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ASSESSMENT OF THE CHALLENGES OF LOGISTICS OF RELIEF MATERIAL AT INTERNALLY DISPLACED PERSONS (IDPS) CAMPS IN NORTH CENTRAL NIGERIA

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ABSTRACT: Aids organisations are scrambling to give relief supplies in a shorter amount of time due to disasters that occur unprepared. Due to difficulties in their logistics system, the rapid demand for relief supplies by catastrophe victims has an impact on how well the humanitarian aid logistics can meet the demand. The purpose of this research is to identify the main challenges that the humanitarian logistics of relief supplies in the IDP camps in North Central Nigeria are facing. The study developed a null hypothesis stating that the six major challenges facing humanitarian logistics of relief supplies across aid organizations are not statistically significant. The IDP camps in Malaysian Garden and Area 1 in Federal Capital Territory were selected for this study using a purposeful sampling method. 120 questionnaires were distributed across the humanitarian relief organisations using convenience sampling. Eighteen challenges that were identified were factored into 6 significant challenges using factor analysis. The data gathered from the humanitarian relief employees was analysed using frequency, percentages, and mean index score while T-Test statistics were used to evaluate the study's hypotheses. The study's findings, however, indicate that the major challenges encountered by the aid organisations are inadequate data on the number of disaster victims, inadequate handling infrastructures, inadequate resources to plan the delivery of relief items, poor transport facilities, inadequate staff, and inadequate procurement method during disasters. The study concluded that there is a statistically significant to the 6-major challenges of humanitarian logistics of relief items across the aid organisation. The study therefore recommends among others that adequate resources should be made available by the government to aid organisations in order to plan the delivery exercise.

Keywords: Humanitarian Logistics, Aid organisation, Relief material, Challenges and IDP Camps

INTRODUCTION

Over the years, disasters have forced people to leave their comfort zones, disrupting lives and livelihoods. Events such as typhoons, wildfires, floods, banditry, and intertribal conflicts have led to large-scale displacement (Daud, *et al*. 2016; Alobo & Obaji, 2018; Ajiboye, 2023; Ohida *et al.*, 2023). According to the Internal Displacement Monitoring Centre (IDMC, 2024), by the end of 2023, a staggering 75.9 million people had been displaced globally, with 68.3 million uprooted by conflict and violence and 7.7 million by natural disasters. In Africa, an estimated 36 million people have been forcibly displaced (Africa Center for Strategic Studies, 2022), while in Nigeria, 3.3 million people were displaced in 2022 due to natural disasters, banditry, and terrorism (IDMC, 2023, Kareem,2023).

Nigeria has experienced a variety of crises over the years, from natural disasters like flooding to man-made disasters such as political and religious conflicts, all contributing to the displacement of thousands. The frequency of these disasters has led to the emergence of numerous informal camps, particularly in North Central Nigeria. As Kleffmann et al. (2024) note, when banditry, terrorism, and communal clashes occur, victims often suffer from mistreatment, sexual harassment, violence, and other human rights abuses, which contribute to forced evacuations.

In response, there is a critical need for efficient humanitarian logistics to deliver essential relief items to internally displaced persons (IDPs). The goal of humanitarian logistics is to ensure that the right quantity and quality of supplies reach the right people at the right time (Ajiboye, 2014; Whybark, 2016). Effective logistics planning is required to design, procure, transport, store, and distribute relief materials, ensuring that these operations satisfy the needs of IDPs (Van Wassenhove, 2016).

Despite these efforts, IDPs often face delays in receiving the aid intended to support them. Abdul (2018) highlights that poor distribution systems frequently hinder the transfer of relief items from donors to vulnerable recipients. Additionally, the unstable and unpredictable nature of disaster situations often results in inefficient logistics processes, characterized by ill-preparedness and a lack of specialized skills. A major challenge for government agencies and humanitarian organisations is the absence of accurate data on the number of disaster victims, which complicates the delivery of relief supplies.

