



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

IMPACT OF SECURITY CHALLENGES ON PATRONAGE OF INLAND WATER TRANSPORTATION IN BAYELSA STATE, NIGERIA

DOI: 10.36108/wjss/ConfP.2024.020

Kenibolayefa M. Owota* ^{a,b} and Andrew A. Obafemi, PhD ^a

^a Department of Geography and Environmental Management, University of Port Harcourt, Port Harcourt, Nigeria

^b Department of Geography and Environmental Management, Niger Delta University, Bayelsa, Nigeria.

* Correspondence author Email: mkowota@gmail.com

Abstract

The purpose of this study is to examine the impact of security challenges on patronage of inland water transportation in Bayelsa State. The study adopted a cross-sectional design and the study's target group includes boat operators and resident of Bayelsa state who have at least once use inland water transportation. Self-administered questionnaire and field observation were used to obtain data from randomly selected sample of 400 inland water transport users in Bayelsa state. The study adopted the Routine Activity Theory as its theoretical guide. Mann-Whitney U-test was used to explain the difference in the level of inland water transport patronage across different seasons in Bayelsa state. Findings showed that piracy attack/robberies (75%), kidnapping (65%), and Hostage taking (45%) as the major security challenges respondents experience using inland water transport. Also, majority of the respondents 30% use inland water transport at least once a week and about 37% of the respondents observed that inland water transportation is unsafe. The results also showed that 52% prefer to use inland water transport during the dry season. Further analysis revealed that there is no significant difference between the level of patronage of inland water transport in rainy season and in dry season, ($Z = -0.75$; $p > 0.05$). Enhance security measures such as increase policing along water routes, regular patrols, and installation of surveillance systems to ensure the safety of passengers and operators. It is also recommended that there is need to improvement seasonal adaption strategies and invest in infrastructural development for inland water transportation especially during the rainy season.

Keywords: Security challenges, Patronage, Inland Water transportation, Seasonal Variation.

Introduction

Transportation stands as a fundamental necessity in modern societies, often described as the vital channels through which national economies operate (Ogundare, 2020). It facilitates societal interactions, acts as a crucial aspect of distribution networks, and enables the movement of people, goods, and various items between locations (Ibama et al., 2015). Transportation modes, categorized into land, water, and air, serve as the essential components of transport systems, each tailored to meet the distinct demands of both freight and passenger

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

traffic (Rodrigue, 2020). These modes possess unique characteristics and requirements, contributing significantly to the functioning of economies worldwide.

Water transportation, among various modes, has been utilized by humans since ancient times for moving goods and people (Aper & Kogi, 2018) and inland waterways transport is considered one of the oldest and environmentally sustainable modes, that facilitates the movement of passengers and cargo (Emmanuel et al., 2018). Inland water transportation is particularly advantageous in areas with watercourses, providing safe and affordable transport solutions.

Nigeria, being a coastal country, boasts an extensive network of inland navigable waters spanning over 10,000 kilometres, comprising rivers, lakes, lagoons, creeks, and intra-coastal waters (Aderemo & Mogaji, 2010). Inland waterways transportation serves as an alternative mode of transport within Bayelsa state and Nigeria at large (Ibok & Otop, 2021), playing a pivotal role in the nations socioeconomic. It facilitates the exchange of goods and services, fosters human interaction, and enhances inland communication. These functions are vital for both economic and social progress, particularly benefiting people residing in secluded communities and remote riverine areas (Aper & Kogi, 2018).

However, despite its resilience in riverine regions, inland water transportation encounters numerous challenges, with security issues being particularly prominent (Ibok & Otop, 2021). Security challenges such as piracy/sea robbery and kidnapping frequently occur on inland water routes, significantly impacting water transportation negatively (Odeh et al., 2020). In the Niger Delta region, water travel has significantly declined due to heightened insecurity in the area's waters (Emenike et al., 2018). According to Odeh et al., (2020) security challenges along inland waterways have affected the level of patronage of inland water transportation (Odeh et al., 2020). Despite the National Inland Waterways Authority (NIWA) being tasked with ensuring safety and security on Nigeria's extensive waterways (Darda'u, 2022), the Niger Delta region, with abundant navigable waterways, faces unprecedented insecurity. However, this study attempt to assess security challenges and seasonal variations in patronage of inland water transportation route in Bayelsa State. The specific objective is to examine the seasonal variations of patronage along inland water transportation route in Bayelsa State. The study

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

further hypothesized that the prevalent of security challenges will significantly predict the difference in the level of water transport patronage across seasons in Bayelsa State.

