

INLAND WATERWAY TRANSPORT SERVICE AND CHALLENGES CONFRONTING THE USERS: A CASE STUDY OF IKORODU - VICTORIA ISLAND WATERWAY CORRIDOR

By

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ABSTRACT

Effective transport service is central to sustainable urban development, enhances movement of people, goods and services. Because of high demand for movement in the cities, there is a need to take a multidimensional approach to address urban transport needs. The main thrust of this paper is to assess the efficiency of inland waterway transport service along Ikorodu - Lagos Island corridor, with a view to identifying challenges confronting the commuters. In conducting the research, relevant literatures were reviewed. Primary data were collected, through the aid of questionnaire and inspection surveys. Convenience sampling method was used to sample 10% of a day waterways passengers, which accounted for 189 respondents. The data collected were analysed and presented with the aid of tables and photographs. The study identified six main facilities, which include parking space, passengers lounge, jetty, ferry boat, accident prevention and waterway route. None of the facilities was identified to be in good condition. Apart from poor condition, none of these facilities has adequate capacity, in term of space to provide efficient and comfortable inland waterway transport service for the commuters. Hence, there were no enough security facilities, such as life jackets, in case of accident. Consequently, the inland waterway service of the study area has not been able to attract adequate number of users, considering the traffic holdups along the motorways. Based on this, the study suggested the need to invest more towards improving the quality of facilities needed to provide safe and convenient inland water transport service.

Keywords : inland waterways, public-private partnership, transport infrastructures, transport planning, urban transport

INTRODUCTION

Lagos is one of the fastest growing cities in the world, the populous urban agglomerations, with its adjoining conurbation, consisting of corridors, such as Mowe along Lagos-Ibadan axis, Sango Otta along Lagos-Abeokuta axis, up to Ikorodu area (Fagbohun and Oduwaye, 2014). Despite the fact that Lagos has the smallest land size, compared to other cities in Nigeria, its population has been estimated at 21 million, where a significant proportion is residing in the suburbs (National Population Commission, 2006; Fagbohun, 2021). The extent of the Lagos agglomeration brings about increase in travel demand for social and economic activities. However, the need for transport cannot be overemphasised

because movement is one of the basic human activities. Mobility is fundamental to economic and social activities, such as manufacturing and distribution of goods and services. Due to the attribute of Lagos, as highlighted here, transport happens to be one of the challenging problems confronting the inhabitants of Lagos metropolis, who will need to commute nearly every day, either for social or economic activity.

Globally, a large fraction of people travel daily for work, shopping and social reasons. Hence, transport also consumes a lot of resources like time, fuel, materials and land, with the antecedent of environmental consequence. For any country to develop with right momentum, modern and efficient transport as a basic infrastructure has to be

considered as a major component of development. It has been discovered that for any nation to achieve rapid development, all available modes of transport have to be harnessed to ensure sustainable transport service provision. It has been asserted that throughout history, socio-economic development has been sustained on the convenience, speed and safety of the modes of transport. Thus, the level of development attained by any nation is closely related and measured by the level of its transport development process. Also, the level of economic productivity of any region is highly dependent on the efficiency of its transport system to effectively move labour, customers and freight between multiple origins and destinations (Egbon, 2013).

The movement of goods and services along inland waterways is one of the oldest means of transport (Fellinda, 2006). This is largely due to the fact that inland water transport offers the most economical, energy efficient and environmental friendly means of transport (Badejo, 2014). In spite of the socio-economic and environmental benefits of water transport, this mode of transport has not been adequately utilized in Lagos to ease movement of people, goods and services (Ezenwaji, 2012). Some researchers such as Douglas (2001) have conducted research on

various aspects of inland water transport such as the advantages, problems and management. The findings have shown that water transport is a viable and formidable mode, economically and environmentally friendly, easy to explore and a means of achieving integration. The main thrust of this study is to evaluate the existing condition and adequacy of inland waterway transport and highlight challenges confronting the operations of waterway transport in study area, towards sustainable transport development.

THE STUDY AREA

Ikorodu is a major town in the northeast of Lagos State, Nigeria. It is located within latitudes 6° and 7° north of the equator, and longitude 2° and 5° east of the Greenwich Meridian. Ikorodu is located along the Lagos Lagoon and shares boundaries with Ogun State. Geographically, it is situated approximately 36 km north of Lagos. Ikorodu is bounded to the south by the Lagos Lagoon, to the north by Ogun State, and to the east by Agbowa-Ikosi, a town in Epe Division of Lagos State. Figure 1 is a map of Lagos showing the location of the Ikorodu Local Government area.

