Assessment of the Impact of Training and Retraining of Staff and Fire Safety Preparedness at Nigerian Domestic Airports

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Abstract:- This research assessed of the impact of training and retraining of staff and fire safety preparedness at Nigerian domestic airports. The objectives of the study were to: Assess the effect of training and retraining of staff and disaster preparedness; examine the availability of manual fire safety equipment and its effect on fire disaster preparedness; and to determine the effect of fire alarms facilities on the level of disaster preparedness at Nigerian Domestic Airports. The study adopteda cross-sectional design using the survey method. The population of the study involves 21 domestic Airports operating in Nigeria with 462 heads of internal departments, 105 safety officers of safety services, and 2 additional employees from each internal department i.e., 924 operating in the 21 domestic airports total (1,491) as statistically reported by the Federal Airports Authority of Nigeria (2019). Out of 21 domestic airports in Nigeria, 8 airports were randomly selected. The study sample size of 400 was obtained using the Taro Yamane formula. The instrument for data collection was a questionnaire. Data collected were analysed using both descriptive statistics. Findings among others showed that there is a significant difference in the perceptions of respondents on the training and retraining of staff and the fire alarms facilities at Nigerian Domestic Airports. Also, there is no significant difference in the perceptions of respondents on the availability of manual fire safety equipment at Nigerian Domestic Airports. Recommendations were made as follows: airport administrators and the government urgently need to upgrade facilities to meet up with modern disaster demands in the airports, stakeholders have to establish a Terms of Reference, have regular meetings, and use a common Operational Airport Information System.

Keywords:- *Fire, Disaster Ppreparedness, Safety, Training, impacts.*

I. INTRODUCTION

In recent years, incidents of fire have increased tremendously and become a national concern in Nigeria Airports (Obwaya, 2010). This has led to the loss of lives, life-threatening injuries, loss of business and investment opportunities, with serious consequences in Nigerian airports.

Despite advances in knowledge and technology, vulnerability to and risks to fire disasters have been rising in both developed and developing countries. Risks and vulnerability to fire disasters have resulted from changes in people's lives socially, economically, culturally, politically and environmental contexts partly due to development as well as lack of development processes. However, according to Hemond & Robert (2012), sometimes man faces risks from such disasters because of a lack of awareness of hazards in his environment. Aspects leading to fire destruction are present almost everywhere ranging from wildfires caused by lighting or dropping of cigarettes outside on flammable surfaces, industrial accidents to earthquakes which have been known to cause damage to gas leaks leading to explosions and fires (Wisner et al, 2015).

Fire destruction can also come from acts of arson and terrorism such as the September (2011) terrorist attack in the United States of America in which terrorists crashed planes into the world Trade Centre causing a jet fuel explosion that set the twin towers on fire. Recent examples of fire as a natural disaster (out-of-control wildfires) that caused death and destruction have been witnessed in Australia in 2009, in Russia in 2010, and virtually every year through different southern and western states of the United States and Mediterranean Europe. However, among the developed countries, the USA has had a bigger share of fire disaster destruction. The United States of America (USA) and Canada have recorded the highest absolute number of fire-related deaths in the world and fire death rates, generally 2 to 4 times those in Europe (Euro Fire Protection, 2012). The United States also has recorded one of the highest per-capita fire rate losses (Coppola, 2015). The cause of accidental death in the United States of America by fire is exceeded only by automobile collisions, falls, and drowning (Coppola, 2015). Wildfire affecting urban and semi-urban areas is a phenomenon that deserves much greater attention than it has been given because of the dense population of people in these areas (ADPC, 2007). In Africa, fires disasters have occurred virtually in all the Sub-Saharan countries and several key sectors of the economy have been affected negatively. For instance, several cases of fire incidences have previously occurred in Kenya with most of them being fatal. The more recent tragic cases include the 2009 fire in Nakumatt stores downtown.

Nigeria equally faces a rising degree of vulnerability to fire disaster risks ranging from loss of property worth billions of dollars to loss of Lives. The frequency and magnitude of fires in Nigeria have increased over the last few years making communities also more vulnerable (UNISDR, (2013). The threat of air traffic accidents on our airways has called for sober reflection at the local, national, and international levels. This is due to the resulting losses,

of both human and material resources. However, there has been a sizeable amount of literature on-air traffic accidents in developed countries; however, researches on aircraft incidence are extremely sparse in the developing world like Nigeria.

