality of life for millions of displaced individuals.

Hitoshi et al. (2022) noted that the conflict between Nigerian state armed groups and non-state armed groups has led to over 2.1 million Internal Displaced Persons (IDPs) residing in camps and host communities. Concerns have arisen regarding the adequacy and functionality of latrine facilities in IDP camps, particularly in providing relief to vulnerable populations such as women and children. This study evaluates the latrine facilities and their associated

health implications in selected official IDP camps in Borno State, Nigeria. A structured questionnaire was administered to respondents from twelve out of sixteen official camps in the area, with 331 well-filled questionnaires received out of 392 distributed (an 84.4% response rate). Data analysis was conducted using SPSS version 19.0. Findings revealed that the predominant type of latrine in the camps is the traditional pit latrine, with most respondents indicating fewer than forty latrines per camp. De-sludging of latrines typically occurs once every two months, contrary to UNHCR and SPHERE standards. The most commonly reported illnesses in the camps, ranked by severity, include diarrhea, sexually transmitted diseases (STDs), fever, and tuberculosis. Recommendations include strict adherence to latrine construction standards such as those set by UNHCR and SPHERE to mitigate the spread of diseases in the camps.

Jude et al. (2021) investigated the knowledge, perceptions, prevalence of pre-existing conditions, and access to essential resources related to COVID-19 among residents of internally displaced person (IDP) camps in Somalia. The study, conducted through a descriptive, cross-sectional survey across twelve IDP camps in the Lower Shabelle region, included 401 adult Somali IDP camp residents, the majority of whom were female (86%) and lacked formal education (89%). Despite 58% reporting "good" health, half reported having one or more pre-existing conditions. While 77% reported taking at least one COVID-19 preventative measure, access to adequate sanitation, ability to practice social distancing, and availability of COVID-19 screening exams were limited. Approximately 50% of respondents were uncertain about COVID-19 prevention and treatment knowledge. Many were unfamiliar with basic virus information and lacked confidence in accessing medical services if infected. Nearly half of the respondents expressed the need for changes in camp living conditions to prevent COVID-19 spread. The study underscores the need for increased resources and tailored interventions to address COVID-19 knowledge gaps and resource access in Somali IDP camps.

Hassan and colleagues (2023) stated that Gender-based violence (GBV) against women and girls is a widespread issue globally, affecting approximately one-third of women during their lifetimes. Somalia stands out as a country with high rates of human rights violations,

particularly in terms of sexual and gender-based violence (SGBV), ranking among the highest worldwide. This violence is particularly prevalent among women and girls residing in internally displaced persons (IDP) camps who lack adequate livelihoods and civil protections. Consequently, the research was aimed to assess the occurrence and underlying factors of gender-based violence in IDP camps within the Deynile district of Somalia. The study, conducted from August 1 to September 30, 2022, employed a cross-sectional design, involving 384 women and girls aged 18 and above residing in selected IDP camps. Camps were chosen randomly, with households and participants selected through systematic random sampling. Participants were interviewed using a pre-tested structured questionnaire by well-trained research assistants. Data analysis was performed using SPSS 25.0, employing logistic regression with a significance level set at $p \leq 0.05$. Findings revealed a prevalent occurrence of gender-based violence in the IDP camps of Mogadishu's Deynile area, with physical abuse being the most common type, mainly perpetrated by intimate partners, parents, and other family members. Factors significantly associated with gender-based violence included young age, extended family structure, larger household size, employment status, substance misuse, distance to the nearest police station, and adequacy of camp safety protection. The study underscores the urgent need to address modifiable factors strongly linked to gender-based violence in the IDP camps of Mogadishu's Deynile area.

The Boko Haram insurgency has resulted in Nigeria having the highest number of internally displaced persons (IDPs) in Africa, particularly concentrated in the NYSC camp in Girei Local Government, Adamawa State. Segun et al. (2021) argued based on forced migration theory and utilising primary and secondary data, that the conditions in this camp are dire, with IDPs lacking access to basic necessities. They emphasize the necessity for the government to prioritize the welfare of IDPs and address corruption among officials, which exacerbates the already poor conditions.

In Colombia, Juan, Sanchez & Gil (2016) contend that individuals affected by armed conflicts and natural disasters in developing nations may face double vulnerability, experiencing simultaneous exposure to both types of crises. In 2013, for instance, over four million internally displaced persons resulting from the armed conflict intersected with

millions affected by floods in 2010 and 2011, creating overlapping populations affected by both human-made and natural disasters.