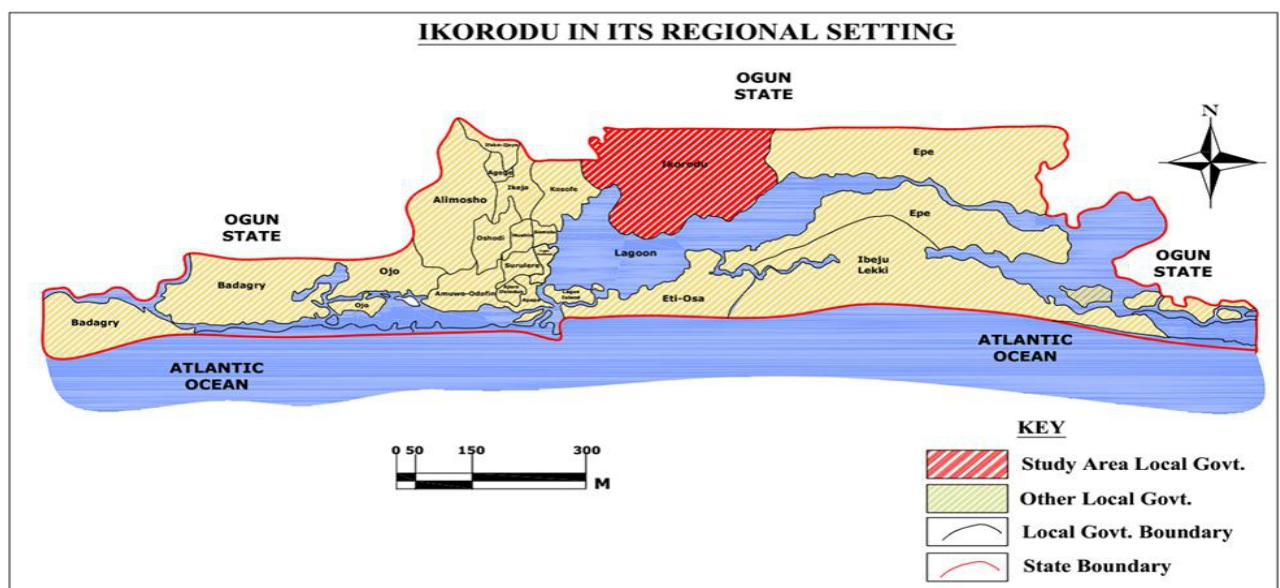


Figure 1: Map of Lagos State Showing the Location of the Study Area and its Inland Waterways

Ikorodu Local Government has a population of 535,619 (National Population Commission, 2006). The area has grown significantly to cover 396.488Km² of land. The major occupations in the study area include trading, farming and manufacturing. There are other towns around Ikorodu that made the area to be regarded as a division, include Imota, Isiu, Liadi, Ijede, Igbogbo and Bayeku, all of which constitute their own Local Council Development Area with their own traditional ruler. Being one of the largest settlements in Lagos State, transport has been of a great concern. The intensity of land uses as well as its large population has a significant implication on transport in the area.

Transport in Ikorodu, just like any area in Lagos State is predominantly by road. The common types of vehicles used for road transport include bicycles, motorcycles, tricycles and taxis/cabs, minibuses called Danfo and Molue. In recent time, specifically in 2007, Bus Rapid Transit (BRT) was introduced. This has been connected to the study area, through the construction of its special way. Ikorodu is linked with Ogun State through two roads namely; Ikorodu-Sagamu Road and Itoikin Road. Meanwhile, another possible alternative transport available in the area is the inland water transport mode, which can be used to connect to some places through Lagos Lagoon. Such places include Epe, Maroko, Vitoria Island, Marina, Mile-2, Agbara, Badagry, and Ipokia area in Ogun State. The inland waterway from Ikorodu to Lagos Island is approximately 19km. The journey is between 25-50 minutes depending on the speed of the ferry boat.

LITERATURE REVIEW

Urban transport system can be defined as the set of transport infrastructures and modes that support urban movements of passengers and freight. In general it expresses the level of accessibility. Its effective operation requires trains, trams, buses, and ferries.