Theoretical framework

The theoretical foundation for this study was the Routine Activity Theory (RAT), which was first proposed in 1979 by Cohen and Felson in their paper "Social Change and Crime Rate Trends." According to Cohen and Felson's "Routine Activity Approach," crime results from the interaction of three essential components: first, there needs to be a potential offender. Second, there needs to be a viable target in addition to a possible offender. Third in the event that guardians are unable, unwilling, or non-existent (Cohen & Felson, 2015). The routine activity strategy, according to Cullen & Agnew (2006), is predicated on two rather straightforward concepts. In the absence of capable guardians, motivated offenders must first meet with appropriate targets for crime to occur. Second, they mentioned that their daily activities—including those related to job, family, play, and consumption—have an impact on the possibility that this scenario will arise. For instance, if we travel by water more often inside our country, there's a greater chance that, in the absence of marine police and other security forces, we will encounter pirates.

The presence of the third element may prevent a crime from occurring, according to the RAT. Even though they are driven to commit a crime, many potential offenders would be reluctant to act criminally in the company of a police officer. Since it enables us to explain why crime occurs in the inland waterways of Bayelsa State, the routine activity hypothesis is pertinent to our study on security issues and seasonal fluctuation in inland water transport patronage. The first group of potential criminals are robbers and pirates, who are driven to carry out criminal activity along the inland waterway in Bayelsa state. Those who operate speedboats and passengers on the waterways are good targets. These targets don't necessarily have strong defences. The countless labyrinths of creeks in the state of Bayelsa offer hiding places for criminals who typically set up ambush for their victims in poorly guarded waterways. These targets are left vulnerable to constant attacks by these determined criminals in the lack of protection. As a result, in Bayelsa state, Nigeria, the routine activity hypothesis provides a succinct explanation of how security concerns affect the seasonal fluctuations in inland water transportation usage.

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

Material and Method

The study was carried out in Bayelsa state. Bayelsa is a state in Southern Nigeria in the core Niger Delta region, between Delta State and Rivers State and the capital is Yenagoa (Berezi et al., 2019). Bayelsa State is geographically located within latitude $4^{\circ}15''\text{N}$ - $5^{\circ}23''\text{N}$ of the Equator and longitude $05^{\circ}22''$ - $06^{\circ}45''$ East of the Greenwich meridian (Berezi et al., 2019). It shares boundaries with Delta State on the North, Rivers State on the East and the Atlantic Ocean on the West and South (Figure 1). Bayelsa State is blessed with an exceptional aligned marine surrounding ideal for transportation of goods, services, and humans with other marine activities (Odeh et al., 2020).