Flávio *et al.* (2014) asserted that the success of humanitarian operations heavily relies on humanitarian logistics, which utilise various infrastructure and resources in highly volatile environments. They highlighted the importance of accurate and timely information, which must be aligned with the real conditions of the affected area. In this regard, volunteered geographic information (VGI) from local members of NGOs or individual citizens emerges as a crucial information source. The paper proposes a conceptual framework that connects supply chain management (SCM) processes of humanitarian organisations with VGI to enhance the identification of necessary information regarding infrastructure and resources for humanitarian SCM processes. The central element of this framework is the Humanitarian Logistics Infrastructure and Resource Model, which aims to encapsulate information and facilitate the integration of SCM and VGI systems.

Moise *et al.* (2020) discussed a cholera outbreak that began in August 2017 at the Muna Garage Internally Displaced Persons camp in Borno state, Nigeria, resulting in over 5000 cases across six local government areas. Their qualitative study evaluated the emergency response to this outbreak. They conducted 39 key informant interviews and focus group discussions, and reviewed 21 documents with participants involved in various sectors. The analysis revealed that although authorities were quickly alerted, the outbreak declaration was delayed by 12 days due to waiting for culture confirmation. The response faced challenges such as delayed repair of a leaking latrine, initial community resistance to chlorine due to misconceptions, and language discrepancies in key messages. The study recommended pre-outbreak planning exercises, inventory sharing, and rapid formative research to improve emergency responses. Despite initial coordination challenges, the activation of an emergency operations center (EOC) improved coordination, emphasizing the importance of recognizing the government's leadership role.

Hazem *et al.* (2018) emphasised the critical importance of promptly providing drinking water to affected populations following a disaster. Their paper aimed to develop an optimisation methodology for distributing drinking water in post-disaster scenarios. The research

comprised two phases: the first phase focused on identifying the most suitable method for delivering drinking water to refugee camps from external sources, considering required quantities and assessing four potential water sources based on cost and risk. The second phase explored distribution within a refugee camp using covering models. They proposed the MCLP (Maximum Covering Location Problem) – optimal number of facilities model to ensure equitable water distribution to all individuals in a camp with the minimum necessary number of water storage tanks. Additionally, a control policy was suggested to ensure fair water distribution. The Al-Za’atari refugee camp in Jordan served as the case study, revealing that tanker-trucks were the most appropriate means of delivering water, and at least five tanks were required for distributing water within the camp effectively. This methodology is crucial for decision-making regarding short-term drinking water distribution in refugee camps, providing a novel solution to a problem not previously addressed in the literature.

Russo & Trecuzzi (2012) discussed emergency logistics as a process for organising and distributing resources during disasters to mitigate their impacts, whether natural or human-induced. They highlighted the importance of ongoing planning during emergency conditions to sustain evacuation efforts beyond the initial disaster impact. Their focus was on identifying and allocating resources, particularly relief vehicles, within the affected area according to essential tasks. They proposed two distribution channel models: transshipment, where relief vehicles converge at a single contact point before proceeding to the emergency area, and point-to-point, where relief vehicles travel directly to the emergency area without intermediate stops.

3 Research Methodology

The research design adopted for this study is essentially a descriptive survey design. Purposive sampling techniques was use to pick the six states of the north central Nigeria for the investigation. The study population comprises of the internally displaced person in Benue, FCT, Kogi, Kwara, Nasarawa, Niger and Plateau. The actual population of the IDPs across the Camp is 63,983 IDPs which forms the unit of inquiries across the 76 IDPs camps in the study area. Taro Yemane formula was use to determine the sample size of 397 which was randomly distributed among the chosen respondents. The questionnaires distributed was

design on a five-point Likert scale where 1 -represent strongly disagreed and 5-represent strongly agreed. The collated data was analyzed using frequency, percentages and mean index score while the hypothesis was tested using chi-square statistics.

4. RESULTS AND DISCUSSION

4.1 Socioeconomic features of the respondents

To understand the perception of the respondents, it becomes very important to understand their demographic characteristics and to show the role of males and females in the sampled community, and helps to understand the ratio of their involvement in the study. Therefore, different demographic and socioeconomic characteristics like household gender, age, occupation, academic qualification, family size income, etc., were studied.

As presented in Table 1, a total of 398 respondents responded to the instrument, of which 222 (55.8%) were males and 176 (44.2%) were females. Everyone participated in the study by completing the questionnaire. This shows that the population of the affected respondents is predominated by males in the study area.

From the age of the respondents studied, it can be deduced that a larger percentage 210 (52.8%) of the respondents fell between the age bracket of 31-45 years, followed by the respondents between the age of 46-60 years with 106 respondents (26.6%), under 16-30 years with 53 respondents (13.3%) and above 60 years with 29 respondents (7.3%) respectively. This also indicated that most of the respondents' ages were adequate for them to give reliable information on the subject matter.