Urban transport problems remain some of the most controversial and nagging problems in urban areas both in developed countries, but more pressing in the third world cities (Fagbohun and Oduwaye, 2014). Attempts have been made to tackle the problems, yet the situation seems to be getting worse. Cities are centres of economic, social, cultural and intellectual activities, these activities cause people to drift from the rural areas to the urban centres, leading to rapid expansion of cities, hence adding more to transport challenges.

Fagbohun (2021) has noted that with the rapid increase in population, daily trips demand was expected to increase to about 40 million per day by the year 2032. Despite this, Lagos roads have been dominated by a very large number of private cars, tricycles and motorcycles, due to inadequate government intervention. The number of vehicles in Lagos has been estimated at 2 million which accounted for 25% to 30% of the total vehicles in Nigeria. The number was projected to increase by 100, 000 vehicles per annum. Vehicles density was estimated at 264 vehicles per kilometre of road while that of the whole country was 30 vehicles (Oshodi, 2017). This has made the nature of mobility around Lagos megacity to be very dynamic, in most cases resulting in traffic conflict, partly due to the use of single mode of transport, uncoordinated transport system, location of traffic attraction centres and the problem of urban sprawl (Fagbohun and Oke, 2010).

Traffic congestion and other challenges exist in every metropolitan area in world. Efficient urban mobility largely relies on the ability of the urban managers to compliment various modes of transport system to address urban transport challenges, rather than subjecting them to competition (Nwanze, 2002). Inland water transport refers to the transport facilities available in the navigable waters, canals, and backwaters. It is the cheapest mode for certain kind of traffic provided the point of origin and origin are located on water bank. River and canal transport played an important role in the

transport system. Despite this, there has not been adequate attention to exploit the opportunity. Ndikom (2008) opined that the state of Nigeria inland waterways despite its great potentials is under prioritized, underutilized and highly underdeveloped. As noted by Flodén (2007), the United Nations Economic Commission for Europe asserted that inland water transport is a viable alternative of addition to road and rail transport. Hence, it is environmentally friendly and the most economically viable mode of inland transport. Towards promoting investment in waterway transport, Badejo (2014) was of the opinion that public-private partnership provides a viable option to revive water transport in Nigeria. The direct merits the private partners will bring on board to huge financial investments, needed expertise. It has been noted that government and the private sector need to have a rethink about the strategy on the development of water transport sub sector, since the mode has the ability to tackle traffic congestion on roads and reduce gas emission that may lead to climate change.

Somalia (2013) posited that for the transport sector to move forward in Nigeria, there is a need for the government to formulate enduring and sustainable transport policies that will enable the country cater to the future of transport. It has been noted that for years, Lagos lagged behind other emerging cities at the global level in the exploitation of modern transport infrastructure solutions to curb traffic congestion. Lagos transport infrastructure and service conditions were almost the same as they were in 1976 (Adi, 2016).

Water transport in Lagos State has been observed to be facing different challenges ranging from inadequate water transport facilities to poor transport management (Fagbohun, 2021). Ezenwaji (2012) did a study on effective inland water transport and identified some challenges facing the sector. The researcher identified environmental challenges as a strong underlying factors militating against effective water transport. It was discovered that stop-over charges and

payment of operational fees to both the National Inland Waterways Authority and Lagos State Waterways Authority constitute the biggest human induced challenges. The study found that lack of facilities, which would have aided smooth ferry operations aside attracting more patronage is a fundamental challenge facing effective inland waterways transport service.

All these challenges in no small measure escalate ferry operational and maintenance cost leading to operational sustenance difficulties. Adi (2016) noted that more is expected of government in terms of eradicating these challenges through the removal of water hyacinth and other debris, abandoned dredging equipment, adequate funding and provision of infrastructural facilities, removal of bureaucratic bottlenecks in terms of double taxation and establishing proper regulatory framework for the sector. These will ensure the survival of the sector and more private sector participation. However, this study is designed to ascertain the extent the highlighted challenges have escalated the ferry operational difficulties in the study area.

