

INVESTIGATING THE IMPACTS OF INLAND WATERWAYS TRANSPORTATION ON ECONOMIC DEVELOPMENT OF BONNY ISLAND RIVERS STATE NIGERIA

¹Matthew Oghale Osah, ²Chinyeaka Nwokodi Nwolozi, ³Elias Eleyi, ⁴Lawrence O.F. Bereiweriso, ⁵Ebere Nwabueze

^{1,2,3,4,5}*Department of Maritime Science, Faculty of Science, Rivers State University, Port Harcourt, Nigeria*

ABSTRACT

This study investigates the impacts of inland waterways transportation on economic development of Bonny Island in Rivers State. Two research questions and two hypotheses were postulated in the study. The descriptive survey design was used. The population for the study was 470 passengers/traders in maritime support commerce and 196 boat drivers that travel through the Bonny-Bodo and Bonny-Port Harcourt routes as respondents. The total respondents were 666. Tuckman's formula for proportional stratified random sampling technique was used to draw a sample size of 333. The researcher designed questionnaire as the instrument for data collection. The Instrument was validated by three experts. Reliability coefficient of 0.62(employment), and 0.66 (trade/commerce) were analyzed using cronbach alpha. Mean was used to answer the research questions while the hypotheses were tested using Z-test. Findings revealed that inland waterways transportation in Bonny Island has significant impacts on employment generation as well as on trade and commerce. The researchers recommend that the State and Local Governments should put up an enabling maritime business environment to support inland waterways transportation in Bonny Island.