On the occupation of the respondents, out of the 398 respondents, 192 (48.2%) were civil servants, followed by Trader/Business 93 (23.4%), 57 (14.3%) were farmers, 32 (8.0%) were self-employed respondents while the least 24 (6.0%) were for others.

About the respondents' level of education attainment, 204 (51.3%) have tertiary education, 104 (26.1%) have secondary education, 46 (11.6%) of the respondents have primary school level education, 36 (9.0%) have Qur'anic Education while 8 (2.0%) were not literate.

Further, the result of the marital status shows that 221 (55.5%) were married, 119 (29.9%) were single, 26 (6.5%) were divorced, 21 (5.3%) of the respondents were separated and 11 (2.8%) were widowed.

Table 1: Social demographic characteristics of the respondents

S/N	Variables	Option	Frequency	Percentage
1	Gender of the Respondent	Male	222	55.8
		Female	176	44.2
		Total	398	100
2	Age of the Respondents	Under 16-30 years	53	13.3
		31-45 years	210	52.8
		46-60 years	106	26.6
		>60 years	29	7.3
		Total	398	100
		3	Occupation	Civil servant
Trader/Business	93			23.4
Farmer	57			14.3
Self Employed	32			8.0
Others	24			6.0
Total	398			100.0
4	Educational Qualification	Not Literate	8	2.0
		Qur’anic Education	36	9.0
		Primary	46	11.6
		Secondary	104	26.1
		Tertiary	204	51.3
		Total	398	100.0
5	Marital status	Single	119	29.9
		Married	221	55.5
		Widowed	11	2.8
		Separated	21	5.3
		Divorced	26	6.5
		Total	398	100.0
6	Household income	Less than 10,000	59	14.8
		10,000 – 19,999	61	15.3
		20,000- 39,999	109	27.4
		40,000 – 49,999	97	24.4
		50,000- 100,000	34	8.5
		100,000- 200,000	20	5.0
		Above 200,000	18	4.5
Total		398	100.0	

Source: Researcher's Fieldwork, 2023

Lastly, respondents were also asked about their monthly income in Naira. It is very important to figure out the income of the respondents which is interlinked with their economic status. Amongst the respondents, 109 (27.4%) have a monthly income ranging from 20,000- 39,999

Naira, and 97 (24.4%) of the respondents have a monthly income ranging from 40,000 – 49,999 Naira. About 61 (15.3%) of the respondents have an income between 10,000 – 19,999 Naira, 59 (14.8%) have an income of less than 10,000, 34 (8.5%) between 50,000- 100,000, 20 (5.0%) between 100,000- 200,000 and the remaining 18 (4.5%) have Above 200,000 Naira respectively.

4.2 Analysis of type and condition of Logistics Infrastructure

Table 2 shows the mean ratings and standard deviation on the logistics infrastructure types and conditions in place at the IDP camps in the rural and urban areas in North Central Nigeria.

The table indicates that respondents agree to the inadequate shelter facilities, food and material warehouse, water and sanitation facilities, health clinics, educational centres, transportation facilities and distribution equipment, ICT centre and Security measures like checkpoints, security personnel, etc., as seen in items 1, 2, 3, 4, 5, 6, 7 and 8 in the above table with mean scores of 4.78, 3.56, 3.60, 2.94, 3.30, 3.95, 2.87 and 3.42 respectively. Though respondents from the rural areas in the North Central Nigeria disagree to items 2, 3, 4, 5, 7 and 8 as seen in their corresponding mean scores of 2.56, 2.75, 1.99, 2.33, 2.55, 2.46 and with the grand mean of 2.82.

Table 2: Mean ratings and standard deviation on Logistics Infrastructure types and Conditions in Place at the IDP Camps in the Rural and Urban Areas in North Central Nigeria.

S/N	Variables	Respondents' Responses					
		Urban IDPs=197		Rural IDPs=201		$\bar{X}_1\bar{X}_2$	Remark
		\bar{X}_1	S. D1	\bar{X}_2	S. D2		
1	Shelter facilities	5.00	0.00	4.56	0.50	4.78	Accepted
2	Food and material warehouse	4.55	0.50	2.56	0.51	3.56	Accepted
3	Water and sanitation facilities	4.46	0.58	2.75	0.43	3.60	Accepted
4	Health clinics	3.89	0.89	1.99	0.62	2.94	Accepted
5	Educational centres	4.26	0.77	2.33	0.47	3.30	Accepted
6	Transportation facilities and distribution equipment	4.55	0.50	3.34	0.60	3.95	Accepted
7	ICT centre	3.18	0.39	2.55	0.50	2.87	Accepted
8	Security measures like checkpoints, security personnel, etc.,	4.38	0.64	2.46	0.50	3.42	Accepted
Grand mean		4.28	0.53	2.82	0.52	3.55	

Source: Survey Data 2023

An indication of worst logistics infrastructure types and conditions in place at the IDP Camps in the rural areas in North Central Nigeria contrary to that of the urban areas. In all, the grand weighted mean value of 3.55 indicates that the answer to research objective is that logistics infrastructure types and conditions in place at the IDP camps in the rural and urban areas in North Central Nigeria are inadequate and need urgent attention.