Humanitarian aid logistics continues to encounter significant hurdles, such as duplicate orders, storage issues, expired supplies, costly inventory management, insufficient time for proper analysis, and poor coordination of activities, facility locations, procurement, and transportation (Balcik & Beamon, 2008; Falasca & Zobel, 2011; Jahre, 2016; Beyene, 2018). Furthermore, persistent challenges like ineffective procurement methods during disasters, inadequate data on affected populations, poor workflow design, and a shortage of logistics personnel exacerbate these problems. These issues hamper the efficient delivery of relief items to IDPs, and prolonging their suffering by delaying access to essential resources.

To mitigate this, there is a pressing need for robust humanitarian logistics systems that can deliver life-sustaining products swiftly and efficiently, reducing the hardships faced by displaced individuals. Against this backdrop, the present study aims to identify the key challenges affecting the logistics of relief material delivery to IDP camps in North Central Nigeria, specifically in the Malaysian Garden and Area 1 camps in Abuja, FCT. The study

proposes a null hypothesis, which suggests that the six major challenges of humanitarian logistics in relief supply distribution across aid organisations do not have a statistically significant effect.

LITERATURE REVIEW

Theoretical Review

Researchers have proposed several theories to support the success of logistics operations, with Just-in-Time (JIT) theory being one of the most commonly applied. JIT, developed in Japan during the 1970s, operates on four key principles: reducing stock levels, minimizing production backlogs, cutting down on waiting times for supply deliveries, and speeding up the overall delivery of goods. In humanitarian logistics, this means that relief supplies should be delivered quickly and efficiently to internally displaced persons (IDPs) when needed. The JIT approach is best suited to organisations that function with high efficiency and adhere to strict schedules for supply deliveries. Another widely recognised theory is the Systems Theory, introduced by Ludwig von Bertalanffy in the 1950s. The theory studies systems as coherent collections of interrelated and interdependent parts, whether naturally occurring or artificially constructed. According to Von Bertalanffy (1956), every system has boundaries influenced by its environment, defined by its structure, function, and role, and interacts with other systems through these connections. In humanitarian logistics, changes in operational systems can significantly impact the delivery of relief materials to disaster victims, affecting the system's ability to achieve its primary objective.

Information Theory has also gained traction among scholars studying relief logistics. This theory, which deals with the measurement, transfer, and storage of information, was developed by Claude Shannon in the 1940s, with foundational work by Harry Nyquist and Ralph Hartley in the 1920s. According to Gaspar (2020), Information Theory in humanitarian logistics focuses on the asymmetrical sharing of information between supply chain collaborators and relief organisations. The availability of relief supplies depends heavily on how accurately information is communicated across supply chain actors and humanitarian organisations (Atshipara, 2016). The Resource-Based View (RBV) is another widely accepted theory in logistics. RBV posits that organisational resources should be a central consideration when designing and managing the supply chain process. This perspective emphasizes leveraging internal resources to gain a competitive advantage in supply chain operations.

Recently, the Supply Chain Operations Reference (SCOR) model has become prominent in logistics. Considered one of the most promising approaches for strategic supply chain decision-making, SCOR (Huan, *et al.* 2004) is a management tool used to analyze, improve, and communicate supply chain management strategies both within organizations and between suppliers and clients. The SCOR framework focuses on five key components of the supply chain: planning, sourcing, production, distribution, and return. In the context of humanitarian logistics, this model underscores the importance of meticulously planning the entire logistics process, from the initial stages through to the execution of relief item delivery, to ensure that humanitarian organisations can achieve their primary goal of providing timely aid to disaster victims.

Internal Challenges Limiting Humanitarian Logistics

Internal bottlenecks are difficulties within the humanitarian aid organisation which limit their relief supply's ability. For instance, studies by Balcik and Beamon (2008) and Ajiboye, *et al.*, (2015a) reveals that disaster logistics are constrained by lack of teamwork and coordination which may results to ineffectiveness in the relief supplies. In another study, Dabin (2023) indicate that poor planning process, implementing, and controlling efficiency, as well as storing products and materials are the key challenges experienced in disaster logistics. These outcomes are an indication that efficient planning can be a game changer in disasters logistics and cannot be overlooked in today relief operations. Similarly, Tatham and Christopher (2018) argued that an internal structure of an organisation as well as its strategies and policies, has a substantial effect on the nature of these operational challenges. In a study conducted in Kenya, Nyamu (2012) studies aimed to determine the impact of supply chain management difficulties faced by humanitarian organisations. The findings show that the primary obstacles facing humanitarian supply chain management include a lack of acknowledgement of the importance of supply chain management in humanitarian situations, operational delays, demand uncertainty, and insufficient transportation facilities to reach disaster victims.