KEYWORDS: Inland-waterways; Transportation; Economic-development, Bonny Island

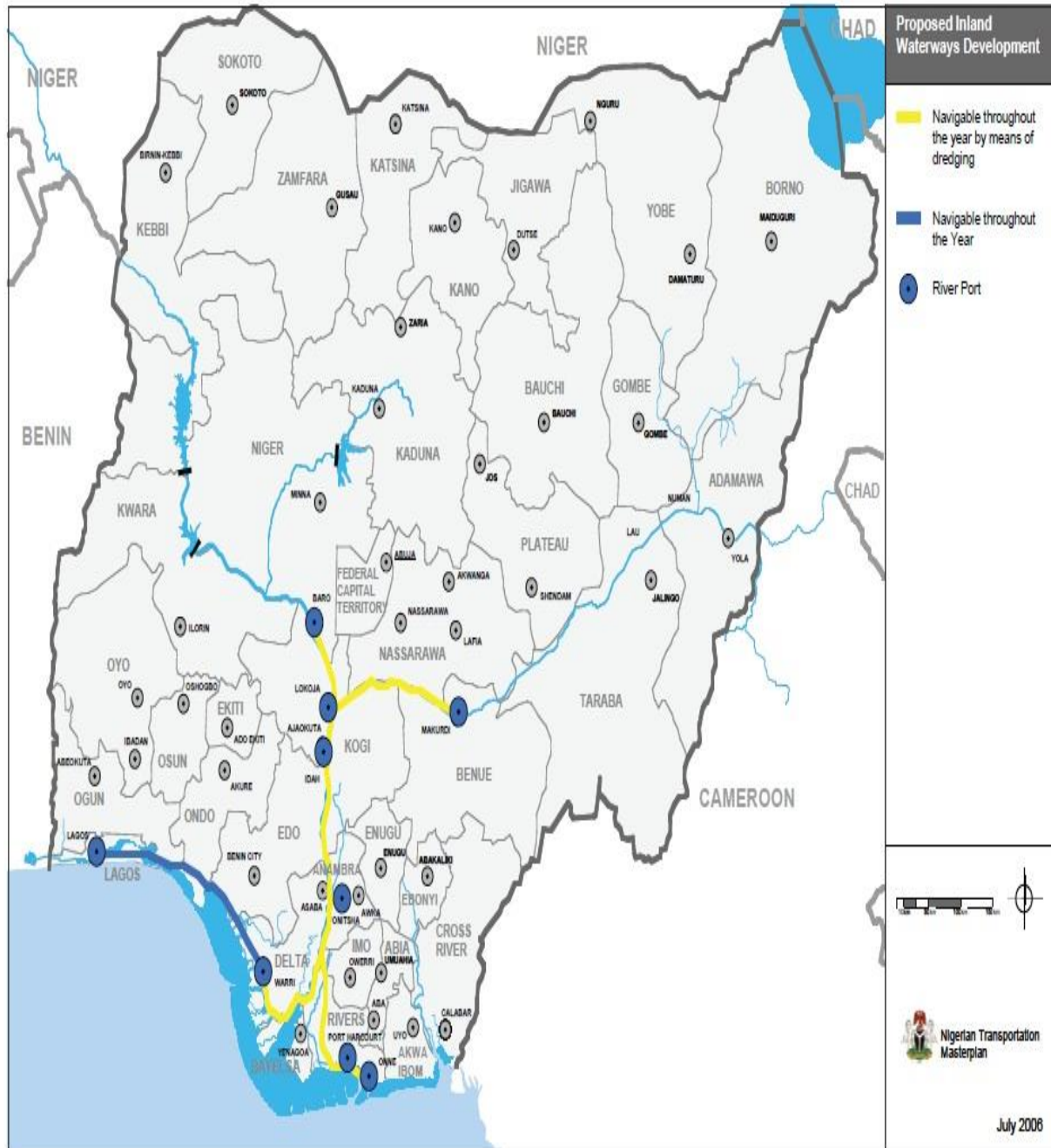
1. INTRODUCTION

Nigeria is naturally endowed with large body of inland waterways spreading over 10,000 kilometres which actually linked about 28 states out of the 36 states and the second lengthiest waterways in Africa (National Inland Waterways Authority 2021). Over 3,000 kilometres of the 10,000 kilometres of inland waterways in Nigeria are navigable seasonally (National Inland Waterways Authority 2021), especially during the wet season when the water volume and tide is high to maintain the boat buoyance for easy navigation. This figure represents only 30% utilization of the waterways in Nigeria and 70% unutilized due to undeveloped inland waterways as a means of transportation. Nigeria indeed is blessed with dense network of rivers, streams, creeks and coastal lagoons which can provide huge potentials for development of efficient inland water transport and Nigeria can also link five of its neighbouring countries—Benin Republic (Port Novo), Equatorial Guinea, Cameroon, Chad and Niger Republic by water (National Inland Waterways Authority 2021).

The sources of Nigeria Inland Waterways are the river Niger through the west and Benue through the north, which are the two main rivers in Nigeria that meet each other at Lokoja and flow together down to the south where the tributaries constitute the major channels for inland waterways. The longest river is the Niger River and its tributary, but the Benue River is the most used, especially by larger powered boats for commerce in the Niger Delta and along the coast from Lagos Lagoon to Cross Rivers. The major tributaries include but not limited to, Port-novo-Badagry waterways, Lekki and Lagos lagoons, Ogun-Ondo waterways, Escravos channel, Bonny- Port Harcourt waterways, Lake Chad and other numerous creeks in the Niger Delta which has been underutilized for inland water transportation.

The inland waterways have served as the oldest means of transporting goods and people from island city to another and/or from upland city to inland city across waters (Fellinda, 2006). This attribute makes it the most economical, energy efficient and environmental friendly means of transporting all types of cargoes and passengers from place to place across water channels. It facilitates commerce, recreation, tourism, wealth creation, alleviation of poverty, and job creation for youth within such localities (Ojile, 2006).

Fig1 Map of Nigeria showing waterways



Source: NIWA, 2006

The navigable water channels in Nigeria waterways include the following:

- The River Niger from the Nigerian/Niger/Benin border, through the Nun and Forcados distributaries to the Atlantic Ocean.
- The River Benue from the Nigerian/Cameroun border to its confluence with River Niger at Lokoja.
- The Cross River from the Nigerian/Cameroun border to the Atlantic Ocean, and all its distributaries.
- Rivers Sokoto. Kaduna. Geriny. Gongola. Taraba. Donga. Katsina-Ala. Anambra. Ogun. Oluwa. Osse, Benin, Imo. Kwa Ibo.

