Full Length Research

Maritime transport incidents; level of safety awareness and safety practices in selected states of the Niger Delta Region

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The current study examines maritime transport incidents; level of safety awareness and safety practices in selected states of the Niger delta Region. The research design is the cross sectional design. The researcher employed a structured questionnaire which was administered on target respondents. Data analysis was achieved using the analysis of variance (ANOVA). Findings include that, in Anambra state, 3.8 % of the total respondents accented to the fact that boat mishap happens daily, 5.9% suggested that, boat mishap happens weekly, while on a monthly bases boat mishaps happen for 54.1% of the period. In the same state 36.2% of the total respondents suggested that boat mishap occur quarterly. Furthermore, in Rivers state, only 0.5% of the total respondents adduced that boat mishap happens daily, while majority (69.9%) of the respondents suggested that boat mishap occurs monthly in the area. A similar pattern existed in other locations in the study area. Similarly, Overloading, Offshore collision and fire accidents were among the accident types identified by respondents to be among the accident types that occur in the area regularly. The analysis of variance result showed that there is spatial variation in boat accidents in the area p<0.05{130.8}; there is variation in safety awareness p<0.05 (F=4.4) and that spatial variation in safety practices in the study area exist (p<0.05, F=48.9). The study recommends the use of standard and routinely maintained boats, properly constructed and equipped jetties, initiation of programs of training and retraining of Beach Masters, Quarter Masters, Deckhand and beach or jetty personnel, amongst others.

Key words: Niger Delta, Boat-Mishap, transport, accidents.

INTRODUCTION

The maritime industry globally is pivotal and critically significant to the economic development of coastal nations. The waterways are the primary means through which goods are transported both internationally and locally, and many cities rely on their ports as a major source of revenue (Toffoli et al., 2005; Aderemo and Mogaji, 2010; Ezenwaji, 2010; Obed, 2013; and Obeta, 2014). The maritime industry which is a subsector of the transport sector, accounts for over 70% of the transportation requirement of the world. The maritime industry is of huge importance in terms of natural resources and energy, trade and industry, as well as sciences and leisure activities. It is an essential part of trade which demands innovative solutions and careful management systems to ensure its long-term sustainability. It is difficult to quantify the total value of the world's maritime industry, and its economic relevance as it is a sector that affects a wide array of aspects of modern societies and their developments

(Theotokas, and Progoulaki, 2007; Hanzu-Pazaraet al., 2008; Celik, and Cebi, 2009; Tzannatos, 2010; Progoulaki and Roe, 2011).

Globally, the maritime sector has been marked by an unending series of accidents and incidents which have threatened the safety of seafarers and the entire sector at large whether in the ancient times or in present (Phillip, 2000; Eliopoulou et al., 2016). In other to enhance the safety of seafarers, the International Maritime Organization (IMO) was developed (of which Nigeria is a member of) and saddled with the responsibility of developing and maintaining a comprehensive regulatory framework for shipping and its job includes safety, environmental concerns, legal matters, technical co-operation, maritime security and the efficiency of shipping. However, the adherence of seafarers to IMO standards in the developing world is poor and in some cases no adherence at all (Toffoli et al., 2005). This condition is a substantial incubator for sea accidents (Hashemi et al., 1995; Phillips, 2000; Toffoli et al., 2005; Talley et al., 2005; Theotokas, and Progoulaki, 2007; Hanzu-Pazara et al., 2008; Celik, and Cebi, 2009; Tzannatos, 2010; Progoulaki and Roe, 2011).

In Nigeria, the maritime sector is a subsector of the transport sector and encompasses both the inland waterways and the national waterways (Victor, 2014). Nigeria has a large resource base of waterways spanning 10,000 kilometres; about 3,800 kilometres is navigable seasonally. Twenty eight (28) of the nation's thirty six (36) states can be accessed through water (Aderemo and Mogaji, 2010; Ezenwaji, 2010; Obed, 2013; Obeta, 2014). Similarly, Nigeria can also link five of its neighboring countries, such as Benin Republic (Port Novo), Equatorial Guinea, Cameroon, Chad and Niger Republic. The Rivers Niger and Benue constitute the major channels for inland navigation which include but are not limited to the Cross River, Port Novo- Badagry-Lagos waterways, Lekki and Lagos Lagoons, Ogun-Ondo waterways, Benin River, Escravos channel, Nun River, Imo River, Orashi River, Ethiope River, Ugwuta lake, Lake Chad and the numerous creeks in the Niger delta (NIWA, 2017).