External Challenges Experienced in Disaster Logistics

The external bottlenecks experience in disaster logistics are related to transport and logistics infrastructures. This was evidenced by Iqbal *et al.* (2007) that millions of people suffered in the aftermath of Hurricane Katrina in the United States due to a lack of physical infrastructure facilities, such as efficient transportation networks and inadequate shelter, whereas people's perception of life-saving goods such as food, water, and drugs was a mirage. As a result, successful distribution of relief items is only possible when relief organisations are familiar with all of the potential areas of difficulty and how to overcome them in the event of a tragedy. Though the study is insightful but limited to developed country therefore outcomes cannot be generalised to developing countries like Nigeria which still have issues with her disaster response plans.

Using the case of Canterbury region of New Zealand, Ajiboye *et al.* (2015b) studied the logistics challenges during a series of earthquakes and post-disasters. The study indicate that accessibility challenges were the problem encountered during the response. Though the study is insightful, but using a case of a single disaster limited the generality of the findings because disaster caused due to war or ethnic crises does not limit accessibility unlike those caused by natural disasters like flooding, and earthquake. In another study, Ibrahim *et al.* (2017) showed that several obstacles affect procurement operations in the humanitarian supply chain that are tied to politics, including political pressure, lax enforcement, weak institutions, corruption, and a lack of politics.

Gbadamosi and Oluwole (2019) studied the transportation operational challenges faced by relief organisations (ROs) in Nigeria. The study results reveals that there are few bad roads, lack of professionals, unscrupulous behaviour, ineffective distribution plans, and poor transport management. Their findings indicate that there are significant challenges for Nigerian relief organisations while providing emergency response services to internally displaced individuals. While the study offers insight on transportation challenges experience in Nigeria, it fails to provide specific information of the logistics challenges experienced in most IDP camps in North Central Nigeria especially at Area-One and Malaysian garden IDPs camp in Abuja. In a

separate study Balcik et al. (2010) reviewed coordination in humanitarian relief chains. The study goal was to review the obstacles in coordinating humanitarian relief chains and their practices and to explain the present and emerging disaster relief coordination practices. The authors reported that the timing, unavailability of disaster victims, limited transportation infrastructure, and political environment are the main problems impacting relief material supply chains. Though the study provides a substantial information regarding bottlenecks facing disaster logistics but it lacks empirical data which makes it difficult for generality of the outcomes.

Neeta and Liina (2018) conducted a study on the challenges of humanitarian logistics in a nonprofit organisation in Namibia. The goal of the study was to assess the issues faced by humanitarian logisticians during disaster relief operations and suggest solutions for a nonprofit organisation in Namibia. The study revealed that important hurdles, such as the sourcing of relief supplies, resources, transportation issues, and difficulty in assessing initial assistance requirements, all contribute to difficulties in delivering effective and efficient services to affected groups. Despite the study insightfulness, its limited to a single developing country with lesser GDP compare to Nigeria with more developed economy which make the present study significant.

In a study on disaster relief effort during the 2017 Kermanshah earthquake in Iran, Maghsoudi and Moshtari (2021) noted the difficulties that arose when national actors dominated the humanitarian response. The author highlights the logistical difficulties that arise when determining needs, obtaining goods, storing them, transporting them, and dispersing them to the last mile. Highlighting of the core component of logistics provides stages of disasters logistic operation but fails to identified the extent of this challenges on relief disasters logistics.