CONCEPTUAL FRAMEWORK

The concept adopted for this study is inter-modal transport system. However, intermodal concept in transport planning explains the nature of a transport system as one which emphasises on the movement of people and goods through a system of integrated transport components consisting of various modes all of which are connected and coordinated to ensure efficient mobility of passengers and freight (Jones, Moura, and Domingos, 2016; Wisnicki and Chybowski, 2017). The concept sees transport system as being holistic and interdependent consisting of different modes, such as road, water, rail and air, which are designed and coordinated to complement each other and collectively facilitate safe and convenient movement. Also, the concept of intermodal was appraised in the work of Okanlawon (2007) as involving a process of transport through

interconnected networks using multiple modes, all of which are efficiently linked and coordinated. The description thus identifies an integrated transport system of interconnected transport modes whereby various modes of transport are designed to provide complementary opportunities of movement of people, goods and services within a particular area (Jaworski, 2016).

Empirically, Badejo (2014) identifies intermodal as being a subsystem of the transport system consisting of the closed system or intermodal transport system and the open system or intermodal transport system. It has been discovered that the need for an intermodal transport system arises when a particular mode of transport has been overly depended on and it no longer provides the required efficiency. The modal allows for the introduction of other modes to support and complement the dysfunctional mode (Wang and Liu, 2007). An integrated transport system opposes the idea of a non-integrated system of separate transport modes which are made to compete with each other in a transport sector. Thus, the competition between modes in a transport system produces a transport system which is un-integrated where each mode “sought to exploit its own advantage in terms of service, cost, safety and reliability” (Okanlawon, 2007).

In order to facilitate a well-coordinated integrated transport system, three ways have been suggested, which include “routing”, “scheduling” and “fare structures”. Routing explains the linkage of all public transport modes, while scheduling involves planning the different modes into a time-table to reduce passenger waiting time in changing from one mode to another (Chybowski, Gawdzinska and Wisnicki, 2016). It has been argued that structures emphasise the need for an advanced transport fare collection through the use of travel cards, season tickets or zonal fare tickets. This study is based on the notion that, more efforts have been made by the Lagos State Government to enhance transport by road from Ikorodu to Lagos

Metropolis, it is important to complement this with water transport system.

RESEARCH METHODOLOGY

Both primary and secondary were collected for the study, towards achieving the primary aim and objectives. Hence, the needed data were collected from both secondary and primary sources. The existing literatures were reviewed to form the basis of the study. Primary data were with aid of questionnaire and inspection survey. Convenience sampling method was used to sample the respondents for questionnaire survey. This was carried at Ikorodu main jetty terminal, both in the morning for departure and evening for arrival. At the end of questionnaire survey, 189 passengers were successfully investigated. Inspection survey was conducted on all the available 12 jetties along the study inland waterways transport corridor, which stretched from Ikorodu to Lagos Island. During the inspection survey, participatory approach was used to collect some relevant data from the passengers on the trips from one ferry location to another. The data collected were analysed using descriptive statistics.

DATA ANALYSIS AND RESULTS

Data are analysed under different key objectives of the study. These include socioeconomic characteristics of the respondents, the condition of inland waterways facilities, the adequacy of inland waterways transport facilities, and condition of inland water transport services.

SOCIOECONOMIC CHARACTERISTICS OF THE RESPONDENTS

The study assessed the socioeconomic characteristics of the samples commuters through inland waterways respondents and found that 67.20% of them were males, while the remaining 32.80% were females. This implies that males made trip, through inland waterways more than females in the study area. The study found further that 22.20% of the respondents were single,

56.70% were married, while the remaining 19.00% of the respondents were either widows or widowers. The study assessed other socioeconomic characteristics, and found that 13.80% of the respondents for the study were below the age of 20, while 12.70% and 32.30% are in the age group of 21-30 and 31-40 respectively. On the other hand, 13.80% were in the age group 41-50, 19.60% were in the age group 51-60, while the remaining 9.50% were in age group of 61 years and above.

EVALUATION OF THE CONDITION OF INLAND WATERWAYS FACILITIES

In order to adequately evaluate the condition of the inland waterways facilities, the perception of the users, the respondents were measured on 6 main facilities, which include parking space, passengers lounge, jetty, ferry boat, accident prevention unit, waterway route and ticketing boat.

As indicated in Table 1, the study found that 34.4% of the respondents observed that the condition of parking space at the terminal were good, 47.1% believed that the condition was fair, while 18.5% believed that the condition the parking space was bad. For the passengers lounge, 32.8% observed that it was in good condition, while 50.3% were of the opinion that the condition was fair, while

16.9% believed that the condition of this facility was bad. In the case of jetty, 25.9% believed that the condition was good, while 49.2% and 25.9% were of the opinion that its condition was fair and bad respectively.

