



Usage of Life-saving Equipment by Commercial Boat Users and Operators in Southern Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Non-usage of life-saving equipment while on water may increase disaster risk such as boat capsizing, injury, and drowning; studies find generally low levels of lifejacket wear among drowning victims and among some cultural groups. Considering this, the study examined the usage of life-saving equipment by commercial boat users and operators in southern Nigeria. The finding revealed that among the boat operators, 41.9% uses of life-saving equipment is always and 63.4% for the boat users. The determinant factor for the use of life-saving equipment among boat operators were compliance (38.7%) and compulsory for boat entry (27.4%) while for boat users it was prevention from drowning (44.4%) and safety (30.1%). Considering the usage of life-saving equipment along Nigerian waterways, it was concluded that commercial boat operators and users use life-saving equipment always and regularly.

Keywords: *Life-saving equipment; commercial boat; Nigerian waterways; safety; drowning.*

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1. INTRODUCTION

“Safety is considered as the most important ingredient of any mode of transportation, water transport inclusive. Although overall safety knowledge can be considered good, some differences still exist between groups of passengers” [1]. “However, several studies have shown that safety is considered to be most important to transport users and managers. There have been diverse interests in the study of safety in water transport. Some studies have focused on the operational characteristics. Others focused on accidents, safety of the water bodies, and low investment in water transportation by the respective authorities. However, there still exists a paucity of information on the perception of passengers on safety as a factor responsible for low patronage of water transportation” [1]. The work of Bayode and Ipingbemi, (2016) found that safety of water transport has been compromised due to operators’ misbehaviors and government inattention.

Similarly, Sigurd et al., (2016) opined that “younger passengers and passengers on shorter trips generally have less safety knowledge than older passengers and passengers on longer trips”. Also, Nze [2] analyzed “the fatality rates of boat and ferry accidents on inland waterways in Nigeria and found that more fatal accidents occurred with the use of boats than ferries on the waterways. The safety of passengers and crew on boat is of paramount importance while ships are conducting their commercial activities”. Therefore, boats must carry appropriate life-saving appliances, including lifejackets, and many others to be used by passengers and crew in case of emergency to protect their lives at sea [3]. “The carriage of life-saving appliances is made mandatory as per the SOLAS Convention. The International Life-Saving Appliance (LSA) Code provides more specific technical requirements for the manufacturing, testing, maintenance, and record keeping of life-saving appliances” [3]. The number, capacity and type of life-saving appliances differ from boat to ship and larger vessels depending on its size, shipping activity and voyage, and the LSA Code stipulates minimum requirements to comply to make a ship safe for its passengers and crew.

Aside for the consideration for life-saving equipment available to commercial boat users, Tosin [4] noted that boat riders rely on their over-rated knowledge of the water ways to convey

passengers and goods to different destinations without adequate training and certification in safety measures and navigational techniques. Identify various life-saving peculiar to Nigeria Inland waterways, Aiyegbajeje and Deinne [1] noted that passengers are either not aware of the safety measures or fail to heed safety measure and mostly prefer not to use life jackets during journeys. According to Faud [5], one of the important safety aspects of passenger vessels is the carriage of life-saving appliances that contribute directly to the safety of passengers. The examples of the personal life-saving appliances are life jackets, life buoys, and immersion suits.

“Drowning is a major cause of unintentional injury death worldwide. The toll is greatest in low and middle-income countries (LMICs) that suffer over 90% of the burden. In high-income countries (HICs), drownings mostly occur during leisure and recreational activities” [6] (Oporia et al, 2021). “Risk factors for drowning include non-use of lifejackets, fishing, and water transportation” [7] (Oporia et al., 2021). “If worn correctly, the efficacy of lifejackets in preventing drowning is over 80%. However, lifejacket wear rates in both High Income Countries and Low-Medium Income Countries are low. Eighty-one per cent to 90% of people who drown from boating activities in HICs do not wear lifejackets” [8] (Willcox -Pidgeon et al, 2019; Oporia et al., 2021).