Using the case of southwestern region of Cameroon, Akuri (2019) looked at logistical challenges to support IDPs and best practices by humanitarian organisations. The objective of the study was to identify a group of logistical issues in a single armed conflict context and the tried-and-true best practices that were used, which may have practical consequences for future actions of the humanitarian organisations. Information from the professionals from various humanitarian organisations was gathered via semi-structured interviews. The findings indicate that the logistical issues that humanitarian logistics had to address were security, accessibility, safety, infrastructure, and transportation.

Nnamdi, *et al.* (2020) investigated the challenges faced by the National Emergency Management Agency (NEMA) in managing Internally Displaced Persons (IDPs) in North-Eastern Nigeria using interview and documentary analysis. The study highlights issues like poor record-keeping, coordination failures with aid agencies, and funding constraints that hinder NEMA's ability to address the humanitarian crisis caused by Boko Haram. The study found that NEMA's lack of accurate data led to accommodation shortages, while poor coordination caused food shortages and health problems in IDP camps. Additionally, inefficient resource use and limited funding weakened relief efforts. The study calls for more quantitative data and notes limitations in generalising the findings to other contexts.

Also, Oloruntoba and Banomyong (2018) examined humanitarian logistics in managing the care of refugees and internally displaced persons (IDPs). The study identifies gaps in logistics, operations, and supply chain management (LOSCM) that hinder effective aid delivery. It emphasises the need for a research agenda to address these gaps, particularly in preparedness

and logistics planning for vulnerable populations. Through a conceptual approach based on literature reviews and viewpoints, the authors highlight the underdevelopment of "refugee logistics" and call for more critical research in this area. Key challenges include inadequate logistics planning, poor collaboration between organisations, and insufficient data for decision-making. The study provides valuable insights but lacks empirical data and would benefit from addressing specific regional logistics challenges.

METHODOLOGY

Population and Sampling Method

The study population consists of organisations that are involved in providing humanitarian assistance, such as the Nigerian Emergency Management Agency (NEMA), the Federal Capital Territory Emergency Management Agency (FEMA), the Local Emergency Management Agency (LEMA), various Non-Governmental Organizations (NGOs), and individuals. To collect data on the challenges these organisations face in logistics for delivering relief supplies, 120 questionnaires were purposefully distributed among the study population because there is no accurate database for humanitarian organisation in Nigeria to work on. Convenient sampling was employed to select the Federal Capital Territory among the states and Malaysian Garden and Area One IDP camps in Abuja, FCT, as the study locations.

Description of the instruments utilised for data collection

The questionnaire comprised two sections for data collection. The first section focused on the socioeconomic and demographic characteristics of aid organisations, while the second section addressed the logistical challenges these organisations encounter. Humanitarian relief workers rated their perceptions of the logistical difficulties they faced using a 5-point Likert scale, where 1 represents "strongly disagree" and 5 represents "strongly agree."

Method of data collection and analysis

The data collected in this study were analysed using percentages, frequencies, and mean index scores, while the hypotheses were tested using a t-test. T-test were used because it is designed to test a single hypothesis, such as whether there is a difference between the means of two groups (independent T-test) or within the same group over time (paired T-test). Moreso, Factor analysis was employed to group the 18 logistical challenges faced by aid organisations in delivering relief items at the camp into six major categories: inadequate handling infrastructure, insufficient resources for planning relief delivery, poor transport facilities, inadequate staff, ineffective procurement methods during disasters, and data shortages on the number of disaster victims. Factor analysis was utilised because it allows for simplification of data, making interpretation easier and helping to identify the most significant underlying issues affecting the variables in question (Hair *et al.*, 2010). This study is grounded in system theory and the resource-based view theory. It is assumed that if the subsystems within aid organisations function effectively and sufficient resources are available to plan logistics operations, most of the challenges in delivering relief materials to internally displaced persons (IDPs) will be resolved. As a result, humanitarian aid logistics will become more efficient, ensuring that essential items are delivered to IDPs when needed.