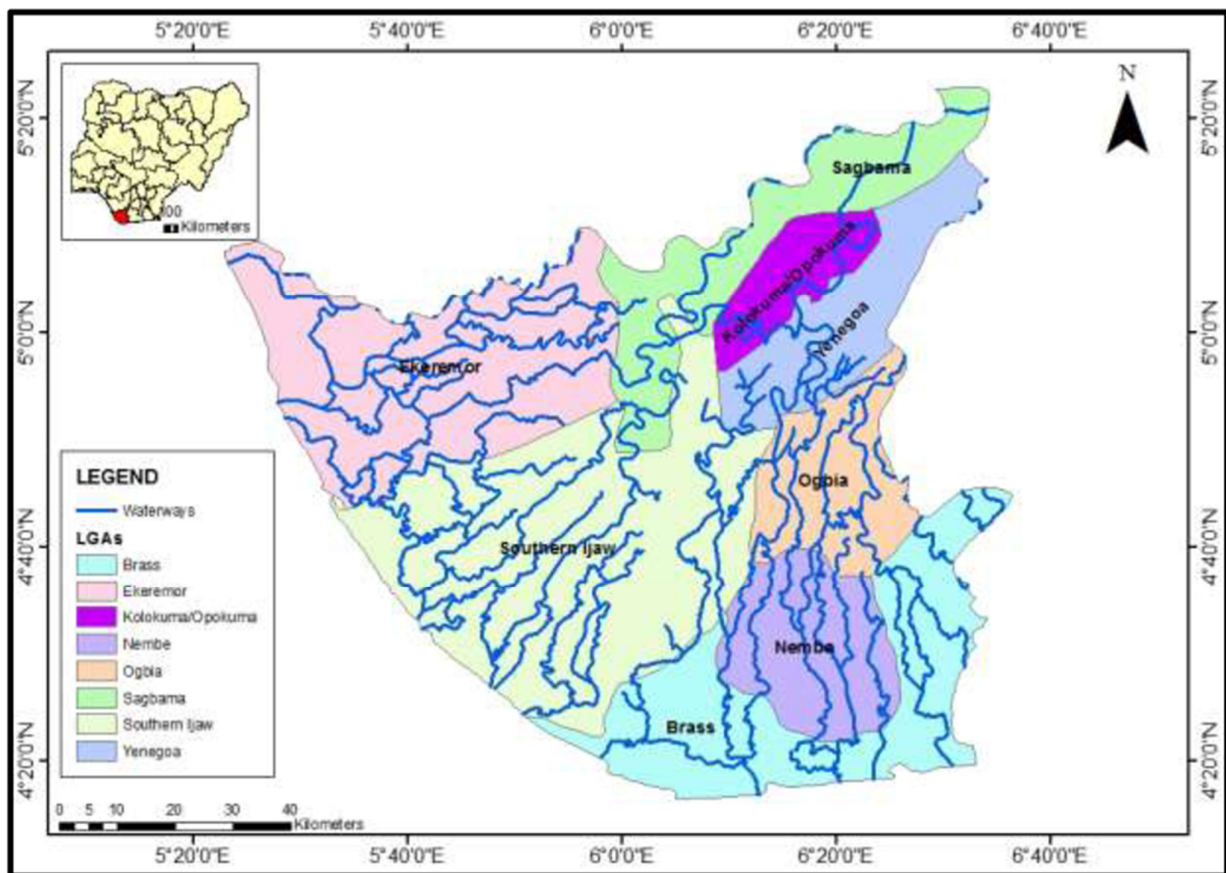


Figure 1: Bayelsa State the study area.

Source: (Odeh et al., 2020)

A society's ability to build its transport infrastructure is crucial. Any regional economy depends on transport use to function. The need for travel inside and between different modes

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



**Proceedings of the 2nd (Hybrid) International Conference, Faculty
of Social Sciences, Niger Delta University, Held on March 13, 2024**

of transportation in order to maintain connectedness, however, is a crucial outcome of this intricate relationship. This region's physical growth is being matched by a rise in transit demand. By road, very few communities are reachable. Boats are the primary means of intercommunal transit, and they require facilities like jetty and water motors (Ferry).

Because the survey is only done once and is not repeated, the study used a cross-sectional research design, which allowed the researcher to make conclusions regarding the correlations between independent and dependent variables (Behnke et al., 2006, p. 70). The three senatorial districts of Bayelsa State were included in the study. The estimated 2,621,544 residents of Bayelsa State were used to determine the sample size (Brinkhoff, 2022). Everyone who has used inland water transport in the state of Bayelsa at least once is included in the study's sample size. The Taro Yamane (1973) formula for sample size determination was used to determine the actual size of the study, yielding a sample size of 400. The formula is as follows:

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

Where

n = sample size

e = Level of significance (5%)

N = Population size

400 respondents were drawn from the Bayelsa State total population.

Simple random sampling technique was used to select four hundred (400) persons who have at least once use inland water transport in Bayelsa State. The instrument adopted in eliciting data for this study is the questionnaire. Data were collected through a well- structured questionnaire. This study adopts quantitative method of data analysis using statistical package for social sciences (SPSS v. 22). Data collected were analysed using both descriptive (tables, graphs, and frequencies) and inferential statistics (nonparametric Mann- Whitney U test) was used. Variables needed to answer the set objective, are patronage of inland water which is the dependent variable and seasonal usage of inland water transportation route which is the **Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century***



**Proceedings of the 2nd (Hybrid) International Conference, Faculty
of Social Sciences, Niger Delta University, Held on March 13, 2024**

independent variables. Using (SPSS v. 22) inland water transport patronage variable “how often do you use water transport (a) Every day (b) at least once a week (c) At least once a month (d) Occasionally,” were decode and categorised to High and Low, where High represents (a) and (b) and Low represent (c) and (d).

Findings and Discussion

Socio-demographic characteristics of respondents

Table 1: Distribution of respondents by Socio-demographic variables

Socio-demographic characteristics		Frequency	Percentage
Age (Years)	18 -29	104	26.0
	30 -49	177	44.3
	50 and above	119	29.8
Gender	Male	245	61.3
	Female	115	38.8
Marital status	Married	203	50.8
	Previously married	55	13.8
	Never Married	142	35.5
Level of Education	Primary School	34	8.5
	Secondary School	167	41.8
	University/Polytechnic	173	43.8
	No formal Education	26	6.5
Occupation	Civil/public servant	115	28.8
	Privately employed	95	23.8
	Unemployed	92	23.0
	Apprenticeship	8	2.0
	Student	90	22.5
Income /Month	Below N18,000	80	20.0
	N18,001- N49,999	103	25.8
	N50,000 – N79,999	111	27.8
	N80,000 – N109,999	69	17.3
	Above N110,000	39	9.3