- The Intra-coastal route from Badagry along the Badagry Creek to Lagos through Lagos Lagoon to Epe, Lekki Lagoon to Iwopin along Omu Creek, Talifa Kivei to Atijere, Akata. Aboto. Oluwa River to Okitipupa and onto Gbekebo. Arobo. Ofunama. Benin Creek to Warri. Also the canal running from Araromi through Aiyetoro. Imelumo to Benin River and from Aiyetoro through Mahin Lagoon to Igbokoda.
- The waterway from Warri along the Forcados River, through Frukana, Siam. Bomadi. Angalabiri. Patani. Torofani down River Nun to Agberi, Kiama. Sabagreia. Gbaran Creek, Agudama, Ekpetional into Ekole Creek to Yanaka. Yenegoa, Sangala to Mbiakpaba onto Okokokiri, Ofokpota, Olagaga. Nembe, Adema. Agoribiri Creek to Egbema, Degema, Sombreiro River to Hanya Town, Ogbakiri to Port Harcourt.
- The waterway from Port Harcourt, through Amadi Creek down Bonny River, into Opobo Channel Adoni River, through Andoni Flats, Tellifer Creek, Imo River. Shooter Creek. Kwa Ibo Creek, Kwa Ibo River, Stubbs Creeks. Widenham Creek, Effiat-Mbo Creek, Cross River estuary to Oron and Calabar.
- Rivers Benue. Edo. Niger. Oshana. Onne, Aba. Azumini, Olomumu. Siluko, Talifa, Forcados, Pennington, Escravos, Warri, Ramos, Dodo, Bonny, Middleton, Fishtown, Sengana, Brass of Nicholas, Santa Barbara. San Bartholomew, Sambriero, New Calabar, Mbo, Rio del Rey, Uruan, Akwayafe.
- Creeks Odiama, Agamama Tora, Nembe, Krakama, Buguma, Bille, Finima, New Calabar, Ekole, Cawthorne Channel, Ikane-Bakassi, Omu, Kwato (Gwato), Adagbrassa, Chananomi, Okpoko, Jones Kulama, Ikebiri, Nikorogba, Sagbama, Egbedi, Kolo, Laylor, Hughes Channel.
- Lakes Mahin, Oguta, Osiam Ehomu.
- The Orashi River from Oguta Lake to Ebocha, Omoku, Kreigani, Moiyama, Okariki, Egbema, Sombreiro River.
- Lake Chad, that part within Nigeria.

The underdevelopment state of the inland water transportation remains a sad explanation on present day Nigeria. During the colonial era, inland waterways transportation was the mode of transport that moved the economy. According to Enyeribe (2019), the colonial masters used the river ports of Baro, Lokoja and Onitsha to move raw materials down to Apapa Wharf for shipment to their country. The Baro Port was the first colonial port used for both local and foreign shipments, the river port was linked with railway and good roads, which made movement of agricultural raw materials from the hinterland to the river port seamless and the efficiency of inland water transportation during this period was a beauty to behold (Enyeribe, 2019).

But shortly, after independence, the use of inland water transportation and river ports gradually decline as a result of negligence and utility diminishes until it became totally abandoned by government. Nigeria Waterways Authority (NIWA), is the agency saddled with responsibility of maintaining and ensuring viability of the inland waters in Nigeria. The river channel, that is, the lower Niger River; only a few years ago were contracts awarded for the dredging of the river Niger but, from all indications it is clear that the huge contract sums have been swept under the carpet up to date. However, whatever being the condition, the only indicator of dredged river is increased business activities on the river and movement of goods and passengers from one river port to the other, down to the seaports in Lagos, Warri and Port Harcourt. If capital dredging was done and maintenance dredging did not follow up, it means no work has been done since navigation down the entire course of the river is not possible.

2. STATEMENT OF THE PROBLEM

One of the objectives of the National Inland Waterways Authorities (NIWA) is to improve and develop inland waterways for navigation and to provide regulatory, economical and operational leadership in the nation's inland waterways system and develop infrastructural facilities for an efficient intermodal transportation system that is safe, seamless and affordable. Despite the lofty mission of NIWA, there has been inadequate attention by both the Federal Government of Nigeria and Rivers state towards inland waterways development. This has led to challenges encountered in the use of waterways presently in Rivers State especially the routes connecting Port Harcourt – Bonny and Bodo- Bonny through Bonny Island. There is high level of infrastructural neglect, insufficient safety measures by operators and passengers, narrow routes, floating of debris, sea weeds, sea robbery, militancy and high fares; and notwithstanding, there is still high traffic flow of goods and passengers through the Bonny routes as the only means of transportation available to the people. The researchers have identified the lucrateness of IWT in Bonny Island and deem it necessary to establish the impacts of inland water transport on economic development of bonny Island.

However, other studies in maritime industry and inland waterways transportation in Nigeria have focused on river Niger and Benue, no study has considered the impact of inland water transport on economic development in Bonny Island in Rivers State. It is in light of this, the researchers choose to carry out this study to provide empirical evidence and bridge gap in literature.