In Nigeria, airway safety has received little attention and the attempts made to date across the entire transportation segment have mostly centered on the highways and manufacturing industry (Adebiyi, 2018).

Historically, aviation safety has been built upon the reactive analysis of past accidents and the introduction of corrective actions to prevent the recurrence of those events. Moreover, enhancing overall safety most efficiently requires the adoption of a systems approach to safety management (Bayuk, 2017). Safety is a very complex, multi-faceted activity that encompasses all fields of aviation and affects every single individual involved in aviation. Accidents are the result of an undesirable chain of events. According to Stambaugh (2012), the public and private sectors have invested heavily in improving threat assessments, plans, training, resource sharing, communications, and stockpiles of critical supplies. The lessons learned from the major events of the last decade have triggered new laws and regulations that expand prevention strategies and augment response capabilities.

An increase in the number of flights in Nigerian airports and the increasing growth in passenger numbers in these facilities and the surrounding residential areas are posing new challenges to airports management and operations in terms of fire safety preparedness.

The fact that Airport fires do not only affect the occupier and employees but the general public, who include the vulnerable groups such as the elderly, children, contractors, tenants, and the disabled mean that it is essential to prepare for emergencies that face an airport to be able to respond quickly, efficiently and effectively (Ayres, 2009). Owing to the nature of airport operations, airport terminal buildings are generally atrium designed. As such buildings are large and spacious; any fire outbreak can spread rapidly. This, coupled with the high number of passengers commuting through the airport daily, places airport buildings in the high fire load category. This study, therefore, aimed to compare and analyze fire safety preparedness and disaster reduction among domestic airports in Nigeria.

II. AIM AND OBJECTIVES OF STUDY

The study assessed the impact of training and retraining of staff and fire safety preparedness at Nigerian domestic airports.

Objectives are to:
- Assess the effect of training and retraining of staff and disaster preparedness at Nigerian Domestic Airports.
- Determine the effect of fire alarms facilities on the level of disaster preparedness at Nigerian Domestic Airports.
- Examine the availability of manual fire safety equipment and its effect on fire disaster preparedness at Nigerian Domestic Airports.