“Water transportation safety is not only determined by the competence and skills of the crew in accordance with applicable regulations” (Malisan, 2013) but is also determined by the feasibility of the safety equipment on board and its usage. “The safety of human life at sea essentially does not only depend on the condition of the ship, but also on the readiness of its safety equipment to be used at any time, especially in an emergency” [9]. To develop effective interventions for life-saving application, there is need to increase the understanding and know-how [10]. Considering this, the study examined the usage of life-saving equipment by commercial boat users and operators in southern Nigeria.

2. MATERIALS AND METHODS

2.1 Study Area

The study area is within the coastal region of Southern Nigeria. Nigeria has a coastline of approximately 853km facing the Atlantic Ocean.

This coastline lies between latitude 4° 10' to 6° 20'N and longitude 2° 45' to 8° 35'E. The terrestrial portion of this zone is about 28,000 km² in area, while the surface area of the continental shelf is 46,300km² (Fig. 1). The Nigerian coastal zone sprawls a total of nine coastal States; namely: Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Lagos, Ogun, Ondo, and Rivers State. The coastal areas stretch inland for approximately 15km in Lagos in the west to 150 km in the Niger Delta and 25 km east of the Niger Delta [11]. The coastline stretches for 853km comprising inshore waters, coastal lagoons, estuaries, and mangrove especially in the Niger Delta [12].

because it is a suitable and efficient way of studying large population. To have proper coverage, the volume of daily passengers across the selected jetties based on the previous study conducted by Agava [13] and Lagos State Waterways Authority (2017). The population was projected to 2021 at growth rate of 2.5% using Malthus Exponential Model (Table 1).

To get an optimum sample of the target population (1,773,696) the Taro Yamane (1967) formula for sample size determination will be adopted;

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

2.2 Study Design and Sample Size

The survey research method was adopted to carry out the study. This method was adopted

Where: e= Level of precision (0.05), N= Population, n= Sample size, 1= Constant

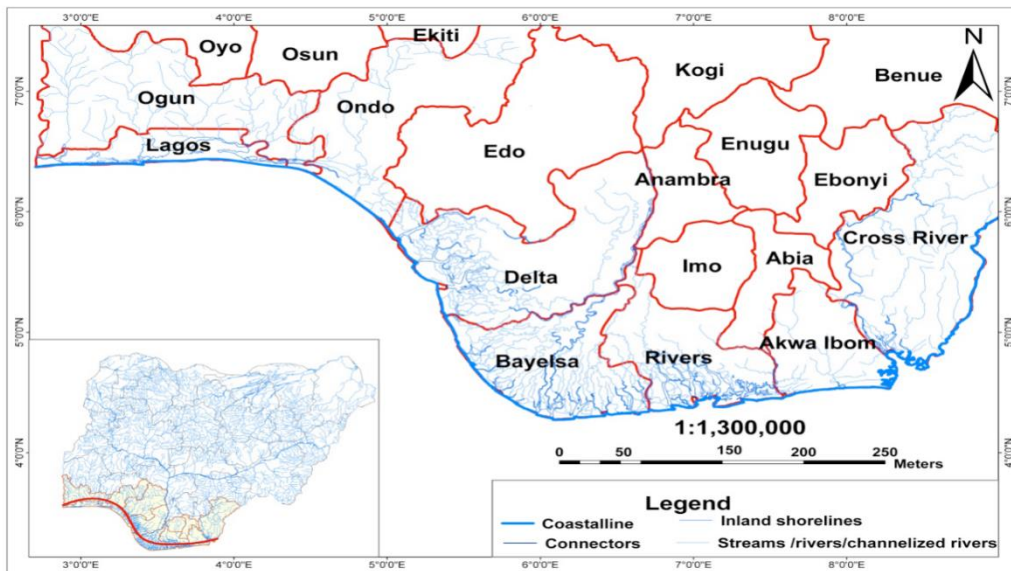


Fig. 1. Coastal region of Southern Nigeria

Source: Awosika (2001)

