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ANALYSIS OF EMERGENCY RESPONSE PROCEDURES AND AIR TRAFFIC ACCIDENTS IN NIGERIA

HASSAN, A.M.
Department of Geography and Regional Planning, Faculty of Social and Management Sciences, Olabisi Onabanjo University, Ago-Iwoye.
E-mail: simplygbayi@gmail.com

Abstract
Incessant air transport accidents have been a source of concern to stakeholders and aviation experts in Nigeria, yet the response and process has not been adequately appraised. This study attempts an evaluation of the emergency response procedures in the aviation industry with particular focus on Murtala Muhammed International Airport, Ikeja which is unarguably the nation's busiest airport and has had considerable emergencies that had necessitated the deployment of emergency curtailing procedures. The objectives of the study includes the functionality of the emergency response plan systems; assessment of magnitude and frequency of emergency situations and examination of the magnitude of lives and properties involved in the emergency situations. Emanating from the study is that there is growing rate of air accidents in Nigeria and no adequate emergency response plan nor manpower equipment to combat air accidents in Nigeria, so also, the Chi Square result shows that the Nigerian Aviation Industry is not in compliance with the International recommendation of International Civil Aviation Organisation (ICAO) as regards emergency management. Recommendations such as establishment of a central body to co-ordinate emergency situations in Nigeria and international agreement with neighbouring states amongst others were proffered for an efficient and effective emergency response procedure in the Nigerian aviation sector. Empirical analysis was used to analyse the observed emergency response procedures of the agencies involved in emergency response plan against the expected level.

Key Words: *Emergency Response Plan, Accident, Response Procedures, Functionality*

Introduction

The airport represents special risk area and it therefore needs to be covered by a comprehensive, functional and robust emergency plan (Sheffield, 1996). An emergency plan is a guideline that lays the framework for managing any emergency event. For the air transport industry, this includes such things as hijack, bomb threat and aircraft in distress, dangerous goods, etc. (Randolph, 1996). Kebabjian (2004) based on the study of previous civil aviation disaster, has identified such causative factors of civil aviation accidents to include among others: air traffic control error, bird strike, cargo-hold/ cabin fire, design flaw, fuel starvation, hijacking (resulting in fatalities), lighting, pilot incapacitation, pilot shot by passenger, sabotage (explosive devices), pilot error, and weather. The need for coordination in carrying out an emergency response plan

can therefore not be over-emphasized sequel to the above arguments as this would prevent individuals from working at cross-roads to each other and thereby curtailing the panicky situation that result in such emergency.

The air transport industry is seen as a sector that needs to be guided and protected extremely well because of the integrated systems that it thrives upon and consequences of accidents that occur in the industry which in most cases could be fatal in nature (Temilade, 1997).The emergency plan is expected to look at the prevailing emergency situation and serve as a guide to curtailing the situation thereby reducing the loss of lives and properties. Ozuruamba (2001) opined that the airport is the terminal/changeover point in the air transport industry and due to the concentration of both human and material resources at this location; an emergency would result in a pandemonium and stampede which needs to be effectively managed.

Following the International Civil Aviation Organization (ICAO) and the International Air Travel Agency (IATA) recommendation, the authorities in the air transport industry in Nigeria formulated an emergency response plan to mitigate the effect of accident/incidents on the overall industrial performance. The response plan which involves several agencies of government, private individuals, airlines, etc. is the basis for the recovery management of any emergency at the airport. Under the supervision of the Federal Airport Authority of Nigeria (FAAN), the different airports managers in Nigeria are expected to coordinate the workings activities of the emergency plan using their local equipment.