Nevertheless, in spite of potentials in the nation's inland waterways, the sub-sector has been regarded as one of the most dangerous in the Nigeria owing to the problems of poor level of safety awareness and safety practices. Again, whereas sea piracy and other insecurities associated with inland water transport appears to be on the decrease globally, it is increasing at an alarming rate in Nigeria. This situation has been worsened by neglect by successive governments in Nigeria to approach insecurity problems head-on. The question on the lips of many transport industry operators is 'when will the inland waterways system be developed in Nigeria? Across the country, the potentials of this sub-sector have remained untapped. This study is therefore set-out to investigate the maritime transport incidents; level of safety awareness and safety practices in selected states of the Niger Delta Region.

MATERIALS AND METHODS

This study is limited to selected coastal states in Nigeria including Anambra, Bayelsa, Cross River, Lagos, Ondo and Rivers States. Nigeria is a coastline state with a coastline of 853km and a land mass of about 923768 sq.km. Its coast line lies on the Gulf of Guinea in the southern part and it is bordered by Lake Chad in the north-eastern part, while on the western part it is bordered by Republic of Benin and Niger Republic on the North. Nigeria is situated geographically between longitude 3^OE and 15^OE, and latitude 4^ON and 14^ON (see Figure 1).

The coastal, area lies on a low plain and it is predominantly covered with swamps (mangrove and fresh water) lagoon mashes, sand dunes, beach ridges and tidal channels. This zone experiences a climatic condition predominated by tropical climate, consisting of rainy season from April to November and dry season from December to March (Efe, 2010).

In terms of methods, the research design adopted in this study is the cross-sectional research design. The researcher employed a structured questionnaire which was administered to regulators, operators and commuters of the inland waterways to assess their perception, knowledge and awareness of the risk inherent in maritime transportation and incident records. The type of data used for this study is the primary data. These are data that were collected by the researcher at the various jetties scattered across the composite states. These data were sourced via the researcher administering copies of the research instrument on targeted respondents in the study area. To understand the target population the researcher embarked on a reconnaissance visit to the different sampling locations displayed. However, the target population for this study includes the regulators of maritime transportation in Nigeria, (Nigerian Maritime Authority, Nigerian Inland
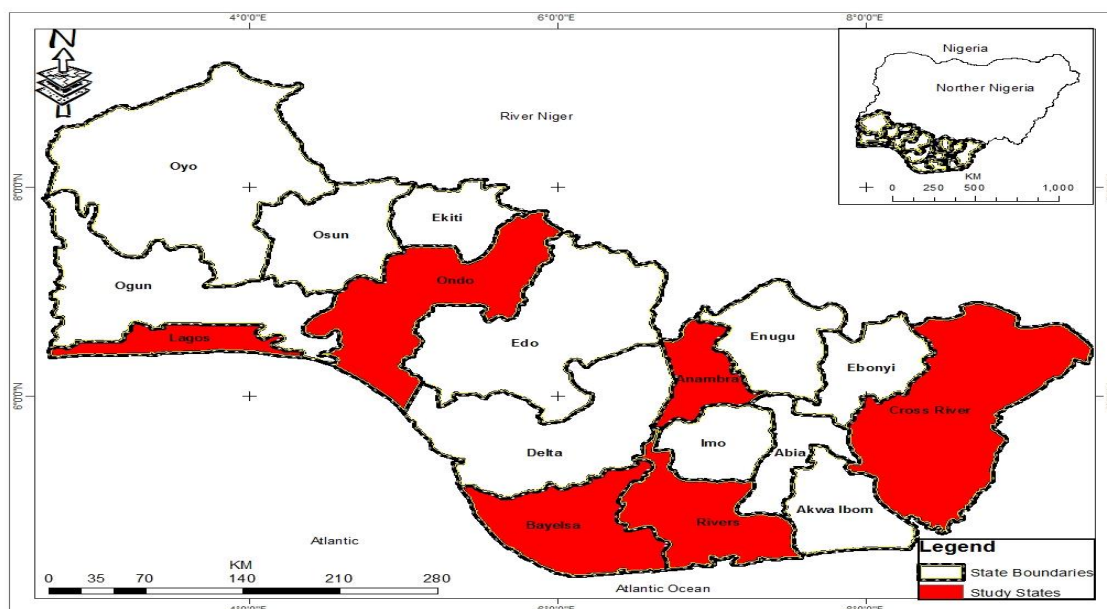
Figure 1. Southern Nigeria showing study states.