N = 400

Table 1 presents the age distribution of respondents and their corresponding frequencies and percentages. The biggest grouping of the respondents that participated in the study were 30-49 years (44.3%), while the 18-29 years (26.0%) and 50 years and above (29.8%) participated

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

respectively. This implies that majority of the respondents are within their active youthful age. A total number of 400 useable responses were establish across the two genders of respondent's assemblages. The highest number of gender of respondents that participated in the study is predominantly male with 61.3% compared to 38.8% for female respondents. This indicates that the distribution of the population of respondents is skews slightly towards males comprising a larger portion of respondents compared to females which is understandable. This in line with studies conducted by (Abiodun, 2021; Ademiluyi et al., 2016; Adongoi et al., 2017).

The marital status for 400 responses were determined across the data collected is indicated in Table 1. The majority of the respondents that participated in the study are married (50%) while others that participated in the study have varying number of respondents which are previously married (13.8%), and never married (35.5%). This shown that married respondents actively participated in the study. This is in line with the findings by (Abiodun, 2021; Ademiluyi et al., 2016; Adongoi et al., 2017)

Most of the respondents that participated in the study are university/ polytechnic degree/ HND holders and secondary school certificate holders with 43.8 % and 41.8 % respectively, while primary school certificate holder 8.5% and respondent with no formal education 6.5%. This shown that university/polytechnic respondents actively participated. 400 responses were established transversely on the occupation of the respondent. The data showing the highest number of respondents that participated in the study are mostly civil/public servant with 28.8%, follow by privately employed with 23.8%, unemployed (23.0%), student (22.5%), and apprenticeship (2%) respectively. This indicated that civil/public servants, privately employed, unemployed and students actively took park in the survey.

The income level per month of the respondents were determined across the data collected as indicted in Table 1. These results provide insights into the income distribution of the respondents, indicating that the majority fall within the N18,001 to N79,999 income range. There is a smaller proportion of respondents with higher incomes above N110,000, and a smaller proportion with lower incomes below N18,000.

Table 2: Inland water transport usage pattern

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



**Proceedings of the 2nd (Hybrid) International Conference, Faculty
of Social Sciences, Niger Delta University, Held on March 13, 2024**

How often do you use water transport	Frequency	Percentage
Every Day	94	23.5
At least once a week	118	29.5
At least once a month	84	21.0
Occasionally	104	26.0
Total	400	100

Table 2 shows that, 23.5% of respondents use water transport every day, while 29.5% use it at least once a week. About 21.0% utilize water transport at least once a month, and 26.0% use it occasionally. These results suggest that a significant portion of the surveyed population relies on water transport, with a notable portion using it frequently. This highlights the importance of water transport as a means of transportation in Bayelsa State. Also, the data indicates a diverse range of usage frequencies, demonstrating the varying reliance on water transport among the respondents.

Table 3: Purposes for Using Inland Water Transport

What is your usual purpose of using inland water transport	Frequency	Percentage
Workplace	83	20.8
Local Market	128	32.0
Educational Purposes	26	6.5
Family & Social Purposes	131	32.8
To other modes of transport	32	8.0
Total	400	100

Table 3 shows the usual purposes for using inland water transport, shedding light on the frequency and corresponding percentages of each purpose among the respondents. Out of the total 400 participants, 20.8% utilize inland water transport for commuting to their work, emphasizing its significance as a means of transportation for daily work-related journeys. Around 32.0% of respondents use inland water transport to access local markets, indicating its convenience for transporting goods and reaching commercial areas. For educational purposes, 6.5% of respondents rely on inland water transport, potentially highlighting its relevance in connecting educational institutions located near waterways. Family and social

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



**Proceedings of the 2nd (Hybrid) International Conference, Faculty
of Social Sciences, Niger Delta University, Held on March 13, 2024**

purposes account for a significant portion, with 32.8% of respondents utilizing inland water transport for these activities, reflecting its role in leisure, social gatherings, and visiting relatives. Additionally, 8.0% of respondents use inland water transport as a mode of transit to connect with other transportation modes, underscoring its intermodal connectivity. These findings highlight the diverse and multi-faceted roles of inland water transport in fulfilling various needs of individuals across work, commerce, education, social engagements, and intermodal connections.