Table 1. Study Population, Sample Size and Questionnaire distribution Across Jetties

States	Jetties	Volume Traffic (2017)	Projected Volume Traffic (2021)	Percentage Contribution (%)	Sample Size
Rivers	Member/Bile	5,152	5,719	15.26	61
	Marine Base	2,980	3,308	8.82	35
Bayelsa	Nembe	3,440	3,818	10.19	40
	Akassa	2,016	2,238	5.97	24
Delta	Ovwian	2,120	2,353	6.28	25
	Igbudu	1,841	2,044	5.45	22
Cross River	Marina	2,640	2,930	7.82	31
	Ikang	3,550	3,941	10.51	42

States	Jetties	Volume Traffic (2017)	Projected Volume Traffic (2021)	Percentage Contribution (%)	Sample Size
Akwa Ibom	Oron Beach	2,325	2,581	6.88	28
	Effiat Waterside	1,938	2,151	5.74	23
Lagos	Falomo	2,847	3,160	8.43	34
	Liverpool	2,921	3,242	8.65	35
Total	12		37,485	100	400

$$n = \frac{37485}{1 + 37485(0.05)^2}$$

$$n = \frac{37485}{1 + 37485 \times 0.0025}$$

$$n = \frac{37485}{1 + 93.7}$$

$$n = \frac{37485}{94.7}$$

$n = 396$

For the study robustness and conveniences, the sample size was increased to 400. Therefore, the study total sample size was 400 respondents (Boat users and operators). Using proportionate sampling techniques, the distribution of the sample size (400) was based on the percentage of volume of traffic (projected) from each jetty which also determines the number of questionnaires that was administered among the jetties as indicated in Table 1.

2.3 Data Analysis

The retrieved copies of questionnaire were coded and subjected to statistical analysis using Statistical Package for the Social Sciences (SPSS-21) for proper analysis. The data of the study were analysed through descriptive and inferential statistics (Analysis of Variance ANOVA).

3. RESULTS AND DISCUSSION

3.1 Socio-Demographic Details of the Respondents

The socio-demographic details of the respondents were presented in Table 2 for both the boat operators and users. For the boat operators, the analysis revealed that all the respondents were male (100%) within the age group of 18-35 (74.2%) and mostly single (58.1%). Also, most of the boat operators had primary level of education and they have been operation at the jetty in the last 2-4years (46.8%). Considering their type of boat for operation, the

outcome indicated that most of the operators (40.3%) use wooden boats/ferries while 29.0% of the operators use motorized-medium power boats.

Among the boat users, 51.3% of those involved in the study were male while 48.7% were female within the age group of 36-50 (40.9%) and mostly married (61.4%). The outcome showed that most of the boat users hold a primary level education (37.9%) and engage in various professional occupations (35.0%). Considering the years they have been using the jetty, the outcome revealed that most of the boat users (42.8%) have using the jetty in the last 2-4years while 4.2% have been using the jetty in the last 9-12years.

3.2 Usage of Life- saving Equipment by Commercial Boat Users and Operators

Details on the usage of life-saving equipment and determinant factors among the boat operators and users were presented in the Table 3. Among the boat operators, 41.9% indicated that the use of life-saving equipment is always, 32.3% indicated to regularly use of life-saving equipment while 16.1% and 9.7% of the operators indicated that the use of life-saving equipment is often and never use it respectively. Among the boat users, 63.4% indicated that the use of life-saving equipment is always, 23.2% indicated to regularly use of life-saving equipment while 11.4% and 2.0% of the users indicated that the use of life-saving equipment is often and never use it respectively. The outcome revealed that commercial boat operators and

users use life-saving equipment always and regularly. The outcome showed similarity the study conducted by Chung et al. (2014) which noted lifejackets usage was high among their

interest group of their study interest. Viaroux and Gungor (2016) noted that lifejacket wear is one of the most important determinants that influence various water-related activities.