Akerele (1999) writing on airline and airport safety suggested that what brings a passenger to an airport is the level of service that such airport is able to offer. It is therefore important that an airport sharpens and provides the necessary facilities to ensure the safety of passengers and staff alike. The need for an adequate and comprehensive plan in the air transport industry is a worldwide phenomenon which needs to be addressed with all the seriousness that it entails. This is recognized by ICAO in the certification of airports and the kind of rescue services that the airport offers in the case of emergency. Sheffield (1996) was of the opinion that an emergency response plan is expected to be utilized in order to reduce reaction time to response to emergencies, assuring that emergency equipment responds and identifies/reduces the potential emergency area. He also went further that an emergency plan should be able to assist in eliminating possible incidents including forecasting for incidents/scenario combating. Demuren (2006) pointed out that safety is the major pivot on which aviation activities revolve while Ogunsanya (1997) viewed accident occurrences in Nigeria as a major source of concern to air passengers, this is because within a period of six years (2000 to 2006), there occurred nineteen (19) aircraft accidents/incidents in Nigeria (Aviation Safety Network/ASN Aviation Safety Database 2007). The objectives of the study includes the functionality of the emergency response plan systems; assessment of magnitude and frequency of emergency situations and examination of the magnitude of lives and properties involved in the emergency situations.

Materials and Methods

Data for this work was gathered through secondary source of data, information on the recorded accident occurrence Accident Investigation was

sourced from the Federal Ministry of Aviation.

The Nigerian Airspace Management Agency (NAMA) provided information on the causes of air accident as well as the management of the Nigerian Airspace. So also, the Nigerian Civil Aviation Authority (NCAA) provides information on compliance of Airlines to safety standards.

The Nigerian Emergency Management Agency (NEMA) was also consulted where information on search and rescue operation were sought. Airlines with operations in and out Murtala Muhammed International Airport provided information on response to emergency situations by agencies responsible and time taken to bring the situation back to normalcy was provided.

The data obtained were subjected to simple statistical analysis such as Chi Square, a statistical testing method used in comparing an actual/observed distribution with a hypothesized or expected distribution. The technique (Chi-square) was used to analyse the observed emergency response curtailing capacities of the agencies involved in emergency response plan against the expected level in the study area as stipulated by International Civil Aviation (ICAO) standard.

Result and Discussion

The recommended and available facilities for emergency response plan at the Murtala Muhammed International Airport, Ikeja, shows that 25 major crash tenders were recommended by the International Civil Aviation Organisation (ICAO) but 7 were available at the airport which represents 28% of the recommended practice by the ICAO, also, 10 rapid intervention vehicles with 1,000 litres capacity of water that will get to the scene of the accident before the crash tenders were recommended by ICAO, but only 2 were met on ground which represent 20% of the practice by ICAO. 10 water tankers were recommended by ICAO with each one having about 11,000 litres of water but only 2 were met on ground at the airport this also represent only 20% of the recommended practice by ICAO, so also, 15 ambulance buses were recommended but only 2 were met on ground at the airport which also represents 13.3% of the recommended practice by ICAO.

Table 1: Test Statistics between International Standards and Observed practices

Test Statistics

	Recommended	Available
Chi-Square [a]	.000	.000
df	3	3
Asymp. Sig.	1.000	1.000

a. 4 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 1.0

The Chi square result shows significant difference between the recommendation of the International Civil Aviation Organisation (ICAO) and observed practice in the Nigerian Civil Aviation Industry. Clearly, the Nigerian aviation industry is not in compliance with the international standard.

Table 2 shows the number of accidents and fatalities at the Murtala Muhammed International Airport, Ikeja between 1996 and 2013, it shows that a decrease of -66.67% was noticed in 1997 representing but no difference in 1998, while 1999 had a decrease of -200% there was a consistent increase of +50% from 2000 to 2002 and also, a consistent decrease of -100% each from 2003 to 2004 and it increase again by +75% in 2005 and -33.3% in 2006. The number of fatalities at the Murtala Muhammed International Airport between 1996 and 2006 also shows that that there was a decrease of -27.16% in 1997. In 1998 no fatality was witnessed as well as in 1999, +100% increase in fatalities was reported in 2000, no case was reported in

2001. +98.68% was recorded in 2002, no case was reported in 2003 and 2004 but year 2005 has the highest number of victims of air accidents as 225 people were reported to have died representing 100% increase from the preceding year and a decrease of -878.2% was witnessed in 2006 against the preceding year. Also in 2008, there was an increase of 4% in the number of fatalities against the preceding year, in 2012 and 2013 there was an increase of 153% and a decrease of -84% respectively in the nations aviation industry.