DATA ANALYSIS AND RESULT PRESENTATION

Analysis of Socioeconomic Features of the Aid Staff

Table 1 is the summary of the examination of the gender composition of the humanitarian logistics organisation. It shows that a larger share of 69.0% of the personnel were males, and 31.0% were females. This finding reveals that more men than women are involved in the logistics of providing humanitarian aid. Similarly, Table 1 shows the ages of the staff in the humanitarian sector. The majority of respondents to the survey (i.e., 37.2%) were between the ages of 29 and 39. Only 3.5% of the humanitarian personnel were above 61 years old, while 25.7% of them were between the ages of 40 and 50, 19.5% were between the ages of 51 and 60, 14.2% were between the ages of 18 and 28, and 25.7% were between the ages of 40 and 50.

Table 1: Aid Staff Distribution of Socioeconomic Backgrounds

Socioeconomic Features of the Humanitarian Logistics Staff		Frequency	Percentage
	Male	78	69.0
Gender	Female	35	31.0
	Total	113	100.0
	18-28years	16	14.2
	29-39years	42	37.2
Age	40-50years	29	25.7
	51-60years	22	19.5
	61years above	4	3.5
	Total	113	100.0
	Married	48	42.5
	Widow	16	14.2
Marital Status	Single	40	35.4
	Divorced	9	8.0
	Total	113	100.0
Educational	No formal education	12	10.6
Background	primary school cert	19	16.8
	WAEC	19	16.8
	OND/NCE	18	15.9
	HND/Degree	33	29.2
	Postgraduate	12	10.6
	Total	113	100.0
Monthly Income	Below 30,000	23	20.4
Earn	31,000-60,000	16	14.2
	61,000-90,000	29	25.7
	91,000-120,000	30	26.5
	Over, 121,000	15	13.2
	Total	113	100.0
Years of	0-5years	11	9.7
Working	6-11years	51	45.1
Experience	12-17years	29	25.7
	18 years above	22	19.5

	Total	113	100.0
Numbers of Questionnaires Attached to Aid Workers at the Camp	Area 1 IDP camp	43	38.1
	Malaysian camp	29	25.7
	Others	41	36.3
	Total	113	100.0

Source: Authors' Fieldwork (2023)

This finding shows that most of the workers from the humanitarian organisations who normally helped the disaster victims with relief supplies were between the ages of 29 and 39. Table 1 also reveals the marital status of the staff. 42.5% of them were married, 35.4% were still unmarried, 14.2% were widows, and only 8.0% were divorced.

Similarly, from the same Table 1, there is an information on the educational background of the humanitarian staff. It showed that 29.2% of them held Higher National Diplomas or Degree Certificates, 15.9% held regular National Diploma or National Certificate in Education (NCE), and 16.8% each held West African School Certificates and Primary School Certificates. Only 10.6% of them did not attend any formal schooling, while 10.6% got postgraduate certificates.

The breakdown of the monthly salaries received by the humanitarian personnel in Table 1 shows that around 26.5% of the workers made between ₦91,000 and ₦120,000, 25.7% between ₦ 61,000 and ₦ 90,000, and only 20.4% made less than ₦30,000. Furthermore, just 13.2% of them made more than ₦121,000 each month, while 14.2% made between ₦31,000 and 60,000. The analysis of the years of working experience in relief organisation in Table 1 showed that majority (i.e., 45.1%) of the staff had between 6 and 11 years of experiences, 25.7% of them had between 12 and 17 years of experience and 19.7% of them had over 18 year of experience and only 9.7% of them had less than 5 years working experiences.

Finally, Table 1 shows the analysis of Internally displaced person camp in which the aid organisation has been supplying relief materials. From the analysis, it was observed that about 38.1% of aid staff has been delivering relief item in Area One IDPs camp, 36.3% of them indicate that they have been supplying relief materials in other camps and only 25.7% of the said they have been supplying item to Malaysian Garden IDPs camp in Abuja, FCT.

Analysis of the Products Supplied to IDPs Camp in North Central Nigeria

From the analysis in Table 2, it was recorded that 25.7% of the staff said they supplied the IDPs camp with drugs and provide medical attention to internally displaced persons, 22.1% of them indicate that they provide shelters and mattrasses to the internally displaced persons, and 18.6% of them reveal that they supplied foods, snacks and drinks to the disaster victims. In addition, 17.7% of the aid staff supplies mosquito nets and repellents to emergency victims, and only 15.9% of them said they supply other relief items at the camp.