III. THE STUDY AREA
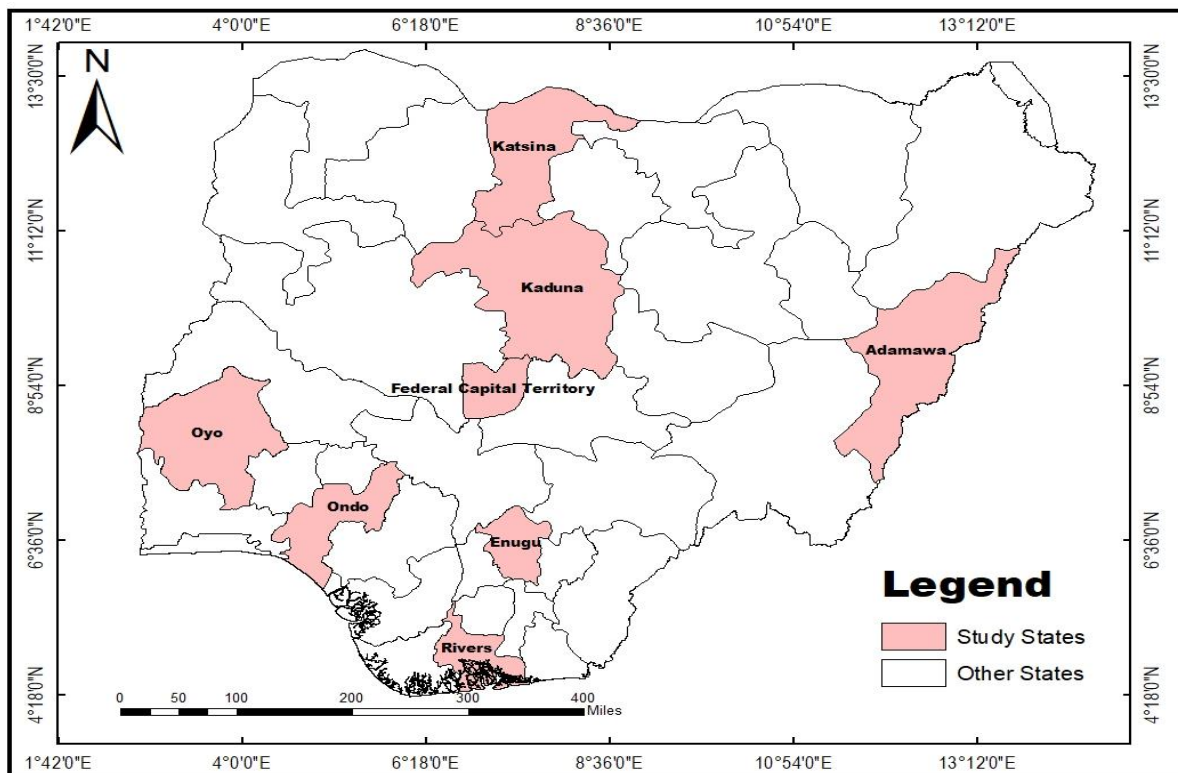
The study area is the Federal Republic of Nigeria. However, the overall sub-regional, regional and continental effort will be a focus of the study. Nigeria is located in the West Africa sub-region. It is bounded in the north by the Niger Republic, south by the Atlantic Ocean, east by Cameroon and Chad, and west by the Benin Republic. She is the most populous country in Africa. Concerning the National population commission (NPC, 2006), Nigeria accounted for more than 140 million and by August 2019 estimated to be about 197-200 million. Nigeria is located within the longitude 3^0E and 15^0E and latitude 4^0N and 14^0N of the equator (Afolayan et al., 2014). Figure 1 shows the Map of Nigeria showing Showing the study States.

IV. MATERIALS AND METHODOLOGY

The study adopted the cross-sectional design. The descriptive design was based on a cross-sectional sampling of the opinions of individuals on a comparative analysis of fire safety preparedness and disaster reduction among domestic airports in Nigeria.

The population for this study consists of all the 21 domestic Airports operating in Nigeria with 462 heads of internal departments, 105 safety officers of safety services, and 2 additional employees from each internal department i.e., 924 operating in the 21 domestic airports total (1,491) as statistically reported by the Federal Airports Authority of Nigeria (2019). Out of 21 domestic airports in Nigeria, 15 airports (71.4%) were randomly selected. The study sample size was calculated using the Taro Yamane formula. In this formula, sample size can be calculated at 3%, 5%, 7% and 10% precision (e) levels. The confidence level used is 95% with a degree of variability (p) equivalent to 0.05.

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

Where:
n-signifies the sample size
N-signifies the population under study
e-signifies the margin error = 0.05

$$n = \frac{1491}{\left(1 + 1491(0.0025)\right)}$$

$$n = \frac{1491}{4.7275} \approx 400$$

The instrument adopted for data collection for this study was a structured questionnaire, face to face interview with respondents.

Questionnaires were selected and set according to the objectives of the study and it is preferred as it is easy to interpret, saves time, and provides uniformity as per information collected. Key Informant Interview (KII) were conducted using a checklist to collect information from key stakeholders such as heads of internal departments and safety officers. This is because both techniques are simple and effective for collecting information and also minimizes researcher biases in assessing the impact of the study. For the qualitative data, the information was collected through interviews with different individuals as well as from focus group discussions with selected staff members. Quantitative data was coded and entered into the computer for analysis using the Statistical Package for Social Sciences (SPSS). Descriptive statistics such as percentages, means, and standard deviation were used to analyse the data generated in line with the research questions.