When the perception of the respondents was measured on ferry boats condition, it was discovered that 27.0% of the respondents were of the view that its condition was good, while 52.9% and 20.1% were of the opinion that the condition of this facility was fair and bad respectively. On the condition of accident prevention unit of the inland waterways, 27.0% of the respondents have the view that its condition was good, 51.3% believed that its condition was fair, while 20.6% of the respondents were of the opinion that its condition was bad. Furthermore, the respondents rated the condition of the study area inland water, in the area of absence of weeds and other things that could obstruct free movement of boats, such as debris, logs and abandoned wrecked boats. The study found that 31.8% of the respondents observed that the condition of waterways route was good, 50.3% believed that the condition was fair, while 18.0% believed that its condition was bad. Plate 1 is a picture showing the parking challenge faced by the operators of ferry boats and the condition of their ferryboats.

Table 1: Existing Condition of Inland Waterways Transport Facilities

Variables	Parking Space		Passengers Lounge		Jetty		Ferry Boat		Accident Prevention		Waterway Route	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Good	65	34.4	62	32.8	47	25.9	51	27.0	51	27.0	60	31.8
Fair	89	47.1	95	50.3	93	49.2	100	52.9	97	51.3	95	50.3
Bad	35	18.5	32	16.9	49	25.9	38	20.1	39	20.6	34	18.0
Total	189	100	189	100	189	100	189	100	189	100	189	100

Source: Field Survey (2021)



Plate 1: Parking Challenge Faced By the Operators of Ferry Boats and Condition of their Boats

Source: Field Survey (2021)

In average, it can be concluded that the condition of all the 6 facilities assessed were fair. This did not mean that the condition of these identified facilities was good enough for free mobility and safety. This calls for pragmatic action to improve the condition of the inland waterways transport facilities in the study area.

ADEQUACY OF INLAND WATERWAYS TRANSPORT FACILITIES

The main thrust of this study is to evaluate the existing condition and adequacy of inland waterway transport and highlight challenges confronting the operations of waterway transport in study area, towards sustainable transport development.

The study investigated the adequacy of the available inland waterways transport facilities to meet the needs of the users. As shown in Table 2, the study found that 24.9% of the respondents for this study observed that the size of the parking facility provided at the jetty of the inland water was adequate to take care of their motor parking need, 50.3% were of the view that the adequacy of

the facility is fair in size, while 24.9% of the respondents were of the opinion that the parking space was not adequate to meet the parking need of the user of the inland waterways transport facilities. For passengers' lounge, the study found that 24.34% of the respondents observed that the size was adequate for their use, while 54.0% of them were of the view that the size was fairly okay for their use. However, it was only 21.7% of the respondents that were using the waterways transport that have the opinion that the size of passengers' lounge was not adequate for their use.

The study investigated further to assess the perceptions of the respondents on the adequacy of the number of jetties. As indicated in Table 3, 24.9% of the respondents observed that the number of jetties provided along the waterways was adequate, 55.0% observed that the number was fair to take care of them, while 20.1% of the respondents were of the opinion that the number provided was not adequate to provide them the needed water ways transport service. On the adequacy of the number of ferry boats plying the waterways

of the study area, 19.6% of the respondents believed that the number was adequate to provide them the needed inland waterways transport service, 58.2% believed that the number was fair enough, while 22.2% of the respondents were of the view that the number of the ferry boats was not enough. On the size and functionality of the accident prevention unit of the inland waterways, 14.8% of the respondents were of the view that it was adequate, 49.7% believed that the size and functionality was fair, while 35.4% of the respondents were of the opinion that it was not adequate in size and in performing the expected functions of an accident prevention unit.

The respondents were enquired to express their perception on the size of the waterways.

The study found that 51.85% of the respondents were of the notion that the size of the waterways was adequate to accommodate the ferry boats plying the waterways, 26.98% of the respondents were of the view that the size was fair enough to accommodate the ferry boats, while 21.16% were of the notion that the size was not adequate to accommodate the number of the ferry boats needed on the waterway.

It can be concluded from the study that in overall, the general performance of the six waterways transport facilities was fair to perform the expected functions and render the needed service. They were not good enough. Hence, they need more attention to improve on the condition of the waterways transport facilities, towards

ensuring efficient inland water transport service delivery.