Table 2: Fatalities at Murtala Muhammed International Airport, Ikeja 1996 - 2013

Year	Fatalities	% difference
1996	169	
1997	6	- 2810
1998	-	-
1999	-	-
2000	1	+ 100
2001	1	-
2002	76	+ 98.68
2003	-	-
2004	-	-
2005	225	+ 100
2006	128	-878.2
2007	-	-
2008	4	4
2009	-	-
2010	-	-
2011	-	-
2012	153	153
2013	16	-84

Source: Federal Airport Authority of Nigeria – Operations Department

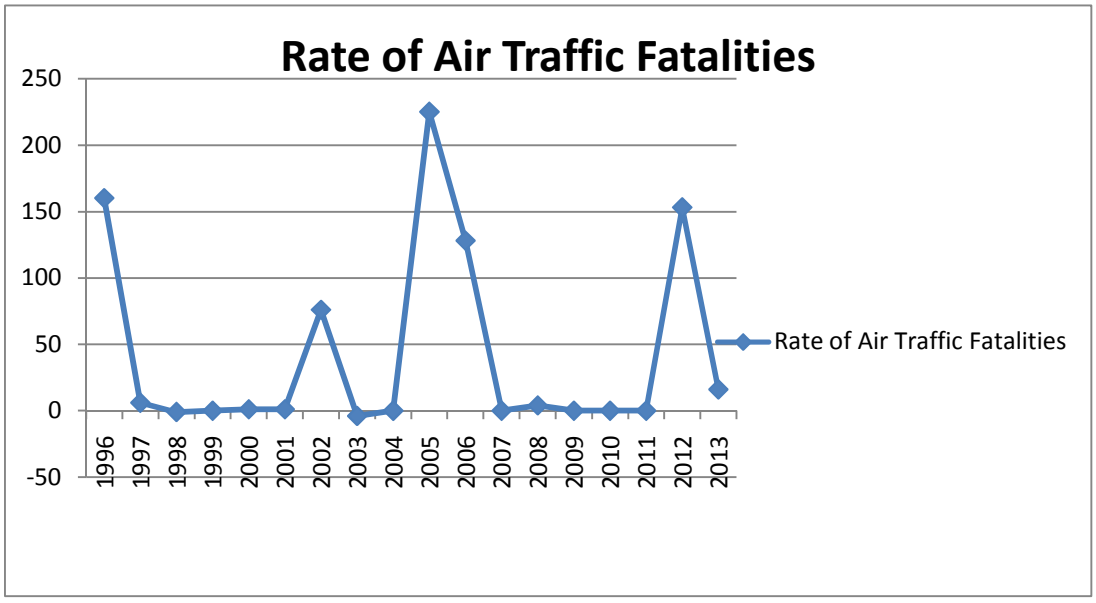

Figure 1: Rate of Air Traffic Fatalities in the Nigerian Aviation Industry 1996 - 2013

This study examines the emergency response procedures in Nigeria aviation industry from 1996 to 2013 and attempted to develop a policy framework for an effective and vibrant aviation industry that is accident-free. Emanating from the study is fact that there is growing rate of air accidents in Nigeria within the period under study and there is no adequate as well as manpower equipment to combat air accidents in Nigeria. So also, the time taken for emergency response team to arrive at the scene of accident is too high compare to the stipulation of the International Civil aviation organization (ICAO). The study also reveals that access to better communication would increase faster response to emergency situation. The International Civil Aviation Organisation (ICAO) recommends that at any stage of the investigation of an accident or incident, the accident or incident investigation authority of the State conducting the investigation shall recommend to the appropriate authorities, including those in other States, any preventive action which it considers necessary to be taken promptly to enhance aviation safety. The Nigeria Civil Aviation Authority is saddled with responsibility of informing other States of any preventive action which it considers necessary to enhance aviation safety in the country. The International Civil Aviation Organisation (ICAO) also stipulates that state shall establish a mandatory incident reporting system to facilitate collection of information on actual or potential safety deficiencies. At the Murtala Muhammed International Airport the Airport Rescue and Fire Fighting Services and the Airport Authority are saddled with the responsibility of reporting an incident or potential incident. According to the International Civil Aviation Organisation (ICAO), State should establish a voluntary incident reporting system to facilitate the collection of information that may not be captured by a mandatory incident reporting system, however, the Nigeria civil Aviation does not have a voluntary incident reporting system.