Table 2. Socio-demographic details of the boat operators and users

Variable	Boat Operators		Boat Users	
	Frequency (n=62)	Percentage (%)	Frequency (n=306)	Percentage (%)
Sex of Respondents				
Male	62	100.00	157	51.3
Female	--	-	149	48.7
Age (years)				
18-35	46	74.2	87	28.4
36-50	15	24.2	125	40.9
51-65	1	1.6	76	24.8
Above 65	-	-	18	5.9
Marital Status				
Single	36	58.1	111	36.3
Married	23	37.1	188	61.4
Divorced	1	1.6	7	2.3
Widowed	2	3.2	-	-
Level of Educational				
None	7	11.3	56	18.3
Primary	35	56.5	116	37.9
Secondary	12	19.4	104	34.0
Tertiary	8	12.9	30	9.8
Primary Occupation				
Unemployed	-	-	73	23.9
Professional Occupation	-	-	107	35.0
Skilled/Managerial Occupation	-	-	73	23.9
Manual/Partly Skilled	-	-	36	11.8
Self-employed/Commerce	-	-	10	3.3
Student	-	-	6	2.0
Others	-	-	1	0.3
Years of Jetty Operation/Usage				
Less than 1years	15	24.2	92	30.1
2-4years	29	46.8	131	42.8
5-7years	17	27.4	70	22.9
9-12years	1	1.6	13	4.2
13years above	-	-	-	-
Responsibility at Jetty				
Boat Operators	62	100	-	-
Commuters (Boat Users)	-	-	306	100
Official (Regulator) for LGA	-	-	-	-
Official (Regulator) for NIWA	-	-	-	-
Others	-	-	-	-
Type of Boat Operating				
Utility-Fibre Boat	-	-	-	-
Wooden Boats/Ferries	25	40.3	-	-
Motorized-Larger Power Boats	19	30.7	-	-
Motorized-Medium Power Boats	18	29.0	-	-
Others	-	-	-	-

Source: Researcher's Filed Work, 2023

Table 3. Usage of life- saving equipment among boat operators and users

Variable	Boat Operators		Boat Users	
	Frequency (n=62)	Percentage (%)	Frequency (n=306)	Percentage (%)
Use Life-Saving Equipment				
Yes, always	26	41.9	194	63.4
Regularly	20	32.3	71	23.2
Often	10	16.1	35	11.4
Never	6	9.7	6	2.0
Factor Influencing the Use Life-Saving Equipment				
Compliance with Work Ethics	24	38.7	12	3.9
Safety	3	4.8	92	30.1
Prevention of Drowning	13	21.0	136	44.4
Compulsory before Boat Entry	17	27.4	64	20.9
Others	5	8.1	2	0.7

Source: Researcher's Filed Work, 2023

For the boat operators, the outcome of the analysis revealed that 38.7% of the operators uses the life-saving equipment due to compliance with work ethics, 4.8% due to safety, 21.0% uses the life-saving equipment to prevent drowning while 27.4% and 8.1% of the operators uses the life-saving equipment as its compulsory before entry and other factors respectively. Among the boat users (commuters), the analysis revealed that 3.9% of the commuters uses the life-saving equipment due to compliance with work ethics, 30.1% due to safety, 44.4% uses the life-saving equipment to prevent drowning while 20.9% and 0.7% of the commuters uses the life-saving equipment as its compulsory before entry and other factors respectively. The outcome revealed that the use of life-saving equipment among the boat operation was majorly due to the compliance with their work ethics and lifejacket wearing is also made mandatory for every operator before boat entry. The outcome corroborated with the study conducted by Spitzer et al. (2018) which asserted that boaters are aware of the connection between lifejacket use and compliance and are more likely to wear life jackets when boating in conditions perceived to be risky. In the case of the boat users, the outcome indicated the use of lifejackets among the boat users are influence by their awareness of the equipment to prevent drowning and for their safety. The outcome share similarity with the suggestion of Spitzer et al. (2018) which indicated that boaters are aware of the connection between lifejacket use and drowning prevention and are more likely to wear lifejackets when boating in conditions perceived to be risky. Similarly, Oporia et al. [14] asserted that boaters attributed their lifejacket use to prior experience or witness of a drowning.