Waterways Authority and Lagos State Waterways Agency), and commuters derived from house hold population of the catchment areas of the various jetties that dotted the study area. The household size for Nigeria is known to be 5 persons per household; this was then used to multiply the household numbers enumerated by the researcher within the period of this study.   The justification for targeting this population is that the researcher felt that these populations are those who frequently use the inland water ways (Celik, and Cebi, 2009; Tzannatos, 2010; Progoulaki and Roe, 2011) located in the following states (Anambra, Bayelsa, Cross River, Lagos, Ondo and Rivers States) in Southern Nigeria, as such would also have first-hand information regarding the issue under review.

Nevertheless, a population of four hundred and thirty-eight thousand, four hundred and eighty (438480) persons was the total population. Thereafter the Taro Yamane equation was then used to generate appropriate sample size for the study using equation 3.1 below

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

where   n = the sample size
        N = the total population size
        e = sampling error (in this case 0.05)

1= constant

As a result, a total of 2375 sample size was realized. This implies that the sample was distributed across the sampled states as follows: Anambra state 393, Rivers state 398, Lagos state 399, Cross rivers state 395, Ondo state 392 and Bayelsa state 398. The reason behind the researcher sampling the states apart is that the researcher wanted to deal with states exclusively. Having achieved the delineation of the sample sizes the researcher then proportionally distributing the samples among the jetties.

The systematic sampling technique was then employed for gathering data for the study. Systematic sampling technique is a probability sampling method in which, sample numbers from a large population are selected according to a random starting point and a fixed sampling interval, in which case subjects has equal chance of being selected (Oyegun, 2003). Each individual in this study was sampled at an interval of every 5th commuter at the jetties; chosen systematically and entirely by precision, such that each individual has the same probability of being chosen at any stage during the sampling process, and each subset of k individuals has the same probability of being chosen for the sample as any other subset of k individuals.

The research instrument was subjected to face and content validation by experts in the field of marine research. This was necessitated by the need for the

Table 1. Frequency of boat mishap occurrence.

State	Daily	Weekly	Monthly	Quarterly	Total
Anambra	15	23	211	141	390
Percentage (%)	3.8	5.9	54.1	36.2	100
Rivers	2	34	276	83	395
Percentage (%)	0.5	8.6	69.9	21	100
Lagos	12	19	261	103	395
Percentage (%)	3	4.8	66.1	26.1	100
Cross rivers	8	21	152	209	390
Percentage (%)	2.1	5.4	38.9	53.6	100
Ondo	6	24	146	214	390
Percentage (%)	1.6	6.1	37.4	54.9	100
Bayelsa	39	78	117	158	392
Percentage (%)	9.9	19.9	29.9	40.3	100

Source: Authors fieldwork.

items on the instrument to measure what they are supposed to measure and do so consistently. In terms of the instrument's reliability, the Pearson's correlation coefficient was calculated on the scores of the respondents (20 boat users) who completed the questionnaire two times. The correlation coefficients varied across the sections and the boat user groups (ranging from 0.69 to 0.87). The overall reliability was high ($r=0.83$, $p<0.005$).