Table 2: **Passengers'** Perception on the Adequacy of Inland Waterways Facilities

Variables	Parking Space		Passengers Lounge		Jetty		Ferry Boat		Accident Prevention		Waterway Size	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Adequate	47	24.9	46	24.34	47	24.9	37	19.6	28	14.8	98	51.85
Fair	95	50.3	102	54.0	104	55.0	110	58.2	94	49.7	51	26.98
Not Adequate	47	24.9	41	21.7	38	20.1	42	22.2	67	35.4	40	21.16
Total	189	100	189	100	189	100	189	100	189	100	189	100

Source: Field Survey (2021)

CONDITION OF INLAND WATER TRANSPORT SERVICES

The study enquired into the level of satisfaction and efficiency in the inland waterways transport service delivery. The areas of service delivery that were examined, from the views of the users include cost of service delivery, adequacy, condition and quality of life jackets. Others include effect of the condition of ferry boats, the incidence of overloading and effect of the level of navigability. This is as indicated in Table 3.

For the cost of inland waterways transport service, as shown in Table 3, the study found that 38.6% of the respondents strongly agreed with the view that the cost of the

inland water transport is too high, 33.3% agreed with the notion, while 7.4% was not sure whether the cost of waterway transport is too high or not. On the other hand, 12.2% disagreed with the notion that the cost of waterway transport is too high, while 8.5% strongly disagreed with the notion. Since the calculated mean (\bar{X}) is 3.8, and is greater than the set rejection level of 3.0 for the study; the notion that cost of the inland water transport was too high for the passengers is hereby accepted to be true.

On the adequacy of life jackets, the study discovered that 40.2% of the respondents strongly agreed with the notion that there is inadequate life jacket for the use of the passengers along the study transport route,

38.6% agreed with the notion, while 2.7% was not sure whether the available life jackets are adequate or not. However, 11.6% of the respondents strongly disagreed with the notion that the available life jackets were not adequate for the passengers using the service of the inland waterways transport service, while 6.9% strongly disagreed with the notion. Since the calculated mean (\bar{X}) is 3.9, and is greater than the set rejection level of 3.0 for the study; the notion that the available life jackets were not adequate for the passengers is hereby accepted to be true.

The study assessed the view of the respondents on the notion that the available life jackets are of poor quality. The study found that 38.1% of the respondents strongly agreed with the notion that the available life jackets are of poor quality, 32.8% agreed with the notion, while 3.7% were not sure whether the available life jackets are of poor quality or not. On the other hand, 12.2% strongly disagreed with the view that the available life jackets are of poor quality. Since the calculated mean (\bar{X}) for the notion is 3.8, which is greater than the set rejection level of 3.0, the hypothesis that the available life jackets are of poor quality is accepted to be true for the case of the study route.

On the sanitary condition of the available life jackets, 38.6% of the respondents strongly agreed with notion that The sanitary condition of the available life jackets is poor, 36.% agreed with the notion, while 5.8% were not sure whether the sanitary condition of the available life jackets is poor or not. However, 11.6% strongly disagreed with the notion, while 7.9% disagreed with the view. Hence, the calculated mean (\bar{X}) of 3.9 is greater than the set rejection level of 3.0.

Therefore, the hypothesis that the sanitary condition of the available life jackets is poor is hereby accepted to be true for the case of the study waterways transport service.

After the study assessed the view of the respondents on the notion the poor condition of ferry boats used on the waterway can cause accident, it was discovered that 40.7% of them strongly agreed with the notion, 33.9% agreed, while 6.9% of them were not sure whether the poor condition of ferry boats used on the waterway can cause accident or not. On the other hand, 10.1% of the respondents strongly disagreed with the notion, while 8.5% disagreed with the notion that the poor condition of ferry boats used on the waterway can cause accident. Since the calculated mean (\bar{X}) is 3.9 and is greater than the set rejection level of 3.0 for the study, the hypothesis that the poor condition of ferry boats used on the waterway maylead to accident can be accepted to be true.