Table 2: Respondents' Distribution on the Products Supplied to IDPs Camp in North Central Nigeria

Products supplied	Frequency	Percentage
Foods, snacks and drinks	21	18.6
Drugs and medical attention	29	25.7
Mosquito nets and repellents	20	17.7
Shelters and mattress	25	22.1
Others	18	15.9
Total	113	100.0

Source: Authors' Fieldwork (2023)

Analysis of Humanitarian Organisation involvement in Supplying Relief Materials at the Camp

According to the data in Table 3, 17.7% of the aid organisations are FCT Emergency Management Agency, 20.4% are CEMAs, and 29.2% are National Emergency Management Agency (NEMA) organisations that give relief items to disaster victims. Furthermore, 15.9% of the organisations offering aid to IDPs in the camp are religious institutions, 8.0% are national NGOs, 6.2% are international NGOs, and only 2.7% are individuals who traveled to the camp to provide for the displaced people.

Table 3 Respondents Distribution on the Humanitarian organisation distributing aid materials to disasters Victims at the Camp

Humanitarian Aid Organisations	Frequency	Percentage
NEMA	33	29.2
SEMA	20	17.7
LEMA	23	20.4
Faith Based Organisation	18	15.9
International NGO	7	6.2
National NGO	9	8.0
Individuals	3	2.7
TOTAL	113	100.0

Source: Authors' Fieldwork (2023)

Analysis of the Challenges facing Humanitarian Logistics of Relief items at the Camp

The analysis in Table 4 indicates that inadequate handling infrastructure (M= 3.6018), Inadequate resources to plan the delivery of relief items (M= 3.3186), Poor transport facilities (M= 3.4336), Inadequate staff (M= 3.1947), Poor procurement method during disasters (M= 3.2655), Data Shortage on the number of disaster victims (M= 3.4602) and Poor funding (M= 3.3451) are the major challenges faced by the Humanitarian aid organisation in their effort to deliver relief items to the IDPs in the camp. However, as more people become vulnerable, fewer resources and facilities are available to meet the disaster victims' needs, resulting in many of the victims suffering (Dabin, 2023). Also, IDPs suffer due to a lack of physical infrastructure,

such as effective transport facilities, efficient handling facilities and so on, to deliver the relief item at the right time (Iqbal *et al.*, 2007). Other challenges that the aid organisation faces are Insecurity (M= 2.9646), Problem of Workflow Design (M= 2.5487), Products shortage (M= 2.5929), poor communication facilities (M= 2.4071), Administrative challenges affecting the management of relief items (M= 2.9912), High cost of acquiring relief items (M= 2.8761), Inadequate storage facilities for the relief items (M= 2.9027), Inadequate distribution approach (M= 2.6991), Inadequate logisticians (M= 2.7788) and Inadequate warehouse facilities (M= 2.6460).

Table 4: Analysis of the Challenges Faced by Aid Organisations During the Supply of Relief Items to IDPs in the Camps.

S/n	Humanitarian logistics challenges	MEAN INDEX SCORE (MIS)	Standard Deviation
1	Inadequate handling infrastructures	3.6018	1.06519
2	Inadequate resources to plan the delivery of relief item	3.3186	1.07126
3	Poor transport facilities	3.4336	1.10902
4	Inadequate staff	3.1947	1.34867
5	Poor procurement method during disasters	3.2655	1.38884
6	Data Shortage on the number of disaster victims	3.4602	1.48225
7	Poor funding	3.3451	1.48667
8	Insecurity	2.9646	1.43259
9	Problem of Work flow Design	2.5487	1.15721
10	Products shortage	2.5929	1.27921
11	Poor communication	2.4071	1.19252
12	Administrative challenges affecting the management of relief items	2.9912	.81827
13	High cost of acquiring relief items	2.8761	1.00118
14	Inadequate storage facilities for the relief items	2.9027	.99071
15	Inadequate distribution approach	2.6991	.99897
16	Inadequate logisticians	2.7788	1.17058
18	Inadequate warehouse facilities	2.6460	.99929

Source: Authors' Survey (2023)

Test of Hypothesis

This study hypothesis determines how significant the 6-key challenges of humanitarian logistics of relief items across the aid organisation. In order to identify these six-challenges, factor analysis was used to determine the 6-major challenges faced by relief organisation out of the 18 challenges identified in Table 5. However, any challenges whose Eugene value (E) is less than one is not referred to as a major challenge.