Table 4. Perception of Safety in Inland Water Transportation Routes

How safe is inland water transportation route	Frequency	Percentage
Safe	160	40
Unsafe	240	60
Total	400	100

Table 4 show that 40% of the respondent perceived inland water transportation routes as 'Safe,' while the remaining 60% regarded them as 'Unsafe.'

Level of inland water transport patronage

The level of inland water transport patronage variable was recoded from Table 2. where everyday use of inland water transport and at least once a week were coded as “high level of inland water transport patronage” while, at least once a month and occasionally usage of inland water transport were coded to be “Low level of inland water transport patronage (see Figure 2).



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

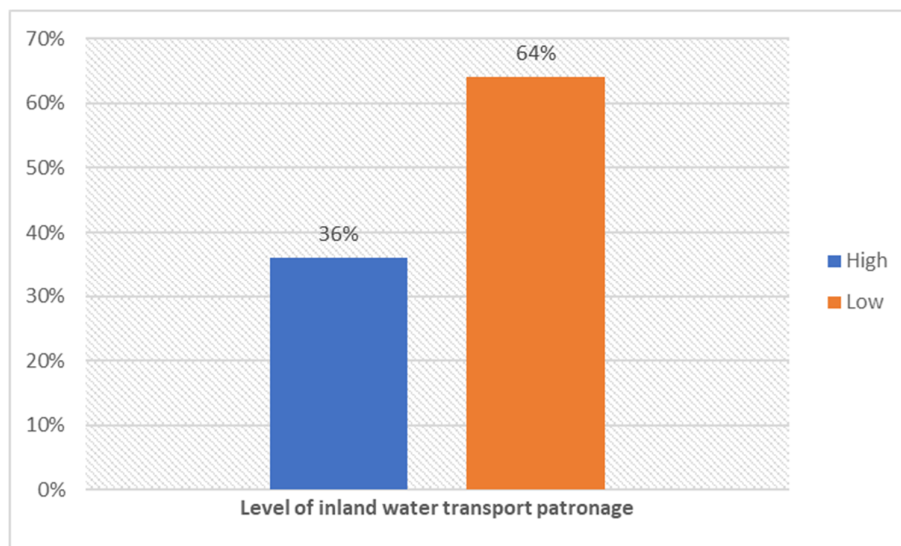


Figure 2: level of inland water transportation patronage

Figure 2 shows the level of inland water patronage, categorizing it into high and low. 36% of the respondents exhibit a high level of engagement with inland water transportation, indicating substantial utilization. In contrast, the majority, accounting 64%, display a low level of patronage, suggesting limited usage. This result revealed that a larger portion of the respondents has a relatively lower engagement with inland water transportation while a smaller percentage actively utilizes and benefits from inland water transportation.

Seasonal Patterns and Preferences of inland water transportation usage

Table 5: Seasonal Preferences of inland water Transport Usage

During which season do you use inland water transport the most	Frequency	Percentage
Rainy Season	192	48.0
Dry season	208	52.0
Total	400	100

Source: Authors' Fieldwork (2023)

Table 5. shows out of the total 400 respondents, 48.0% use inland water transport the most during the rainy season, while 52.0% prefer the dry season for its usage. This data provides valuable insights into the seasonal preferences of individuals when it comes to utilizing inland

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

water transport. It indicates that almost half of the respondent favour using it during the rainy season, possibly due to the availability of waterways and increased navigability. Conversely, a slightly higher percentage of respondents, 52.0%, opt for inland water transport during the dry season, which might be influenced by factors such as calmer waters and reduced risks associated with inclement weather.

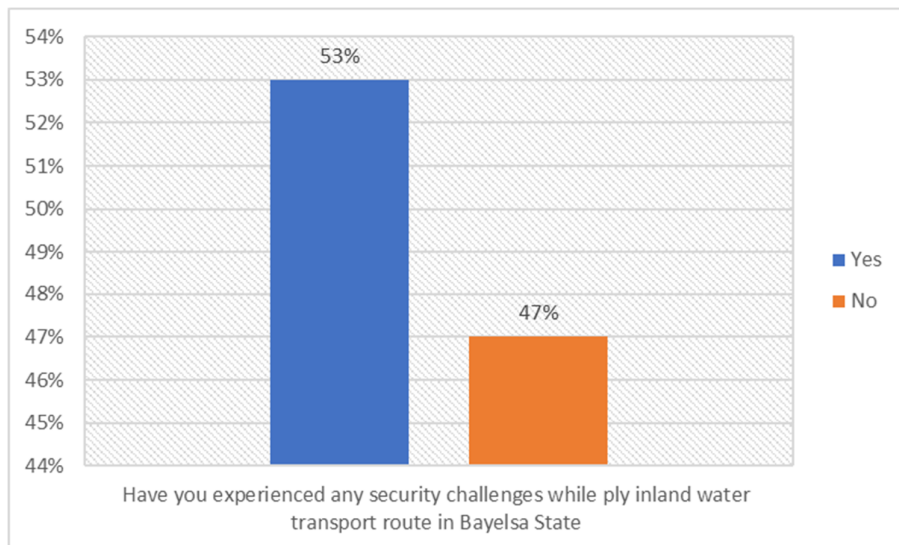


Figure 3: Percentage distribution of security challenges experienced.