The International Civil Aviation Organisation recommends that when practicable, States should establish systems, including data bases, to facilitate effective analysis of the information obtained from its investigations of accidents and incidents, wherever they occurred. The data base systems should use standardized formats to facilitate data exchange. Nigeria civil aviation does not have database systems which could facilitate effective analysis of the information obtained from investigations rather it engages the services of expatriates from Canada and USA in this regard. According to the International Civil Aviation Organisation recommendations, State having established an accident and incident data base and an incident reporting system shall analyse the information contained in its accident/incident reports and the data base to determine any preventive actions required. But Nigeria often adopts recommendations from the expatriates hired during emergencies. The international Civil Aviation Authority recommends that the Civil Aviation Authority of any state should produce, publish and distributes via the World Wide Web: Accident briefs, defect Reports, fatal Accident Reports, Weekly Accident Reports, Safety Reports. Accident brief, defect reports, fatal accident report, weekly accident reports and safety reports are published in the website of the Nigeria Civil Aviation Authority.

The international Civil Aviation Authority in its recommendation stipulates that the Civil Aviation Authority Safety Research, Education and Publishing Group

should incorporate the Safety Investigation Unit, the Safety Analysis Unit, and the Communications and Safety Education Unit. Occurrences are investigated to find out if there are safety lessons to be learnt from them. The Nigeria Civil Aviation does not have the units such as safety analysis unit, communication and safety education unit as stipulated by the International Civil Aviation Organisation. It is recommended by the International Civil Aviation Authority that when the aircraft involved in an accident is of a maximum mass of over 2,250 kg, the State conducting the investigation shall send, as soon as practicable after the investigation, the Accident Data Report to the International Civil Aviation Organization. But in Nigeria sending Accident data report to the International Civil Aviation Organisation is usually practiced in the Nigeria Civil Aviation especially during the 2005 incessant air accidents in Nigeria. According to the International Civil Aviation Authority, a State shall establish a mandatory incident reporting system to facilitate collection of information on actual or potential safety deficiencies. Establishment of a mandatory incident reporting system is not usually practiced in the Nigeria Civil Aviation industry.

In accordance with International Civil Aviation Organization annex 14, Murtala Muhammed International Airport (MMIA) provides aircraft crash-category 9. Should the Airport Rescue and Fire Fighting Services (ARFFS) for any reason not be able to maintain the category, then the Air Traffic Control Services (ATCS) will be notified immediately. Airport Rescue and Fire Fighting Services (ARFFS) operates based on Nigeria Civil Aviation Authority (NCAA) manual of standard (MOS) and Airport Rescue and Fire Fighting Services (ARRFFS) Murtala Muhammed Airport operational manual. So also in accordance with International Civil Aviation Organisation Annex 17, the airport develops security programme that encompasses all aviation security issues. The programme is implemented for safety airport operations and passenger facilitation. If a primary vehicle becomes unserviceable it would still be possible to maintain the published ICAO category 9 in the event that a second primary vehicle becomes inoperative Air Traffic Control Services (ATCS) would immediately be informed.

Recommendations and Conclusion

Of paramount recommendation is establishment of a central body to co-ordinate, organize and manage emergency situations in Nigeria. This will not only minimize waste of human and material resources but will nationalize the service and free agencies responsible for emergency situations from Civil Service bureaucracy. For effective emergency situations across international border, Nigeria should have international agreement with neighbouring states negotiated through regional, sub – regional bodies and states organs for easy entry into neighbouring states and use of necessary. Emergency response facilities, while agreements should be signed with local equipment owners for pooling during operations, there should be a relevant equipment audit and physical verification to locate where and what equipment is, and their state of serviceability, for safe and easy access for their use during emergency operations.

Alerting posts should be created properly and equipped with necessary communication equipment such as telephone, walkie –talkie and other wireless system. These alerting posts should be

made aware of their responsibilities of getting reports to and reporting immediately to the subcentre or centre nearest to them in the event of an emergency requiring emergency response. Training of emergency situations service personnel in all aspects of Search and Rescue should be given a priority. National Search and Rescue exercises should be organized yearly. Competitive remuneration and carrier packages should be put in place to facilitate the recruitment and retention of experienced professionals. Training should be targeted on younger personnel for effective and longer use of knowledge acquired.

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