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Assessment of Socio-Economic Characteristics of the Ferry Passengers and Operation of Ferry Service in Ikorodu Waterways, Lagos State

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Abstract:- Water transportation has been a means to reduce traffic congestion on the roads. This paper examined the socio economic characteristics and operation of the ferry service. Primary data were obtained using structured questionnaires. Also used are secondary sources of data to obtain maps. A total of 149 questionnaires were randomly distributed to ferry passengers using an accidental sampling method within the four jetties in the study area. Data were analysed using descriptive statistics. It has been revealed that the majority of ferry passengers are married male between the ages of 28 to 38 years with the income range of ₦30,000 - ₦59,000. Majority of the passengers have been using ferry water transportation between 1- 5years. Passengers of up to 30.0% in all the jetties noted that the available boats are safe, more convenient and reliable. Problems and challenges include inadequate boats, water hyacinth and accidents. The findings show that passengers make use of the ferry water transport because it is faster and it saves time. It is therefore recommended that the government should assist in the improvement of ferry service operation for sustainable means of transportation to encourage its usage by more people and reduce traffic congestion on the road.

Keywords:- *Ferry, Jetties, passengers, water transportation.*

I. INTRODUCTION

Transportation is the movement of humans, animals and goods from one location to another (Oni, 2009; Rodrigue *et al*., 2013). It could also refer to the activity that facilitates physical movement of goods and individuals from one place to another. Movement is a basic activity of man and it is impossible for man to do without it. Based on this need, and pursuit of development through science and technology, movement of man is aided through transportation and it represents one of the most important human activities worldwide. Oni (2009) defines transportation as the conveyance of goods and people over land, across water, and through the air from one location to another. It is an integral part of human activity thus forms the basis for all socio economic interactions, indeed no two locations can interact effectively without a viable means of movement. An efficient, reliable and safe transport is pivotal to economic growth and development (Dostál and Adamec, 2011).

Transportation is the main artery via which the economy of any nation flows and its development is one of the most indispensable enzymes necessary for the activation of economic, socio-political and strategic development of a nation (Ighodalo, 2009; Rodrigue, 2020). This goes on to say that the development of an efficient, safe and dynamic transport system is vital for a meaningful and sustainable social, economic growth and development of a nation. More so, since transport as an economic function enhances the productive use of human and material resources, it therefore creates the utility of place and time and thereby ensures that goods and services are moved promptly, seamlessly and safely.

A. Water Transportation

In all the modes of transport, water transportation is the cheapest and the oldest. It does not require huge capital investment in the construction and maintenance of its track because it operates on a natural track, except for canals. It has the largest capacity to convey large goods over long distances (Ademiluyi, *et al*., 2016). Water transport consists of Inland water transport which involves transportation by rivers, canals and lakes; and ocean-transport. The inland water transport has been found to be very advantageous as it has low operational cost; provides flexible services; has the capacity to move heavy goods, and has a low accident rate hence, guaranteed safety (Ademiluyi, et a*l*., 2016).

Water transportation plays a vital role in urban growth and development, in clearer terms, water transport is pivotal to growing and development of all sectors in the economy. It has played a very significant role in bringing different parts of the world closer and is indispensable to foreign trade.

Water transport helps to bridge the gap of the inabilities of land transport to cope with the unfolding trends and it plays a crucial role in the connection of the foreland to the hinterland. It involves the process of moving people, goods among others by barge boats, ships or sail boats over a sea, ocean, lake, canal, and river. In its simplest form, it connotes transportation via water (Solomon, *et al.*, 2020). It is equally important to emphasise that most inland water transportation is usually through the means of ferry services both in Nigeria and the entire world (Ojile, 2006). Ferry is a boat or ship used to carry primarily passengers, and sometimes vehicles and cargo as well, across a body of water.