4.3 Perceptions on the condition of the relief material logistics infrastructure

Table 3 shows the respondents perceptions on the condition of the relief material logistics infrastructure in Place at the IDP Camps in the Rural and Urban Areas in North Central Nigeria. The findings of the study showed that there is problem of: access road, Vehicle availability, Warehouse, Material handling equipment, Information and Telecommunication Technology facilities and Telecommunication Network as seen on item 1, 2, 3, 4, 5 and 6 with the weighted mean ratings of 3.24, 3.83, 3.07, 3.06, 3.13 and 4.39. The grand weighted mean value of 3.45 shows the poor condition state of the relief material logistics infrastructure in Place at the IDP Camps in the Rural and Urban Areas in North Central Nigeria.

Table 3: Respondents perceptions on the condition of the relief material logistics infrastructure

S/N	Variables	Respondents' Responses					
		Urban IDPs=197		Rural IDPs=201		$\bar{X}_1\bar{X}_2$	Remark
		\bar{X}_1	S. D1	\bar{X}_2	S. D2		
1	Access road	3.95	0.88	2.53	0.50	3.24	Accepted
2	Vehicle availability	4.50	0.50	3.15	0.36	3.83	Accepted
3	Warehouse	3.69	0.86	2.44	0.50	3.07	Accepted
4	Material handling equipment	3.31	0.63	2.82	0.39	3.06	Accepted
5	Information and Telecommunication Technology facilities	3.34	0.48	2.93	0.26	3.13	Accepted
6	Telecommunication Network	4.77	0.42	4.00	0.00	4.39	Accepted
Grand mean		3.93	0.63	2.98	0.34	3.45	

Source: Survey Data 2022

4.4 Hypothesis

Ho: The type and condition of logistics infrastructure in place at the IDP camps in the rural and urban areas in North Central Nigeria is not a function of government funding, location of IDP camp, number of IDPs, location of IDP camp, NGO and international aid, security, camp management, conflict severity, local government support, and environmental factors.

A Chi-square test was conducted to examine the association between the type and condition of logistics infrastructure in place at the IDP camps in the rural and urban areas in North Central Nigeria in Table 4. The sample comprised 398 participants, and the test revealed a statistically significant relationship, $\chi^2 (20, N = 398) = 394.400$, $p < .01$. Therefore, the null hypothesis, stating no significant association between the type and condition of logistics infrastructure in place at the IDP camps in the rural and urban areas in North Central Nigeria, was rejected. This outcome suggests a significant deviation between the observed and expected frequencies, indicating that the type and condition of logistics infrastructure in place at the IDP camps in the rural and urban areas in North Central Nigeria are not independent.

Table 4: Chi-square analysis of the type and condition of logistics infrastructure in place at the IDP camps in the rural and urban areas in North Central Nigeria.

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	394.400	20	.000
Likelihood Ratio	545.203	20	.000
Linear-by-Linear Association	283.808	1	.000
N of Valid Cases	398		

14 cells (33.3%) have expected count less than 5. The minimum expected count is .49.

5 CONCLUSIONS

This study on the condition of the logistics infrastructure at internally displaced person camp in north central Nigeria focus on examine the type of logistics infrastructure at internally displaced persons camp in the northcentral Nigeria as well as measuring the perception of the state of the infrastructures. The study outcome enables the author to concluded that Shelter facilities, Food and material warehouse, Water and sanitation facilities, Health clinics, educational centers and Transportation facilities and distribution equipment are some of the available logistics infrastructures across the IDPs camp in Northcentral. Also, the study concluded that access road, vehicle availability, warehouse, material handling equipment among others are in a bad state. The study recommended that;

1. Improve roads and facilities for better access and scheduling of relief material deliveries.
2. Develop secure and adequate storage closer to IDP camps for efficient material management.
3. Collaborate closely with rural communities to better support and integrate IDPs.
4. Establish improved coordination among governments, NGOs, academia, and media for streamlined relief efforts.
5. Prioritize improving vital infrastructure at IDP camps, especially in rural areas.
6. Implement policies prioritizing funding and resources for logistics, security, and camp management improvements.

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