Aim and Objectives of the Study

The aim of this research is to evaluate the impact of inland waterways transportation on economic development of Bonny Island. The specific objectives of this study are to:

1. Find out if inland waterways transportation has significant impact on employment generation in Bonny Island.
2. Find out if inland waterways transportation has significant impact on trade and commerce in Bonny Island.

Research Questions

1. Does inland waterways transportation have significant impact on employment generation in Bonny Island?
2. Does inland waterways transportation have significant impact on trade and commerce in Bonny Island?

Hypotheses

1. H_{01} : Inland waterways transportation has no significant impact on employment generation in Bonny Island.
2. H_{02} : Inland waterways transportation has no significant impact on trade and commerce in Bonny Island.

3. REVIEW OF LITERATURES

Inland water transportation neglected, is one of the most important catalysts for economic development of any place. The development and improvement in inland water modes have an impact on economic pattern and behaviour of coastal communities. Despite the huge potentials in Nigeria's waterways, this sector has had a long history of neglect by Government and private sectors. Apart from the Lagos State Government that is at the forefront of developing its inland waterways, other state governments in Nigeria pay little or no attention to the inland water transportation and its economic benefits (Nwoye and Ugbebor, 2019). Inland waterways generates employment opportunities for the transport sub-sector through active engagement of the local dwellers and industries in boat building/fabrication processes, welding, engine repairs/fixing, boat spare parts sales, boat captains, boat stewards etc. With little arable land suitable for agricultural activities; products are transported from production centres to areas such as Bonny Island through the waterways. This process boosts the availability of commercial agricultural products in such coastal areas. In most coastal communities of Rivers State, transportation of people, goods, services and some cultural festivals are carried out on waterways. One of such coastal communities which is mainly accessible by water (as there is no road access, except by means choppers/aircrafts only made available for company senior staff) in Rivers state is Bonny Island which is the area of interest in this research work. Bonny is an island town and a local government area in Rivers state in southern Nigeria.

It is situated at the southern edge of the Niger-Delta region and it is about an hour ferry drive to Port Harcourt. Ferries are the main form of transport to and fro the island. The Nigerian Liquefied Natural Gas (NLNG) is one of the major companies located in Bonny Island and the region produces a type of crude oil called bonny light. The content of the study will focus on the economic impact of inland waterways transportation using two variables namely; employment and trade/commerce. There are other economic variables (which are outside the scope of this work) that are influenced by inland water transport but the researcher selected the above two variables. These variables have been selected because, to the best of the researcher's knowledge, they have not been studied in relation to inland waterways and economic pattern in Bonny Island, Rivers State.

Inland Water Transportation Employment Generation

The Inland Water Transportation (IWT) sector is a large employer of labour for persons employable as captains, engineers, stewards, and spare parts dealers in boats operations and construction. It also indirectly generates employments for other sectors such as insurance, boat building, boat repairs, maritime training, haulage, clearance and logistics, storage, cargo handling, and other value-added activities. Analysis by the Indian National Transport Policy Committee as cited by Praveen and Jegan (2015) indicated that in the year 2011, IWT sector provided a higher employment coefficient per unit of investment than any other mode of transportation in India. In Nova Scotia, Canada, the maritime transport industry generated a total of 93,500 jobs or 25% of total employment in the state in 2006 (The Philippine Environmental Governance, 2006). Also in the UK, a similar study estimated that the maritime transport industry generated around 212,000 jobs in 2007 (Oxford Economics, 2007). In the light of the above information, it is very clear that IWT plays significant role in economic development through job creation/employment opportunities.

Inland Water Transportation Trade/Commerce

IWT carrying capacity provides a strong channel for the hauling of agricultural and other products cheaply through the water. With adequate dredging, the inland waterways can take up to 10,000 tons flat bottom boats and barges (Nsan-Awaji, 2019). Goods produced within hinterland farms are conveyed through inland waterways to coastal ports and other coastal communities. The concept can be applicable in the transportation of tones of agricultural products from the northern area to the southern area of Nigeria through water ways. Industries prefer to sit their plants near river ports in order to reduce transportation costs especially for those companies that depend on imported raw materials and equipment.