Figure 3. displayed the distribution of security challenges experienced among respondents while plying inland water transport route in Bayelsa state. The figure revealed that 53% reported that they have experienced security challenges, while 47% indicated they had not encountered such issues during their journeys. The aforesaid findings have the consequence that a sizable percentage (53%) of people travelling via inland waterways in Bayelsa State had experienced security issues. This raises the possibility of problems like doubts about safety, criminal activity, or other dangers that can influence how people view and use these water transit routes generally. The relatively high percentage of respondents who reported having security issues might influence how frequently and widely people use the inland water transport system, possibly causing a decline in traveller confidence and necessitating the implementation of better security measures to ensure the safety and wellbeing of those who use these routes.

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



**Proceedings of the 2nd (Hybrid) International Conference, Faculty
of Social Sciences, Niger Delta University, Held on March 13, 2024**

Security challenges

Regarding, the type of security challenges experience or heard reported by people while using inland water transport, the question “Which of these security challenges have you experience or heard reported while using inland water transport in your area?” were asked to get respondents perceptions of the type of security challenges they have experience or heard reported while using inland water transport route in Bayelsa State.

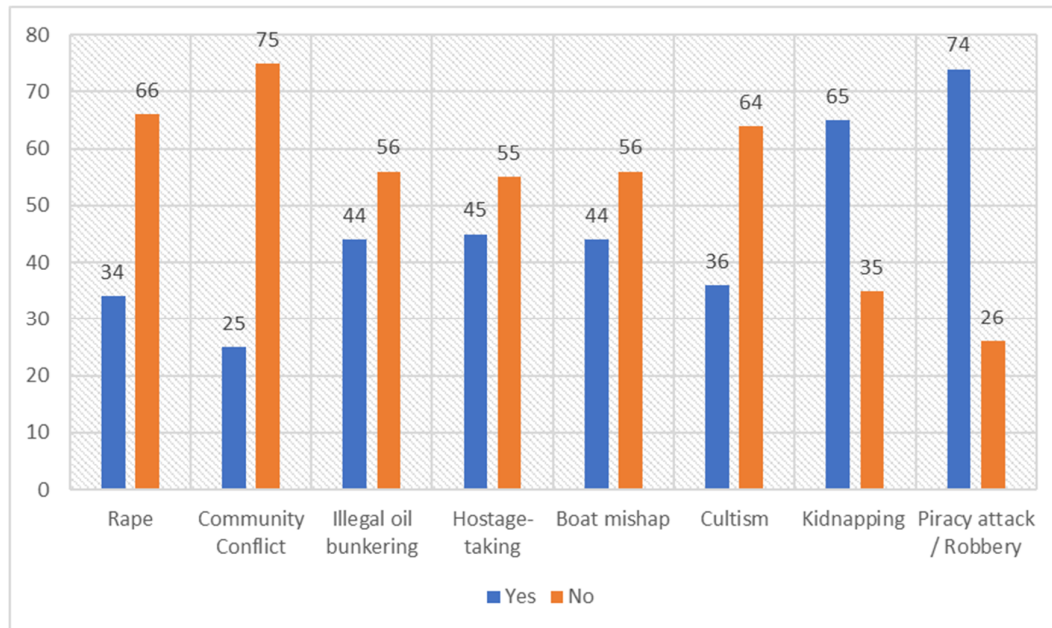


Figure 4: Security challenges variables

Figure 4 reveals important insights into the respondents' perceptions. Firstly, rape emerges as a recognized security challenge, with 34% of respondents acknowledging its occurrence. Although a significant proportion recognizes this issue, it is notable that a majority (66%) do not perceive it as a significant challenge, indicating a potential disparity in awareness.

Community conflict is another identified security challenge, with 25% of respondents considering it a concern. While this suggests some recognition of the risks associated with conflicts within communities, a majority (75%) does not perceive it as a significant issue.