From the analysis in Table 5 which indicate that some variables like inadequate handling infrastructures (E= 6.200), inadequate resources to plan the delivery of relief item (E= 2.393), poor transport facilities (E= 2.008), inadequate staff (E= 1.762), poor procurement method during disasters (E= 1.236) and data shortage on the number of disaster victims (E= 1.063) are the most significant challenges affecting the logistics of relief material in IDPs camps in North

Central Nigeria. Therefore, these 6-challenges were subjected to T-test hypothesis shown in Table 6 to determine how statistically significant these 6-challenges across the aid organizations relief logistics.

Table 5: Total Variables explained

Challenges Faced by Humanitarian Aid Organisation in their logistics of relief Items	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Inadequate handling infrastructures	6.200	28.183	28.183	6.200	28.183	28.183
Inadequate resources to plan the delivery of relief item	2.393	10.876	39.059	2.393	10.876	39.059
Poor transport facilities	2.008	9.127	48.186	2.008	9.127	48.186
Inadequate staff	1.762	8.008	56.194	1.762	8.008	56.194
Poor procurement method during disasters	1.236	5.619	61.813	1.236	5.619	61.813
Data Shortage on the number of disaster victims	1.063	4.832	66.644	1.063	4.832	66.644
Poor funding	.975	4.431	71.075			
Insecurity	.810	3.684	74.759			
Problem of Work flow Design	.781	3.551	78.310			
Products shortage	.681	3.095	81.405			
Poor communication	.639	2.906	84.312			
Administrative challenges affecting the management of relief items	.594	2.701	87.013			
High cost of acquiring relief items	.491	2.234	89.246			
Inadequate storage facilities for the relief items	.443	2.013	91.259			
Inadequate distribution approach	.376	1.707	92.966			
Inadequate logisticians	.348	1.582	94.548			
Inadequate warehouse facilities	.309	1.405	95.953			
Inadequate handling infrastructures	.270	1.228	97.181			

Extraction Method: Principal Component Analysis.

Source: Computer Analysis (2023)

Table 6 indicates that inadequate handling infrastructures, inadequate resources to plan the delivery of relief item, poor transport facilities, inadequate staff, poor procurement method during disasters and data shortage on the number of disaster victims are statistically significant since their significance level (0.000; 0.000; 0.000; 0.000; 0.000 and 0.000) is lesser than P-value of 0.05. This outcome is in line with the work of Gustavsson (2003); Jahre, *et. al.* (2016); Roh *et. al.*, (2016), Baportkar and Shangheta, (2018), Negi and Negi (2021), UNHCR (2021) and Negi (2022).

Table 6: T-test Results

	Test Value = 95					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Inadequate handling infrastructures	-791.800	111	.000	-91.47321	-91.7021	-91.2443
Inadequate resources to plan the delivery of relief item	-841.406	111	.000	-91.58036	-91.7960	-91.3647
Poor transport facilities	-813.320	111	.000	-91.56250	-91.7856	-91.3394
Inadequate staff	-752.640	111	.000	-91.83929	-92.0811	-91.5975
Poor procurement method during disasters	-702.887	111	.000	-91.95536	-92.2146	-91.6961
Data Shortage on the number of disaster victims	-664.323	111	.000	-91.90179	-92.1759	-91.6277

Source: Computer Analysis (2023)

Furthermore, Table 6 highlights that inadequate handling infrastructure has a significance level of 0.000, indicating it is statistically significant at a P-value of 0.05. This suggests that challenges related to handling infrastructure are experienced across various aid organisations. Poor handling infrastructure can lead to damage to relief materials even before they reach disaster victims. The lack of infrastructure was a major constraint faced by the Federal Emergency Management Agency (FEMA) during Hurricane Katrina (Iqbal *et al.*, 2007).