Similarly, the study assessed the view of the respondents on the notion thatthere is incidence of overloading of passengers on the waterways along the study waterways. It was established that 35.5% of the respondents strongly agreed with the notion, 36.0% agreed, while 6.9% of them were not sure whether there is incidence of overloading of passengers on the waterways along the study waterways or not. However, 12.8% strongly disagreed with the notion, while 9.0% of them disagreed. Since the calculated mean (\bar{X}) is 3.8 and is greater than the set rejection level of 3.0 for the study, the hypothesis that there is incidence of overloading of passengers on the waterways is accepted to be true in the case of the study waterways transport.

Table 3: Passengers' Perception on the Condition of Inland Water Transport Services

Strongly Agreed		Agreed		Not sure		Disagree d		Strongly Disagree d		Total	\bar{X}
Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	
Cost of Waterway Transport is Too High For Me											
73	38.6	63	33.3	14	7.4	23	12.2	16	8.5	189	3.8
The available life jackets are not adequate for the passengers											
76	40.2	73	38.6	5	2.7	22	11.6	13	6.9	189	3.9

The available life jackets are of poor quality											
72	38.1	62	32.8	7	3.7	23	12.2	25	13.2	189	3.8
The sanitary condition of the available life jackets is poor											
73	38.6	68	36.0	11	5.8	22	11.6	15	7.9	189	3.9
The poor condition of Ferry Boats Used on The Waterway can cause accident											
77	40.7	64	33.9	13	6.9	19	10.1	16	8.5	189	3.9
There is incidence of Overloading of passengers on the waterways											
67	35.5	68	36.0	13	6.9	24	12.8	17	9.0	189	3.8
Condition of Waterways Has Negative Significant Effect on Ferry Boat Navigation											
73	38.6	72	38.1	17	9.0	19	10.1	15	7.9	189	4.0

Source: Field Survey (2021)

On the notion that the condition of waterways has negative significant effect on ferry boat navigation, the study enquired the view of the respondents. As shown in Table 3, the study found that 38.6% of the respondents strongly agreed with the notion, 38.1% agreed, while 9.0% were not sure whether the condition of waterways has negative significant effect ferry boat navigation or not. On the other hand, 10.1% strongly disagreed with the notion, while 7.9% disagreed. Since the calculated mean (\bar{X}) is 4.0 and is greater than the set rejection level of 3.0 for the study, the hypothesis that condition of waterways has negative significant effect ferry boat navigation is accepted to be true in the case of the study waterways transport.

SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS

The study identified six main types of facilities provided to facilitate the use of inland waterway to provide fast and convenient transport services for the inhabitants of the study area. These include parking space, passengers lounge, jetty, ferry boat, accident prevention unit, waterway route and ticketing boat. It was discovered that the identified facilities was not good condition to promote convenient parking, quick ticketing and boarding of ferry boat to quickly reach different destination of the passengers. The accident prevention facility was also identified not to be good enough to assist to overcome loss of life and property

in case of accident. Hence, the facilities, apart for their poor condition were not adequate enough to accommodate large number of passengers. This was discovered to have been affecting the passengers' turnover.

The study enquired into the level of satisfaction and efficiency in the inland waterways transport service delivery. The areas of service delivery that were examined, from the views of the users include cost of service delivery, adequacy, condition and quality of life jackets. Others include effect of the condition of ferry boats on the passengers' turnover, the incidence of overloading and effect of the level of navigability of the waterways. The seven hypotheses set on the level of satisfaction and efficiency on the inland waterways transport service delivery was positive. This implies that the respondents' passengers were not satisfied with the condition of service delivery of the inland waterway of the study area.

From the foregoing, there is a need for more intervention to improve the quality of facilities provided in the study area, towards promoting the use of the inland waterway, as an alternative transport service to road. Based on this, the following suggestions are hereby made.

- The condition of the facilities provided to facilitate the use of the inland waterway transport service should be improved. Such facilities that required urgent

attention include jetties, waterways, passengers waiting passengers lounge and accident prevention unit. Modern ferry boats should be procured, while weeds growing on the waterways should be regularly cleared. The expected type of ferry boats to be procured should be modern one. They should be of a large carrying capacity. Similarly, new jackets should be procured and they be put into a good sanitary condition.

- In order to achieve adequate provision and management of the inland waterway transport facilities; public-private participation should be encouraged. Government should create a favourable environment for the private sector to invest in the sector. Incentives, such as low interest loan and tax holiday for the investors who just come into the business.
- Regular training should be organised for the operators of the inland waterways transport service. Quality assurance must be introduced to prevent the use of substandard facilities and tools, towards providing accident free transport service.

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