The data obtained via the questionnaire were presented in tables and statistical diagrams. However, for the purpose of data analyses, the analysis of variance (ANOVA) was used. This was used to test the posited hypotheses. However, this was done in the environment of the statistical package for the social sciences (IBM/SPSS V 22).

RESULTS AND DISCUSSION

In Table 1, the frequency of boat mishap occurrence in the study area is shown. In the table, for Anambra state, 3.8 % of the total respondents accented to the fact that boat mishap happens daily, 5.9% suggested that, boat mishap happens weekly, while on a monthly bases boat mishaps happen for 54.1% of the period. In the same state 36.2% of the total respondents suggested that boat mishap occur quarterly. Furthermore, in Rivers state, only 0.5% of the total respondents adduced that boat mishap happens daily, while majority (69.9%) of the respondents suggested that boat mishap occurs monthly in the area.

Similar, situation exists in Lagos where the highest cases of boat mishap (66.1%) occur on monthly bases. In Cross rivers state, there seems to be more respondents (53.6%) in favour of the fact that boat mishap occur more on a quarterly bases; same can be said for Ondo (54.9%) and Bayelsa (40.3%). This agrees with the findings of Toffoli et al., (2005).

In Table 2, the frequency of sea pirates attack occurrence in the study area is shown. In the table, for Anambra state, 3.3 % of the total respondents accented to the fact that sea pirates attack happens daily, 6.4% suggested that, sea pirates attack happens weekly; while on a monthly bases there are only 51.5%. In the same state 38.7% of the total respondents suggested that sea pirates attack occurs quarterly. Furthermore, in Rivers state, only 1.5% of the total respondents adduced that sea pirates attack happens daily, while majority (69.4%) of the respondents suggested that sea pirates attack occurs monthly in the area. Similar, situation exists in Lagos where the highest cases of sea pirate attack (63.5%) occur on monthly bases. In Cross rivers state, there seems to be more respondents (58.7%) in favour of the fact that sea pirate attacks occur more on a quarterly bases; same can be said for Ondo (54.9%) and Bayelsa (41.9%). This finding is congruent with that of Oyadongha, 2014; Iheamnachor, 2014; Akogun, 2014, who in their studies identified that sea piracy has become one of the major threats to maritime transportation, since it leads to accidents, threat to life and loss of properties. This finding agrees with those of Aderemo and Mogaji, (2010).

In Table 3, the frequency of overloading causing

Table 2. Frequency of sea pirates attack.

State	Daily	Weekly	Monthly	Quarterly	Total
Anambra	13	25	201	151	390
Percentage (%)	3.3	6.4	51.5	38.7	100
Rivers	6	30	274	85	395
Percentage (%)	1.5	7.6	69.4	21.5	100
Lagos	10	21	251	113	395
Percentage (%)	2.5	5.3	63.5	28.7	100
Cross rivers	7	22	132	229	390
Percentage (%)	1.8	5.6	33.9	58.7	100
Ondo	6	27	143	214	390
Percentage (%)	1.5	6.9	36.7	54.9	100
Bayelsa	41	80	107	164	392
Percentage (%)	10.5	20.4	27.3	41.9	100

Source: Authors fieldwork

Table 3. Frequency of overloading causing accidents for sea farers.

State	Daily	Weekly	Monthly	Quarterly	Total
Anambra	18	20	201	151	390
Percentage (%)	4.6	5.1	51.5	38.7	100
Rivers	3	33	256	103	395
Percentage (%)	0.8	8.4	64.8	26.1	100
Lagos	11	20	250	114	395
Percentage (%)	2.8	5.1	63.3	28.8	100
Cross rivers	8	26	146	210	390
Percentage (%)	2.1	6.7	37.4	53.9	100
Ondo	5	25	140	220	390
Percentage (%)	1.3	6.4	35.9	56.4	100
Bayelsa	37	76	121	158	392
Percentage (%)	9.4	19.4	30.9	40.3	100