Similarly, Table 6 shows that inadequate resources for planning the delivery of relief items also have a significance level of 0.000, which is statistically significant when compared to the 0.05 threshold. This indicates that the lack of resources hampers effective relief logistics. This finding aligns with Nnamdi *et al.* (2019), who concluded that funding constraints limit the National Emergency Management Agency (NEMA)'s ability to address humanitarian issues.

Additionally, the hypothesis tested in Table 6 reveals that poor transport facilities, with a significance level of 0.000, are statistically significant at a P-value of 0.05. Efficient transportation is crucial for ensuring timely delivery of relief materials to disaster victims (Ohida *et al.*, 2023). This finding supports the claims of Gbadamosi and Oluwole (2019), who noted that relief organisations in Nigeria face severe transportation challenges. Furthermore, Table 6 shows that inadequate staffing is statistically significant at a P-value of 0.05, indicating that aid organisations in Nigeria lack sufficient personnel, making relief distribution difficult. This corroborates Ohida *et al.* (2023), who concluded that aid distribution methods are only moderately effective.

Moreover, Table 6 indicates that poor procurement methods are statistically significant at a P-value of 0.05. This suggests that aid organisations at IDP camps in Abuja experience challenges with procurement. These issues may stem from the nature of disasters, which are often

unplanned, causing delays in acquiring the necessary relief items. Typically, only long-lasting items are kept in stock, leading to procurement inefficiencies during emergencies.

Lastly, Table 6 shows that data shortages on the number of disaster victims are statistically significant, with a significance level of 0.000, which is below the P-value of 0.05. The lack of accurate data on the number of victims at IDP camps results in inadequate supplies, causing some victims to suffer disproportionately. This finding confirms Nnamdi *et al.* (2020)'s claim that IDP camps in Nigeria lack proper record-keeping on internally displaced persons (IDPs).

Conclusion and Recommendations

This study, which assessed the logistics challenges of delivering relief materials at the IDP camp in Abuja, aimed to identify the primary obstacles aid organisations face in managing the logistics of relief distribution. Based on the analysis, the research concluded that humanitarian aid organizations at the IDP camps in North Central Nigeria in general and Abuja in particular face six major challenges. These challenges include inadequate handling infrastructure, insufficient resources for planning the delivery of relief items, poor transportation facilities, staff shortage, ineffective procurement methods during disasters, and a lack of accurate data on the number of disaster victims.

These challenges not only increase the operational costs of delivering aid but also lead to significant issues, such as shortages in supplies. For instance, inaccurate data on disaster victims can result in under supply, forcing aid organizations to repurchase materials. Additionally, poor procurement methods may cause substantial delays in acquiring and distributing essential supplies like food, water, medical items, and shelter, which can worsen the situation for those in need. Lastly, insufficient resources for planning relief deliveries may lead to food shortages, increasing the risk of malnutrition, dehydration, and deteriorating health conditions, particularly among vulnerable groups such as children, the elderly, and the sick. The study, therefore, recommended the following steps to improve logistics and delivery of relief materials:

1. Aid organisations, particularly government agencies such as NEMA and FEMA, should ensure the provision of adequate material handling infrastructure. This will facilitate easier movement and distribution of relief materials while maintaining their quality.
2. The government should allocate sufficient resources to NEMA, SEMA and FEMA to enhance their capacity for effectively planning and delivering aid.
3. Aid organisations, including both government and non-governmental entities, should employ a sufficient number of competent staff to improve the efficiency of relief efforts.
4. The Local Government Areas in North central States and Councils in FCT should be well funded in order to carry out their statutory duties and also to provide adequate transportation facilities, such as well-maintained roads, at the IDP camps. This will ensure seamless delivery of relief items.
5. Aid organisations should gather accurate information about IDPs before planning relief deliveries. Non-governmental organizations should collaborate with NEMA, SEMA and FEMA to collect precise data on disaster victims, ensuring that relief efforts are tailored to the specific needs and population of the camp.

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