V. RESULT AND DISCUSSION

• Staff Public Education, Training and Retraining, Rehearsal and Other Community-Based on Disaster Preparedness

Items	Respondents Per Airport	Respondents Responses		
		$\overline{X}$	σ	Remark
There are regular disaster preparedness meetings with the member of staff	Yola Airport=50	1.82	0.46	Disagree
	Kaduna Airport=50	2.26	0.57	Disagree
	Akure Airport=50	1.74	0.44	Disagree
	Katsina Airport=50	2.0	0.50	Disagree
	Port Harcourt Airport=50	2.64	0.66	Agree
	Enugu Airport=50	2.42	0.61	Disagree
	Abuja Airport=50	1.94	0.49	Disagree
	Ibadan Airport=50	3.22	0.81	Agree
Proper orientation, education, and training of staff to fight any kind of emergency	Yola Airport=50	2.26	0.57	Disagree
	Kaduna Airport=50	3.10	0.78	Agree
	Akure Airport=50	3.50	0.88	Agree

	Katsina Airport=50	2.24	0.56	Disagree
	Port Harcourt Airport=50	3.50	0.88	Agree
	Enugu Airport=50	2.78	0.70	Agree
	Abuja Airport=50	3.6	0.90	Agree
	Ibadan Airport=50	3.34	0.84	Agree
Frequent workshops and seminars are organized to educate staff on disaster preparedness	Yola Airport=50	3.10	0.78	Agree
	Kaduna Airport=50	3.38	0.85	Agree
	Akure Airport=50	3.38	0.85	Agree
	Katsina Airport=50	2.74	0.69	Agree
	Port Harcourt Airport=50	3.68	0.92	Agree
	Enugu Airport=50	3.76	0.94	Agree
	Abuja Airport=50	3.08	0.77	Agree
	Ibadan Airport=50	3.68	0.92	Agree
Maintenance and regular training/ rehearsals of emergency services, e.g., emergency response teams	Yola Airport=50	2.44	0.61	Disagree
	Kaduna Airport=50	2.38	0.60	Disagree
	Akure Airport=50	2.64	0.66	Agree
	Katsina Airport=50	2.78	0.70	Agree
	Port Harcourt Airport=50	2.74	0.69	Agree
	Enugu Airport=50	2.70	0.68	Agree
	Abuja Airport=50	3.52	0.88	Agree
	Ibadan Airport=50	3.60	0.90	Agree
The airport community undertakes evacuation drills regularly	Yola Airport=50	1.98	0.50	Disagree
	Kaduna Airport=50	2.32	0.58	Disagree
	Akure Airport=50	1.98	0.50	Disagree
	Katsina Airport=50	1.80	0.45	Disagree
	Port Harcourt Airport=50	2.08	0.52	Disagree
	Enugu Airport=50	3.32	0.83	Agree
	Abuja Airport=50	2.36	0.59	Disagree
	Ibadan Airport=50	2.52	0.63	Agree
Adequate training of staff on disaster vulnerability assessment, planning, and institutional framework	Yola Airport=50	1.62	0.41	Disagree
	Kaduna Airport=50	1.74	0.44	Disagree
	Akure Airport=50	1.96	0.49	Disagree
	Katsina Airport=50	1.76	0.44	Disagree
	Port Harcourt Airport=50	1.80	0.45	Disagree
	Enugu Airport=50	1.96	0.49	Disagree
	Abuja Airport=50	1.66	0.42	Disagree
	Ibadan Airport=50	1.98	0.50	Disagree

Table 1 : Staff Public Education, Training and Retraining

Source: Researchers' Fieldwork, 2021

Table 1 reveals the opinion of respondents on the staff public education, training and retraining, rehearsal, and other community-based on disaster preparedness in airports.

Item 1 shows whether airport authorities carried out regular disaster preparedness meetings with the member of staff., this could be seen from the responses of the respondents where the decision means of most airports studied disagreed with their mean score 1.82, Yola, 2.26, Kaduna, Akure 1.74, Katsina 2.00, Enugu 2.42, Abuja 1.94 while Port Harcourt 2.64 and Ibadan 3.22 agreed that there are regular disaster preparedness meetings with the member of staff in their airports. In item 2, it was agreed by most airports' respondents that Proper orientation, education, and training of staff to fight any kind of emergency are carried out regularly while few airports' participants disagreed, this could be seen from the responses of the respondents with the decision mean agreement of 3.10 for Kaduna, Akure 3.50, Port Harcourt 3.50, Enugu 2.78, Abuja 3.60 and Ibadan 3.34

while Yola 2.26 and Katsina 2.24 disagreed respectively. Respondents from all the airports studied agreed that frequent workshops and seminars are organized to educate staff on disaster preparedness with the mean score of Yola 4.75 and teachers 3.10, Kaduna 3.38, Akure 3.38, Katsina 2.74, Port Harcourt 3.68, Enugu 3.76, Abuja 3.08, and Ibadan 3.68.