Source: Authors fieldwork

accidents for sea farers in the study area is shown. In the table, for Anambra state, 4.6 % of the total respondents accented to the fact that overloading causes accidents for sea farers daily, 5.1% suggested that, overloading causes accidents for sea farers weekly; while on a monthly bases there are only 51.5% chances of overloading leading to boat accident. In the same state 38.7% of the total respondents suggested that overloading causes accidents for sea farers quarterly. Furthermore, in Rivers state, only 0.8% of the total respondents adduced that overloading causes accident for sea farers daily, while majority (64.8%) of the respondents suggested that overloading causes accidents for sea farers monthly in the area. Similar situation exists in Lagos where the highest cases of overloading causing accidents for sea farers (63.3%) occur on monthly bases. In Cross rivers state, there seems to be more respondents (53.9%) in favour of the fact that overloading causes accidents for sea farers more on a quarterly bases; same can be said for Ondo (56.4%) and Bayelsa (40.3%). This finding agrees with that of Ezenwaji, (2010); but disagrees significantly with those of Obed, (2013).

In Table 4, the frequency of boats collision off-shore in the study area is shown. In the table, for Anambra state, 4.1 % of the total respondents accented to the fact that boats collision of shore occur daily, 5.6%

Table 4. Frequency of boats collision of shore.

State	Daily	Weekly	Monthly	Quarterly	Total
Anambra	16	22	211	141	390
Percentage (%)	4.1	5.6	54.1	36.2	100
Rivers	4	33	275	83	395
Percentage (%)	1	8.4	69.6	21	100
Lagos	12	19	261	103	395
Percentage (%)	3	4.8	66.1	26.1	100
Cross rivers	8	21	151	209	390
Percentage (%)	2.1	5.4	38.7	53.6	100
Ondo	8	20	148	214	390
Percentage (%)	2.1	5.1	37.9	54.8	100
Bayelsa	39	77	118	158	392
Percentage (%)	10	19.6	30.1	40.3	100

Source: Authors fieldwork

Table 5. Frequency of moving boats colliding with wrecked or abandoned boats along waterways.

State	Daily	Weekly	Monthly	Quarterly	Total
Anambra	15	23	211	141	390
Percentage (%)	3.8	5.9	54.1	36.2	100
Rivers	2	34	276	83	395
Percentage (%)	0.5	8.6	69.9	21	100
Lagos	12	19	261	103	395
Percentage (%)	3	4.8	66.1	26.1	100
Cross rivers	8	21	152	209	390
Percentage (%)	2.1	5.4	38.9	53.6	100
Ondo	6	24	146	214	390
Percentage (%)	1.6	6.1	37.4	54.9	100
Bayelsa	39	78	117	158	392
Percentage (%)	9.9	19.9	29.9	40.3	100

Source: Authors fieldwork

suggested that, boat mishap happens weekly, while on a monthly bases there are only 54.1%. In the same state 36.2% of the total respondents suggested that boats collision of shore occur quarterly. Furthermore, in Rivers state, only 1% of the total respondents affirmed that boats collision off-shore happens daily, while majority (69.6%) of the respondents suggested that boats collision of shore occurs monthly in the area. A similar situation exists in Lagos where the highest cases of boat collision (66.1%) occur on monthly bases. In Cross rivers state, there seems to be more respondents (53.6%) in favour of the fact that boat collision occurrence

more on a quarterly bases; same can be said for Ondo (54.8%) and Bayelsa (40.3%).

In Table 5, the frequency of moving boats colliding with wrecked or abandoned boats along waterways in the study area is shown. In the table, for Anambra state, 3.8 % of the total respondents accented to the fact that moving boats colliding with wrecked or abandoned boats along waterways occur daily, 5.9% suggested that, moving boats collide with wrecked or abandoned boats along waterways weekly, while on a monthly bases there are only 54.1%. In the same state 36.2% of the total respondents suggested that moving boats collide with wrecked or abandoned