According to Center for Ports and Waterways (2007), each year, approximately 624 million tons of cargo is carried throughout the U.S. inland waterways, constituting 14% of all intercity freight. The use of the IWT USA helped to avoid 58 million truck trips which would have doubled the number of trucks on the road (Center for Ports and Waterways, Texas Transportation Institute, 2007). In India, cargo transportation by IWT is steadily increasing and movement of National waterways I, II and III has increased from 3MMT in 2005-06 to 7.1MMT in 2015-16, an overall growth around 137 percent (Praveen and Jegan, 2015). Inland waterways in developing countries are critical avenues for local and regional commerce. For example, in Bangkok Thailand and Makoko, Lagos, fruits, vegetables and commodity vendors flock to floating markets on rivers and canals to consolidate commercial activities. IWT is apt in supporting trade/commerce especially in communities like Bonny Island, Rivers state and Takwa Bay, Lagos and it has a ripple effect that such communities can work to achieve cheaper products in their markets.

According to chukwuma (2014), a summary of the spatial structure of IWT in Nigeria is given as follows:

Table1: Characteristics of IWT in Nigeria

s/n	Rivers ports	States	Mean weekly volume of passengers	Commercial ferry on busiest days	Weekly No. of trips in waterways
1	Idah	Kogi	156	4	2
2	Baro	Niger	152	6	3
3	Oguta	Imo	194	8	3
4	Degema	Rivers	1675	23	14
5	Okirika	Rivers	2512	46	16
6	Bonny	Rivers	8500	230	24
7	Yenagoa	Bayelsa	3852	68	22
8	Epe	Lagos	6230	148	14
9	Markurdi	Benue	164	9	2
10	Itu	Akwa-Ibom	1865	21	2
11	Otuocha	Anambra	170	8	8
12	Burutu	Delta	1856	38	9

Source: Chukwuma, 2014

Table2: Goods transported along Nigeria inland waterways

S/N	Category of goods	Examples
1	Agricultural produce	Yam, Maize, Vegetables
2	Plant resources	Fire wood, Root, Timbers
3	Manufactured/industrial goods	Plastics, furniture, etc.
4	Cultural items	Musical and religions implements
5	Harvested fish	Fishes harvest in the rivers
6	Building materials	Sand, gravels, zinc, stores
7	Oil and gas products	Petrol, kerosene, diesel
8	Machinery/equipment/spare parts	Industrial equipment and spare part
9	Food items	Rice, beans , indomie, vegetable oil

Source: Chukwuma, 2014

4. METHODOLOGY

This research adopted the descriptive survey design. The population for this study was the average daily 470 passengers that use the Bonny- Bodo route and Bonny- Port Harcourt and 196 boat drivers including males and females that ply both routes summing up a total of 666 respondents. Applying Tuckman's formula for

proportional stratified random sample size, a total sample size of 333 respondents is required for this study with the distribution pattern of 235 passengers and 98 boat drivers with spread of 228 males and 105 females. A structure questionnaire was designed by the researcher to elicit responses from the target population. The questionnaires were shared over a period of 30 days (July 1-30, 2021) with an average return of eleven (11) respondents per day. The questionnaire addressed the economic variables that are peculiar to this work. They are: employment generation and trade/commerce. The questionnaire had two sessions. Section A dealt with respondent demographic information. Session B had ten (10) items divided into two (2) parts. Part 1 addressed research question 1 and hypothesis 1 with items 1-5, part 2 addressed research question 2 and hypothesis 2 with items 6-10. Response pattern to the items was structured on a 4 point likert scale of Strongly Agree (SA), Agree (A), Strongly Disagree (SD) and Disagree (D).

The instrument was validated by three experts in Maritime Sciences and Measurement and Evaluation. Cronbach Alpha was used to test the reliability of the questionnaire. The instrument was administered to seven inland water transport passengers and four boat drivers, making it eleven respondents. These respondents were not part of the study sample. The instrument reliability coefficients were 0.62 for employment, and 0.66 for trade/commerce. The questionnaire was administered directly to the respondents by the researcher and two (2) trained researcher assistants. All 333 copies of the questionnaire were administered and retrieved on the spot yielding a return rate of 100 percent. Mean was used to answer all the research questions. The criterion mean for all research questions was 2.50. Any response below 2.50 was regarded as Disagree and above 2.50 as Agree. The hypothesis was tested using z-test at 0.05 level of significance. Any response with a calculated z-value above ± 1.96 reject the research hypothesis and below ± 1.96 accept the alternative hypothesis.