Yola and Kaduna airports participants disagreed on the maintenance and regular training/ rehearsals of emergency services, e.g., emergency response teams in their airports while the majority of airports respondents agreed to the same item with the mean decision score of 2.64 for Akure, Katsina 2.78, Port Harcourt 2.74, Enugu 2.70, Abuja 3.52 and Ibadan 3.60. In respect to the airport community undertaking evacuation drills regularly, it was agreed by Enugu and Ibadan respondents that evacuation drills are done regularly while Yola, Kaduna, Akure, Katsina, Port

Harcourt, and Abuja disagreed which is an indication that their airports do not conduct evacuation drill regularly.

Adequate training of staff on disaster vulnerability assessment, planning, and institutional framework attracted general disagreement from all the participants.

	Respondents Per Airport	Respondents Responses		
		Available	Not Available	Total
Public alert system	Yola Airport=50	50(100%)		50
	Kaduna Airport=50	50(100%)		50
	Akure Airport=50	50(100%)		50
	Katsina Airport=50	43(86.0%)	7(14.0%)	50
	Port Harcourt Airport=50	50(100%)		50
	Enugu Airport=50	50(100%)		50
	Abuja Airport=50	50(100%)		50
	Ibadan Airport=50	50(100%)		50
Smoke detection	Yola Airport=50	5(10.0%)	45(90.0%)	50
	Kaduna Airport=50	11(22.0%)	39(78.0%)	50
	Akure Airport=50	9(18.0%)	41(82.0%)	50
	Katsina Airport=50	38(76.0%)	12(24.0%)	50
	Port Harcourt Airport=50	41(82.0%)	9(18.0%)	50
	Enugu Airport=50	50(100%)		50
	Abuja Airport=50	50(100%)		50
	Ibadan Airport=50	50(100%)		50

Table 2 Fire Alarms Facilities Availability

Source: Researchers' Fieldwork, 2021

Table 2 indicated the percentage level of fire alarms facilities available in the studied airports which reveals as follows; Public alert system was 100% available for Yola, Kaduna 100% available, Akure 100% available, Katsina 86.0% available, Port Harcourt 100% available, Enugu 100% available, Abuja 100% available and 100% available for Ibadan respectively.

Smoke detection has 10.0% available and 90.0% not available for Yola, 22.0% available and 78.0% not available for Kaduna, 18.0% available and 82.0% not available for Akure, 76.0% available and 24.0% not available for Katsina, 82.0% available and 18.0% not available for Port Harcourt while Enugu, Abuja and Ibadan have 100% available.

Item	Respondents Per Airport	Available	Not Available	Total
Fire extinguishers in buildings	Yola Airport=50	50(100%)	0	50
	Kaduna Airport=50	50(100%)	0	50
	Akure Airport=50	50(100%)	0	50
	Katsina Airport=50	50(100%)	0	50
	Port Harcourt Airport=50	50(100%)	0	50
	Enugu Airport=50	50(100%)	0	50
	Abuja Airport=50	50(100%)	0	50
	Ibadan Airport=50	50(100%)	0	50
Fire detectors/Alarm systems	Yola Airport=50	50(100%)	0	50
	Kaduna Airport=50	50(100%)	0	50
	Akure Airport=50	50(100%)	0	50
	Katsina Airport=50	50(100%)	0	50
	Port Harcourt Airport=50	50(100%)	0	50
	Enugu Airport=50	50(100%)	0	50
	Abuja Airport=50	50(100%)	0	50
	Ibadan Airport=50	50(100%)	0	50
Sprinkler system and hose reels	Yola Airport=50	50(100%)	0	50
	Kaduna Airport=50	50(100%)	0	50
	Akure Airport=50	50(100%)	0	50
	Katsina Airport=50	50(100%)	0	50
	Port Harcourt Airport=50	50(100%)	0	50
	Enugu Airport=50	50(100%)	0	50
	Abuja Airport=50	50(100%)	0	50