Table 6. Frequency of fire incidents occurrence within jetties and boats

State	Daily	Weekly	Monthly	Quarterly	Total
Anambra	17	19	213	141	390
Percentage (%)	4.4	4.9	54.6	36.1	100
Rivers	4	30	276	85	395
Percentage (%)	1	7.6	69.9	21.5	100
Lagos	10	21	259	105	395
Percentage (%)	2.5	5.3	65.6	26.6	100
Cross rivers	8	21	151	209	390
Percentage (%)	2.1	5.4	38.7	53.6	100
Ondo	5	25	142	218	390
Percentage (%)	1.3	6.4	36.4	55.9	100
Bayelsa	36	81	115	160	392
Percentage (%)	9.2	20.7	29.3	40.8	100

Source: Authors fieldwork

boats along waterways quarterly. Furthermore, in Rivers state, only 0.5% of the total respondents adduced that moving boats collide with wrecked or abandoned boats along waterways daily, while majority (69.9%) of the respondents suggested that moving boats collide with wrecked or abandoned boats along waterways monthly in the area. Similar, situation exists in Lagos where the highest cases of moving boats colliding with wrecked or abandoned boats along waterways (66.1%) occur on monthly bases. In Cross rivers state, there seems to be more respondents (53.6%) in favour of the fact that moving boats colliding with wrecked or abandoned boats along waterways occur more on a quarterly bases; same can be said for Ondo (54.9%) and Bayelsa (40.3%).

In Table 6, the frequency of fire incidents occurrence within jetties and boats in the study area is shown. In the table, for Anambra state, 4.4% of the total respondents accented to the fact that fire incidents occurrence within jetties and boats happens daily, 4.9% suggested that, fire incidents within jetties and boats happens weekly, while on a monthly bases there are only 54.6%. In the same state 36.1% of the total respondents suggested that fire incidents within jetties and boats happen quarterly. Furthermore, in Rivers state, only 1% of the total respondents adduced that fire incident occurrence within jetties and boats happens daily, while majority (69.9%) of the respondents suggested that fire incidents occurrence within jetties and boats occurs monthly in the area. Similar, situation exists in Lagos where the highest cases of boat fire incidence

(65.6%) occur on monthly bases. In Cross rivers state, there seems to be more respondents (53.6%) in favour of the fact that boat fire occurs more on a quarterly bases; same can be said for Ondo (55.9%) and Bayelsa (40.8%).

In Table 7, the frequency of recording accident and incident statistics in the study area is shown. In the table, for Anambra state, 3.9 % of the total respondents accented to the fact that accident and incident statistics are recorded daily, 5.9% suggested that, accident and incident statistics are recorded weekly, while on monthly bases there are only 54.1%. In the same state 36.1% of the total respondents suggested that accident and incident statistics are recorded quarterly. Furthermore, in Rivers state, only 8.6% of the total respondents adduced that accident and incident statistics are recorded daily, while majority (60%) of the respondents suggested that accident and incident statistics are recorded monthly in the area. Similar, situation exists in Lagos where the highest accident and incident statistics are recorded (60.8%) on monthly bases. In Cross rivers state, there seems to be more respondents (53.6%) in favour of the fact that accident and incident statistics are recorded on quarterly bases; same can be said for Ondo (54.9%) and Bayelsa (42.9%).

However, Table 8 reveals the respondents' perception of how proper implementation of marine safety procedures will reduce incidents along the waterways. In Anambra state 66.4% of the total respondents agreed that the Proper implementation of marine safety procedures will reduce incidents along the waterways, while 21.3% of the respondents

Table 7. Accident and incident statistics are recorded.

State	Daily	Weekly	Monthly	Quarterly	Total
Anambra	15	23	211	141	390
Percentage (%)	3.9	5.9	54.1	36.1	100
Rivers	34	16	233	112	395
Percentage (%)	8.6	4	60	28.4	100
Lagos	10	21	240	124	395
Percentage (%)	2.5	5.3	60.8	31.4	100
Cross rivers	8	21	151	209	390
Percentage (%)	2.1	5.4	38.7	53.6	100
Ondo	6	24	146	214	390
Percentage (%)	1.5	6.2	37.4	54.9	100
Bayelsa	43	74	107	168	392
Percentage (%)	11	18.9	27.2	42.9	100

Source: Authors fieldwork

Table 8: implementation of marine safety laws will improve marine Safety.