Illegal oil bunkering is identified as a security challenge by 44% of respondents, highlighting concerns related to the illegal extraction and smuggling of oil. Similarly, hostage-taking and

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

boat mishaps are recognized as security challenges by 45% and 44% of respondents, respectively. These findings underline the potential risks faced by individuals involved in water transport and emphasize the need for measures to mitigate such challenges.

Cultism emerges as a recognized security challenge by 36% of respondents, indicating the perceived influence of cult groups on the safety of inland water transportation. Kidnapping, recognized by 65% of respondents, highlights the perceived risk of individuals being abducted during water transport. The high recognition of piracy attacks and robberies as security challenges, with 74% of respondents acknowledging this threat. This finding confirms to the study by Essien & Adongoi (2015) which say pirate and robberies were identify as security challenge that affect sea business operations. Also, another study by Odeh et al., (2022) confirm to the present study as they identify rape, drug trafficking, pipeline vandalism as security challenges along inland water transportation route.

Security Challenges experience and seasonal preferences for inland water transport usage in Bayelsa state

Table 6. Cross-tabulation of security challenges experienced and season variation on inland water transport usage.

		Have you experienced any security challenges while ply inland water transport route in Bayelsa State		X ²	p-Value	Remarks
		Yes	No			
During which season do you use inland water transport the most	Rainy Season	25%	23%	0.003	0.955	Not Significant
	Dry Season	28%	24%			

*Significant at 0.05 level of significance

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

Contrary to expectations, the analysis did not uncover statistically significant connections between preferred seasons for inland water transport usage and the prevalence of security challenges. Although a slightly greater proportion of respondents facing challenges favoured the rainy season (25%), compared to those without challenges (23%), and vice versa for the dry season (28% versus 24%), the relationship lacked statistical significance ($X^2 = 0.003$, $P = .955$) see Table 6.

Test of hypothesis

It was hypothesized that there will be difference in the level of water transport patronage across the seasons due to security challenges faced by the populace. The Null hypothesis (H_0) state that: there is no significant difference in the level of water transport patronage across different seasons in Bayelsa State. Therefore, in testing the hypothesis, Mann Whitney U-test was used; patronage variable was extracted from Figure 2 and was used to evaluate whether patronage of inland water transport differed by seasons, extracted from Table 2.

Table 7: Mann-Whitney U Test for Inland Water Transport Patronage

	During which season do you use inland water transport the most	N	Mean Rank	Sum of Ranks	Z	P
Level of inland water transport patronage	Rainy season	192	205.25	39216.00	-0.75	0.45
	Dry season	208	197.04	40984.00		

As showed in Table 7 above the result indicated that there is no significant difference between the level of patronage of inland water transport in rainy season and in dry season, ($Z = -0.75$; $p > 0.05$), so therefore, we do not have sufficient evidence to reject the null hypothesis which states that, there is no significant difference in the level of water transport patronage across different seasons in Bayelsa State. This suggests that there is no statistically significant difference in the level of water transport patronage between the rainy and dry seasons.

Conclusion and Recommendations

This study examined security challenges and seasonal variations of patronage along inland water transportation route in Bayelsa State. The result of this study established that security

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

challenges such as rape, illegal oil bunkering, hostage taking, cultism, kidnapping, community conflict, and piracy attack/robbery are prevalent along inland water transportation route in Bayelsa State. also, the level of inland water transportation patronage is low, and the inland transportation route are unsafe. More people opt for dry season than rainy season when it comes to seasonal preferences in using inland water transportation. Contrary to expectation, statistically seasonal variations do not significantly affect patronage. Based on the findings, the study makes the following recommendations: Recommends that there should be collaboration with all law enforcement agencies to intensify patrols, surveillance and also the installation of surveillance systems along the inland water transportation routes, targeting areas prone to security challenges. Foster community engagement initiatives to involve local communities in the security and safety efforts, encouraging them to take an active role in safeguarding the inland water transportation routes. It is also recommended that there is need to improve seasonal adaption strategies by investing in infrastructural development for inland water transportation especially during the rainy season. Finally, the study recommends that government should regularly review, and update policies related to inland water transportation, by taking into consideration the evolving security dynamics.