Result

Research Question 1:

Does inland waterways transportation have significant impact on employment generation in Bonny Island?

Table3: Means, Standard Deviation and Rank Order of Respondents Opinion on the Impact of Inland Waterways Transportation on Employment Generation in Bonny Island

S/n	Items	Males (N1 = 228)		Females (N2 = 105)		Mean Set (X1)(X2)	Rank	Decision
		X1	SD1	X2	SD2			
1	Inland water transport creates job in the insurance industry	2.96	1.315	2.89	1.354	2.93	5 th	High impact
2	Fuel stations situated close to jetties/terminals create jobs in the community	3.76	0.706	3.76	0.728	3.76	4 th	High impact
3	Boat builders are necessary in riverine communities	3.80	0.402	3.80	0.402	3.80	3 rd	High impact
4	Inland water transport create jobs for cargo handlers	3.83	0.377	3.82	0.387	3.83	2 nd	High impact
5	Jetties serves as meeting points for other businesses	3.87	0.339	3.89	0.320	3.88	1 st	High impact
	Aggregate	3.64	0.628	3.63	0.638	3.64		High impact

Source: Author

Table 3 reveals that inland water transportation has high impact on creating direct and indirect jobs opportunities in the following sectors/areas: Insurance, Energy(fuel), Boat building, Logistics(Cargo handling), and other Markets/Businesses. The respective mean scores for each of the questionnaire items with respect to the impact of inland waterways on the socioeconomic indicators of job creations were 2.93(insurance), 3.76 (Energy stations), 3.80 (Boat building), Cargo handling(3.83) and Meeting Points for Other Businesses (3.88), with an overall impact level of 3.64. All the values were above the criterion mean of ± 2.50 , thus showing the high impact of IWT on jobs generation/creations.

Research Question 2:

Does inland waterways transportation have significant impact on trade and commerce in Bonny Island?

Table 4: Means, Standard Deviation and Rank Order of Respondents Opinions on the Impact of Inland Waterways Transportation on Trade and Commerce in Bonny Island

Waterways Transportation on Trade and Commerce in Bonny Island								
S/n	Items	Passengers (N1 = 235) X1 SD1		Boat Drivers (N2 = 98) X2 SD2		Mean Set (X1)(X2)	Rank	Decision
6	Inland water is useful for the movement of agricultural products	2.46	1.403	2.57	1.407	2.52	5 th	High impact
7	Heavy construction materials can easily move through inland waterways	3.15	1.083	2.83	1.167	2.99	4 th	High impact
8	Traders in riverine communities can easily transfer their commodities through waterways	3.56	0.569	3.37	0.924	3.47	1 st	High impact
9	It is cheaper for riverine communities to use waterways for the movement of their commodities	3.46	0.868	3.28	1.082	3.37	2 nd	High impact
10	Inland waters increases trade and commerce in riverine communities	3.31	0.773	2.91	1.046	3.11	3 rd	High impact
	Aggregate	3.19	0.939	2.99	1.125	3.04		High impact

Source: Author

Table 4 reveals that inland water transportation has high impact on trade and commerce especially in the riverine communities. The mean as shown in the table were 2.99 for IWT impact on movement of heavy construction equipment/materials, 3.47 for movement on market commodities, 3.37 for cheaper means of moving commodities in the riverine areas, 3.11 for increases in trade and commerce and for movement of agricultural products was 2.52. The overall impact of IWT on trade and commerce was 3.04 (above criterion mean of 2.50) showing its high impact.

Hypotheses testing

H₀₁: Inland waterways transportation has no significant impact on employment generation in Bonny Island.

Table5: Z-Test Analysis of difference between the Mean Scores of the Impact of Inland Water Transportation on Employment Generation in Bonny Island

Respondents	N	\bar{X}	SD	Df	Z-cal	Z-critical	Decision
Males	228	3.64	0.63	331	0.13	±1.96	H ₀₁ rejected
Females	105	3.63	0.64				
Total	333						

Table 5 shows that the z-test calculated is 0.13 which is less than the z-critical value of ±1.96 at 331 degree of freedom and at 0.05 alpha level. Since the z-calculated is less than the z-critical the research hypothesis was rejected and the alternate accepted. Therefore, inland waterways transportation has significant impact on employment generation in Bonny Island.

H₀₂: Inland waterways transportation has no significant impact on trade and commerce in Bonny Island.