State	Agree	%	Disagree	%	Undecided	%	Total	%
Anambra	259	66.4	46	12.3	85	21.8	390	100
Rivers	295	74.7	31	7.8	69	17.5	395	100
Lagos	243	61.5	105	26.6	47	11.9	395	100
Cross rivers	232	59.5	35	9	123	31.5	390	100
Ondo	339	86.9	4	1	47	12.1	390	100
Bayelsa	346	88.3	21	5.3	25	6.4	392	100

Source: Authors fieldwork

disagree that the Proper implementation of marine safety procedures will reduce incidents along the waterways and 12.3% of respondents in Anambra state are undecided on the issue of how the proper implementation of marine safety procedures will reduce incidents along the waterways. The condition in Rivers state is not so different. In Rivers state, 74.7% of the total respondents agree that the proper implementation of marine safety procedures will reduce incidents along the waterways. As low as 17.5% of the total respondents in Rivers state disagree that the proper implementation of marine safety procedures will reduce incidents along the waterways, while only 7.8% of the respondents in Rivers state were undecided about the issue of the proper implementation of marine safety procedures will reduce incidents along the waterways. In Lagos state 61.5% agreed that the proper implementation of marine safety procedures will reduce incidents along

the waterways, 26.6% of the respondents disagreed. Nonetheless, only 11.9% of the total respondents are undecided. In Cross Rivers state, 59.5% of the total respondents agreed that the proper implementation of marine safety procedures will reduce incidents along the waterways, although 31.5% disagrees with the assertion, while 9% of the total respondents were undecided.

The analysis of variance statistical tool (ANOVA) was deployed to test the hypothesis that there is no significant variation in the spatial distribution of accident occurrence in the study area. Table 9 shows that the Snedecor's F value of 130.789 implies that the occurrence of accidents vary significantly in the study area at the 99.99% probability level.

In Table 9, the ANOVA model is significant at $p < 0.05\{130.8\}$. This implies that there is a statistically significant difference in maritime accidents and incidents across the study area. this finding is also in

Table 9. ANOVA Output on spatial variation in accident occurrence in the study area.

ACD					
	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
Between Groups	297.780	5	59.556	130.789	.000
Within Groups	2746.736	11875	.455		
Total	3044.517	11879			

Source: Authors fieldwork

Table 10. ANOVA Output on spatial variation in safety awareness in the study area.

ANOVA					
SA					
	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
Between Groups	31.095	5	6.219	4.373	.001
Within Groups	7367.339	11875	1.422		
Total	7398.434	11879			

Source: Authors fieldwork

Table 11: ANOVA Output on spatial variation in safety practices in the study area.

ANOVA					
SP					
	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
Between Groups	329.110	5	65.822	48.875	.000
Within Groups	6980.159	11875	1.347		
Total	7309.269	11879			

Source: Authors fieldwork

agreement with those of Oyadongha, (2014); Iheamnachor, (2014); and Akogun, 2014.

In Table 10, the spatial variation in safety awareness in the study is displayed. In the table, the ANOVA model is significant at $p<0.05$ (F=4.4). This indicates that there is a significant spatial variation in safety awareness levels across the study area. In Table 11, the ANOVA model is significant at $p<0.05$ (F=48.9). This signifies that safety practices vary significantly in the study area.