	Ibadan Airport=50	50(100%)	0	50
Assembly point during fire outbreak	Yola Airport=50	50(100%)	0	50
	Kaduna Airport=50	50(100%)	0	50
	Akure Airport=50	50(100%)	0	50
	Katsina Airport=50	50(100%)	0	50
	Port Harcourt Airport=50	50(100%)	0	50
	Enugu Airport=50	50(100%)	0	50
	Abuja Airport=50	50(100%)	0	50
	Ibadan Airport=50	50(100%)	0	50
Emergence exits/escape routes in buildings	Yola Airport=50	50(100%)	0	50
	Kaduna Airport=50	50(100%)	0	50
	Akure Airport=50	50(100%)	0	50
	Katsina Airport=50	50(100%)	0	50
	Port Harcourt Airport=50	50(100%)	0	50
	Enugu Airport=50	50(100%)	0	50
	Abuja Airport=50	50(100%)	0	50
	Ibadan Airport=50	50(100%)	0	50
Fire boots, suits, helmets, hoods, gloves, and breathing apparatus	Yola Airport=50	34(68.0%)	16(32.0%)	50
	Kaduna Airport=50	15(30.0%)	35(70.0%)	50
	Akure Airport=50	6(12.0%)	44(88.0%)	50
	Katsina Airport=50	11(22.0%)	39(78.0%)	50
	Port Harcourt Airport=50	19(38.0%)	31(62.0%)	50
	Enugu Airport=50	3(6.0%)	47(94.0%)	50
	Abuja Airport=50	37(74.0%)	13(26.0%)	50
	Ibadan Airport=50	26(52.0%)	24(48.0%)	50
First Aid Kits	Yola Airport=50	50(100%)	0	50
	Kaduna Airport=50	50(100%)	0	50
	Akure Airport=50	50(100%)	0	50
	Katsina Airport=50	50(100%)	0	50
	Port Harcourt Airport=50	50(100%)	0	50
	Enugu Airport=50	50(100%)	0	50
	Abuja Airport=50	50(100%)	0	50
	Ibadan Airport=50	50(100%)	0	50
Fire Suppression Systems	Yola Airport=50	50(100%)	0	50
	Kaduna Airport=50	50(100%)	0	50
	Akure Airport=50	50(100%)	0	50
	Katsina Airport=50	50(100%)	0	50
	Port Harcourt Airport=50	50(100%)	0	50
	Enugu Airport=50	50(100%)	0	50
	Abuja Airport=50	50(100%)	0	50
	Ibadan Airport=50	50(100%)	0	50
Smoke Alarms	Yola Airport=50	50(100%)	0	50
	Kaduna Airport=50	50(100%)	0	50
	Akure Airport=50	46(92.0%)	6(8.0%)	52
	Katsina Airport=50	50(100%)	0	50
	Port Harcourt Airport=50	39(78.0%)	11(22.0%)	50
	Enugu Airport=50	50(100%)	0	50
	Abuja Airport=50	50(100%)	0	50
	Ibadan Airport=50	41(82.0%)	9(18.0%)	50
Way-finding systems	Yola Airport=50	50(100%)	0	50
	Kaduna Airport=50	50(100%)	0	50
	Akure Airport=50	50(100%)	0	50
	Katsina Airport=50	50(100%)	0	50
	Port Harcourt Airport=50	50(100%)	0	50
	Enugu Airport=50	50(100%)	0	50
	Abuja Airport=50	50(100%)	0	50
	Ibadan Airport=50	50(100%)	0	50
Fire escape stairs	Yola Airport=50	23(46.0%)	27(54.0%)	50