References

- Abiodun, S. (2021). Social and Economic Effect of Robbery (Piracy) of Boat Passengers and Their Belongings on Lagos Rivers and Creeks. *Journal Homepage: Www. Ijrpr. Com ISSN*, 2582, 7421.
- Ademiluyi, I. A., Fashola, O. K., & Afolabi, O. J. (2016). Analysis Of Intra – City Water Transportation In Lagos State. *International Journal of Innovative Research and Advanced Studies (IJIRAS)*, 3(8), 246–254.
- Aderemo, A. J., & Mogaji, S. A. (2010). Rural Transportation of Public Facilities in Nigeria: A Case Study of Edu Local Government Area of Kwara State. *Journal of Human Ecology*, 29, 171. <https://doi.org/10.1080/09709274.2010.11906260>
- Adongoi, T., Brown, A., & Udensi, L. (2017). The Impact of Sea Robbery on Artisanal Fishing in Rural Settlements in Niger Delta Region of Nigeria. *International Journal of Innovation and Sustainability*, 1, 32–43.
- Aper, J. A., & Kogi, H. A. (2018). Pattern of Inland Water Transport in Lokoja, Kogi State of Nigeria. *IJASSH*.

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

- Berezi, O. K., Obafemi, A. A., & Nwankwoala, H. O. (2019). Flood vulnerability assessment of communities in the flood prone areas of Bayelsa State, Nigeria. *International Journal of Geology and Earth Sciences*, 5(3), 19–37.
- Darda'u, J. (2022). NIWA, NAVY TO TACKLE INSECURITY ON WATERWAYS. *Nigerian Waterways*, 34, 2.
- Emenike, G. C., Amamilo, A. C., & Ajayi, A. O. (2018). Assessment of Vessel Traffic and Customers Patronage at the Rivers Seaport, Port Harcourt, Rivers State, Nigeria. *Nature and Science*, 16(11), 22–29.
- Emmanuel, O. A., Ifabiyi, P. I., & Chijioke, A. U. (2018). Opportunities and challenges of inland waterways transport in the southwest coastal belt of Nigeria. *Bhumi, The Planning Research Journal*, 6(1).
- Essien, B. S., & Adongoi, T. (2015). Sea piracy and security challenges of maritime business operation in Bayelsa state, Nigeria: An empirical study. *International Journal of Humanities and Social Sciences*, 5(2), 213–221.
- Ibama, B., Wocha, C., & Dike, E. C. (2015). Development of waterways for effective transportation system and recreation enhancement in selected navigable creeks and waterways in rivers state. *International Journal of Scientific & Engineering Research*, 6(9), 11.
- Ibok, A. N., & Otop, O. (2021). Operational Challenges Hindering Passenger Patronage along the Calabar-Oron Corridor, Nigeria. *International Journal of Innovative Science and Research Technology*, 6(6), 4.
- Odeh, A., Ogbuji, E. C., & Emenike, G. C. (2020). Analysis of Security Challenges along Commercial Water Routes of Bayelsa State, Nigeria. *International Journal of Advances in Scientific Research and Engineering (IJASRE)*, 6(3), 205–216. <https://doi.org/10.31695/IJASRE.2020.33775>
- Odele, M., Idris, N. M., Babalola, A., & Modibbo, M. (2022). Climate change impact and adaptation strategies of farmers and fishermen in Bayelsa State, Nigeria. *ATBU Journal of Environmental Technology*, 15(2), 19–38.
- Ogundare, B. A. (2020). Socio-Economic Importance of Bus Rapid Transit: A Panacea to Sustainable Transport Development in Nigeria. *International Journal of Research in Geography (IJRG)*, 6(1), 29–41.
- Rodrigue, J. P. (2020). *The Geography of Transport Systems* (Fifth Edition). Routledge.

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*



Proceedings of the 2nd (Hybrid) International Conference, Faculty of Social Sciences, Niger Delta University, Held on March 13, 2024

Authors profiles

Mr. Kenibolayefa Michael Owota is a Lecturer in the Department of Geography and Environmental Management, Niger Delta University, Nigeria. He has a Masters' Degree (M.Sc.) and Bachelor of Science (B.Sc.) from the Niger Delta University. Currently, a PhD Candidate at the University of Port Harcourt, Nigeria. His areas of interest spread around mobility, migration, transportation, health geography among others. He can be reached via email at kenibolayefa_owota@uniport.edu.ng or mkowota@ndu.edu.ng

Professor Andrew Adesola Obafemi is a Lecturer in the Department of Geography and Environmental Management, University of Port Harcourt, Nigeria. He obtained a Bachelor of Science Degree in Geography and Environmental Management from the University of Ilorin and later a Master of Science and a Doctorate Degrees in Geography and Environmental Management both from the University of Port Harcourt, Nigeria. He has attended several international/local conferences, workshops, and training. His area of specialization is Geography and Environmental Management. He can be reached via email at andrew.obafemi@uniport.edu.ng or aandyfemi@gmail.com

Theme: *African Solutions to Emerging Challenges: Building Viable Democratic, Economic, Information and Sustainable Systems in the 21st Century*