4. CONCLUSION

Nigeria inland waterways have witnessed various water-related accidents over the years leading to commuters' deaths, injuries, missing or drown. One of the contributing factors to this menace is the inadequate or lack of compliance to various safety measures for water related activities including the use of life-saving equipment. Non-usage of life-saving equipment while on water may increase disaster risk such as boat capsizing, injury, and drowning; studies find generally low levels of lifejacket wear among drowning victims and among some cultural groups. Considering the usage of life-saving equipment along Nigerian waterways, it was concluded that commercial boat operators and users use life-saving equipment always and regularly.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Aiyegbaje FO, Deinne CE. Assessment of commuters' perception of water transportation safety and patronage in Lagos Metropolis, Nigeria. Ghana Journal of Geography. 2021;13 (3): 146-164. DOI: <https://dx.doi.org/10.4314/gjg.v13i3.7>
2. Nze IC. Analysis of the fatality rates of boat and ferry accident on inland waterways in Nigeria. Journal of Business and Management. 2013;11(2):17-20.

3. IMO. Life-saving Appliances: Including LSA Code (2nd ed.). London: IMO; 2019.
4. Tosin J. Causes and Prevention of Boat Mishap. PM News Nigeria, May 26, 2014; 2014. Available:<http://www.pmnewsnigeria.com/2014/05/26/causes-and-prevention-ofboatmishap/>
5. Fuad AFA. Safety assessment model of coastal passenger vessel in the perspective of life jacket compatibility (Doctoral dissertation, Universiti Teknologi Malaysia); 2015.
6. Quistberg DA, Bennett E, Quan L, et al. Low life jacket use among adult recreational boaters: A qualitative study of risk perception and behavior factors. Accident Analysis and Prevention. 2014;62:276–84.
7. Kobusingye O, Tumwesigye NM, Magoola J, et al. Drowning among the lakeside fishing communities in Uganda: results of a community survey. Int J Inj Contr Saf Promot. 2017;24:363–70.
8. Ryan KM, Nathanson AT, Baird J, et al. Injuries and fatalities on Sailboats in the United States 2000-2011: An analysis of US coast guard data. Wilderness Environ Med. 2016; 27:10–18.
9. Lestari E. Feasibility analysis of lifeboat safety equipment (a case study on the ship of MT. Lapetta). Journal of Mechanical and Civil Engineering. 2022;19(2):16-19. DOI: 10.9790/1684-1902011619
10. Peden AE, Demant D, Hagger MS, Hamilton K. Personal, social, and environmental factors associated with lifejacket wear in adults and children: A systematic literature review. PLoS ONE. 2018;13(5):e0196421. Available:<https://doi.org/10.1371/journal.pone.0196421>
11. Kadafa AA. Oil exploration and spillage in the Niger Delta of Nigeria. Civil and Environmental Research. 2012;2(3):38-51.
12. Lambert-Aikhionbare DO, Ibe AC. Petroleum source-bed evaluation of Tertiary Niger delta: discussion. AAPG bulletin. 1984;68(3):387-389.
13. Agava L. Rivercraft challenges in the inland waterways of Niger Delta Region. Center for Transport and logistics studies (CELTRAS), University of Port Harcourt, Nigeria; 2018.
14. Oporia F, Kibira SP, Jagnoor J, Nuwaha F, Makumbi FE, Muwonge T, Kobusingye O. Determinants of lifejacket use among boaters on Lake Albert, Uganda: A qualitative study. Injury prevention; 2022.

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