RECOMMENDATIONS

In conclusion the study examined the issues surrounding safety in maritime transport in the southern part of Nigeria and found out that, boat mishap, overloading and the flagrant disobedience

by boat operators to constituted laws, was among the major factors causing accidents in the maritime industry in Nigeria. Based on the findings of this study the following under listed are recommended for improving safety conditions on Nigeria's inland water ways:

• Use of standard and routinely maintained boats to prevent accidents and break downs off shore.
• Jetties should be properly constructed and equipped with certified personnel and safety equipment, offices, convenient, for safe landing and berthing of boats to enable safe embarking/disembarking of passengers and loading/offloading of goods and equipment.
• There should be program of training and retraining of Beach Masters, Quarter Masters, Deckhand and beach or jetty personnel.
• Beach masters, quarter masters, deckhands and other boat operators and passengers should be routinely tested for Drug and Alcohol abuse to avoid major unsafe behavior on waterways, leading to over loading and over speeding of the boat or vessel, hence causing accident.
• Relevant authorities should ensure maritime safety laws are implemented and adhered to.
• Sensitization and enlightenment campaign of water front dwellers on effects of unsafe operations of boat and ship operators is required.

REFERENCES

Aderemo AJ and Mogaji SA (2010). Rural transportation of public facilities in Nigeria: A case study of Edu Local Government Area of Kwara State. Journal of Human Ecology, 29(3): 171.

Akogun, D (2014). Why Boats Are Capsizing, People Dying on Lagos Waterways. National Mirror.

Celik M and Cebi S (2009). Analytical HFACS for investigating human errors in shipping accidents. Accident Analysis and Prevention, 41: 66–75.

Eliopoulou E, Papanikolaou A and Voulgarellis M (2016). Statistical analysis of ship accidents and review of safety level. Safety Science, 8(5): 282–292.

Ezenwaji EE (2010). Constraints on effective water transportation in some riverine communities of old Anambra Local Government Area, Anambra State.

Hanzu-Pazara R, Barsan E, Arsenie P, Chiotoriou L and Raicu G (2008). Reducing of maritime accidents caused by human factors using simulators in training process. Journal of Maritime Research, 5(1): 3-18.

Hashemi RR, Le Blanc LA, Rucks CT and Hearry A (1995). A neural network for transportation safety modelling, Expert Systems with Applications, 9(3): 247-256.

Iheamnachor D (2014, December 5). We lose engines, 10 colleagues to pirates monthly-Rivers Boat Operators. Vanguard newspaper. Retrieved from http://www.vanguardngr.com/2014/12/lose-engines-10-colleagues-pirates-monthly-rivers-boat-operators/# sthash.GqU46Lks.dpuf.

National Inland Waterways Authority (NIWA) (2017). Annual Reports.

Obed BC (2013). A critical assessment of the inland waterways operations and management of the development of Nigerian maritime industry. Greener Journal of Environmental Management and Public Safety, 2(2): 99.

Obeta MC (2014). The Characteristics of Inland Water Transport in Nigeria, in Journal of IOSR Journal of Humanities and Social Sciences, 19(3): 191 126.

Oyadongha S (2014). Piracy activities heighten in Niger Delta. Vanguard News Online (www.vanguardngr.com).

Phillips R (2000). Sleep, watch keeping and accidents: A content analysis of incident at sea reports, Transportation Research – Part F, 3: 229-240

Progoulaki M and Roe M (2011). Dealing with multicultural human resources in a socially responsible manner: a focus on the maritime industry, WMU J Marit Affairs, 10: 7–23

Theotokas I and Progoulaki M (2007). Cultural diversity, manning strategies and management practices in Greek-shipping. Maritime Policy and Management, 34(4): 383–403

Toffoli A, Lefevre JM, Bitner-Gregersen E and Monbaliu J (2005). Towards the identification of warning criteria: Analysis of a ship accident database, Applied Ocean Research, 27: 281–29

Tzannatos E (2010) Human element and accident in Greek shipping, The Journal of Navigation, 63(1): 119–127

Talley WK, Jin D and Kite-Powell H (2005). Determinants of crew injuries in vessel accidents. Maritime Policy and Management, 32(3): 263–278.

Victor FP (2014). The Role of the Maritime Industry and Vocational and Technical Education and Training in the Economic Development of Nigeria. IOSR Journal of Humanities and Social Science (IOSR-JHSS) 19(5): 45-50. Retrieved from

http://www.iosrjournals.org/iosr-jhss/papers/Vol19-issue5/Version-5/G019554550.pdf