	Kaduna Airport=50	50(100%)	0	50
	Akure Airport=50	42(84.0%)	8(16.0%)	50
	Katsina Airport=50	32(64.0%)	18(36.0%)	50
	Port Harcourt Airport=50	48(96.0%)	2(4.0%)	50
	Enugu Airport=50	50(100%)	0	50
	Abuja Airport=50	50(100%)	0	50
	Ibadan Airport=50	44(88.0%)	6(12.0%)	50
Escape smoke hood	Yola Airport=50	4(8.0%)	46(92.0%)	50
	Kaduna Airport=50	13(26.0%)	37(74.0%)	50
	Akure Airport=50	0	50(100%)	50
	Katsina Airport=50	2(4.0%)	48(96.0%)	50
	Port Harcourt Airport=50	1(2.0%)	49(98.0%)	50
	Enugu Airport=50	19(38.0%)	31(62.0%)	50
	Abuja Airport=50	27(54.0%)	23(46.0%)	50
	Ibadan Airport=50	17(34.0%)	33(66.0%)	50

Table 3 The availability of manual and electronic fire safety equipment

Source: Researchers' Fieldwork, 2021

Table 3 indicated the availability of the following: Fire extinguishers in buildings have 100% available for all the studied airports. Fire detectors/Alarm systems have 100% available for all the airports. Sprinkler system and hose reels have 100% available. Assembly point during fire outbreaks has 100% available for all the studied airports. Emergence exits/escape routes in buildings have 100% available. Fire boots, suits, helmets, hoods, gloves and breathing apparatus has 68.0% available and 32.0% not available for Yola, 30.0% available and 70.0% not available for Kaduna, 12.0% available and 88.0% not available for Akure, 22.0% available and 78.0% not available for Katsina, Port Harcourt has 38.0% available and 62.0% not available, Enugu has 6.0% available and 94.0% not available, 74.0% available and 26.0% not available for Abuja while Ibadan has 52.0% available and 48.0% not available. First Aid Kits and Fire Suppression Systems and Way-finding systems have 100% available for all the airports. On the other hand, Smoke Alarms have Yola, Kaduna, Katsina, Enugu and Abuja have smoke alarms 100% available while 92.0% available and 8.0% not available for Akure, 78.0% available and 22.0% not available for Port Harcourt, and 82.0% available and 18.0% not available for Ibadan.

Fire escape stairs has Yola 46.0% available and 54.0% not available, Kaduna 100% available, 84.0% available and 16.0% not available for Akure, 64.0% available and 36.0% not available for Katsina, 96.0% available and 4.0% not available for Port Harcourt, Enugu and Abuja has 100% available while Ibadan has 88.0% available and 12.0% not available. Escape smoke hood has Yola 8.0% available and 92.0% not available, Kaduna 26.0% available and 74.0% not available, Akure 100% not available, Katsina 4.0% available and 96.0% not available, Port Harcourt 2.0% available and 98.0% not available, Enugu 38.0% available and 62.0% not available, Abuja 54.0% available and 46.0% not available while Ibadan has 34.0% available and 66.0% not available respectively.

VI. CONCLUSION AND RECOMMENDATION

In summary, the results presented and discussed above clearly outline the many challenges in disaster preparedness at Nigerian Domestic Airports. From the respondents, it is evident that Nigerian Domestic Airports are still not prepared to handle any major airport disaster due to a lack of proper disaster preparedness policy awareness and training. Even though the airport has mechanisms in place to coordinate any major operation with the external community, measures have not been taken to incorporate the adjacent community in disaster preparedness awareness. Based on findings, the following recommendations are made:

- Airport administrators and government urgently need to upgrade facilities to meet up with modern disaster demands in the airports. While the airport managers on their part should try to maintain and manage properly the fire service units available;

- To that end, stakeholders have to establish Terms of Reference, have regular meetings, and use a common Operational Airport Information System. All participating organizations could be connected to this system and capture information about air and ground incidents into a common database. This information exchange, the regular meetings, and common objectives provide the necessary premises for the early identification of disaster preparedness bottlenecks, the design of achievable corrective measures, and their effective implementation;

- Air accidents frequently occur near, rather than at airports. Therefore, integrating the activities of local and airport emergency services becomes a major issue for planning. However, this requirement does not encompass planning for potential accidents outside the airport limits. Furthermore, recent experience of major disasters has highlighted the importance of planning to manage the traumatic aftermath of major disasters for survivors, relatives, and operational personnel. Recent US regulations place requirements on airlines to draw up plans and commit resources to deal effectively with the traumatic aftermath of aviation disasters (Federal Family Assistance Plan for Aviation Disasters).

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