Table 6: Z-Test Analysis of difference between the Mean Scores on the Impact of Inland Water Transportation on Trade/Commerce in Bonny Island

Respondents	N	\bar{X}	SD	Df	Z-cal	Z-critical	Decision
Passengers	235	3.19	0.94	331	1.55	±1.96	H ₀₂ rejected
Boat Drivers	98	2.99	1.13				
Total	333						

Table 6 shows that the z-test calculated is 1.55 which is less than the z-critical value of ± 1.96 at 331 degree of freedom and at 0.05 alpha level. Since the z-calculated is less than the z-critical the research hypothesis was rejected and the alternate accepted. Therefore, Inland waterways transportation has significant impact on trade and commerce in Bonny Island.

5. CONCLUSION

Based on observations and empirical evidence shown on the findings of this study, the researchers conclude that Inland Water Transportation (IWT) has significant impact on economic development of Bonny Island, especially on the areas of employment generation and trade/commerce.

Recommendations

Based on the findings of the study, the following recommendations were made:

- There should be deliberate provision of funding by the Government and its partners to support inland water transportations and its facilities especially in the area of ship building. Modern ferries and house boats should be used rather than flying/speed boats which pose more danger to life.
- There should be periodic dredging and canalization by Government to aid safe navigation of waterways.
- Local boat drivers should be adequately trained to ensure safety of lives and properties by Government agencies like NIWA and NIMASA.
- Adequate safety vests should be provided by boat owners for all passengers and any passenger that refuses to wear such should not be allowed to travel.
- All intending passengers and boat drivers must be subjected to security vetting/checks by marine police department before they are allowed to come on-board.
- Ferries should be put in good condition at all times through regular and proper maintenance and their status approved for sailing by competent Government agencies.
- There should be adequate security and enforcement of safety protocols for passengers and boat drivers.
- Government should encourage conservation of the waterways through the removal of flotsams and driftwoods, preservation of beach fronts and cultural heritage of the people along the waterways and navigable creeks.
- Public Private Partnership (PPP) should be encouraged so as to make the funding and management of water transport facilities possible.
- PPP should be encouraged to foster development of IWT to link other states and localities within and outside the country as it brings about economic development.

REFERENCES

1. Bassey, S.I & Ekpenyong NSA, M (2018). Problems and prospect of developing inland water transportation in Nigeria: The case of Calabar River. IOSR Journal of humanities and social science. 23 (7) PP 27-37.
2. Center for Ports and Waterways (2007). A modal comparison of domestic freight transportation effects on the general public. Texas transportation institute, The Texas A&M University system, college station, Texas.
3. Chukwuma O. M. (2014). The Characteristics of Inland Water Transport in Nigeria. IOSR Journal of Humanities and Social Science. Available online at <https://doi.org/10.9790/0837-1934119126>
4. Enyeribe Anyanwu (2019). Inland waterways transportation and its saboteurs Ships & Ports. Available at <https://shipsandports.com.ng/inland-waterways-transportation-saboteurs/>
5. Fellinda, L (2006). World's water transport needs further development. Transport and Development Vol. 1, pp 68-72.
6. National Inland Waterways Authority (2021). Available at <https://niwa.gov.ng>
7. NIWA (2006): Waterways are very important to the Economy of Nigeria Available at <https://niwa.gov.ng/nigerian-waterways/>
8. Nwoye, S. M & Ugbebor, J. N (2019). Prevalent safety hazards and safety practices in maritime transportation in selected states in southern Nigeria. Open journal of safety science and technology. 2019, 9, 83-92.
9. Nsan-Awaji, E.S (2019). The challenges and prospect of maritime industry in Nigeria. Danubius Working Paper: Vol. 1, nr. 1/2019.
10. Ojile, M.O (2006). Draft Report of the Socio-Economic Characteristics for the Idealization of the Port Harcourt Warri Roads Submitted to Messer allots Nigeria Limited on behalf of the Federal Ministry of Works, Abuja. 1:60.
11. Oxford Economics (2009). The economic contribution of the UK shipping industry in 2007.
12. Praveen, S. and Jegan, J (2015). Key issues and challenges for inland water transportation network in India. International journal for scientific research and development. Vol. 3, issue 10, 2015

13. The Philippine Environmental Governance 2 project (2006). Literature Review on Marine Transportation and Coastal Tourism.