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B. Water transportation in Lagos

Ironically, when Lagos State was not as congested as it is now, ferry services were readily available. Records have it that the provision of ferry services date back to the early 1970s, when Lagos was the Federal Capital city. The Federal Inland Waterways then operated ferry services to Apapa, CMS and Ebute-Ero among other locations (Obed, 2013). During the Latteff Jakande's administration, between 1979 and 1983, ferry services were provided together with boats that were referred to as "Ita Faji" and "Baba Kekere". This led to the creation of the Ferry Services Corporation which has now transformed to what is now the Lagos State Waterways Authority (LASWA), created in 2008 (Ademiluyi, *et al.,* 2016). Ferries form a part of the public transport systems in Lagos mega cities allowing direct transit between points at a capital cost much lower, faster and reducing the journey within the Lagos metropolis. Most ferries operate on regular, frequent, return services. A passenger ferry in Lagos State operates in most areas that are connected to Lagos lagoon. It is sometimes called a Water Bus or Water Taxi. Today, Lagos operates and runs ferry services on 12 routes in the State (Ademiluyi, *et al.,* 2016).

There are many researches on the operation of private operators of ferry services in Lagos state and Nigeria, among few researches (Obed, 2013). Findings reveal that most private operators are not properly monitored by relevant government Agencies in Nigeria and this is peculiar in most part of the inland waterways on Nigeria water. Hence, the issue of safety, maintenance, and rickety boat use for the operation has discouraged a lot of commuters from using water transportation in Nigeria. Against this background, this paper therefore examines the socio economic characteristics of the ferry passengers and the operations of the ferry service in Ikorodu, Lagos with the aim to achieve the following objectives include:

- Examine the socio-economic characteristics of the patrons of ferry in Ikorodu water ways, Lagos State;
- Assess the perception of the ferry passengers on the operation of the ferry service;
- Examine the problems and challenges of ferry operation service in the study area.

II. THEORETICAL ANCHOR

The paper adopted quality gap model and theory of customer expectation perception on performance service delivery.

A. Quality Gaps Model: (QGB)

Quality theory model is the model used to assess customer expectations and perceptions on service quality business. Perceived service quality gap can be defined as the difference between consumers' expectations and perceptions and the service delivered (Parasuraman *et al*. 1985; Sekulová and Nedeliak, 2013). The assumption made here is that the level of service quality perceived by customers is influenced by the gap between their expectation before using services and their perception on what they actually receive.

There are five dimensions proposed by this model, which are used to evaluate service quality. They include the following: tangibility, reliability, responsiveness, assurance and empathy (Parasuraman *et al*. 1985; Sekulová and Nedeliak, 2013; Gulc, 2017). This theory suggests that if the service offered to the customer meets the mentioned five dimensions, the customer's perception of the service will be positive. However, other scholars had argued that service quality model should include functional quality, technical quality and corporate quality (Gronroos, 1984).

In this study, ferry service quality was measured in five dimensions of passenger satisfaction, which are convenience, customer care, technology, reliability and safety.

B. Expectations Confirmation Theory (ECT)

The theory deals with four main constructs, which are expectations, performance, confirmation/disconfirmation and satisfaction. This theory holds that service performance expectations have an impact on post-purchase satisfaction.

The theory provides for two post-purchase outcomes: confirmation or disconfirmation between performance and expectation. If the service or product meets customer's expectations, the customer is satisfied but if a service fails to meet customer's expectation, the customer is likely to be dissatisfied (Spreng *et al*. 1996). Expectations reflect the anticipated performance behaviour (Churchill and Surprenant, 1982). Disconfirmation (negative satisfaction) is divergence of an actual service experience from the customer's prior expectations. In relation to this study, the theory helps to explain that ferry passengers feel satisfied or dissatisfied with ferry services when they meet or do not meet their expectations. Passengers' judgment on service satisfaction was measured by rating their satisfaction dimension on given service quality dimensions (Barid, 2012).

III. THE STUDY AREA

Lagos State is located in the south-western coast of Nigeria along the Bight of Benin between Latitudes 6^{o} and 7^{o} North of the Equator and between Longitudes 3^{o} and 4^{o} East of the Greenwich Meridian. The State has a land area of about 3, 577 sq/km, making it the smallest in Nigeria, in terms of physical size, (as shown in Figure 1). However, with a population of about 18million (United Nation, 2006) Lagos is the sixth mega city in the world and the unrivalled largest city in Africa with also one of the fastest growing rates, estimated at nearly 6% per annum. It is estimated that the population of Lagos will reach 30 million by year 2025 (World Habitat Report 2006). The geographical area that is called Metropolitan Lagos is also rapidly expanding (as shown in Figure 1.2).

Indeed the commuters in "Metropolitan Lagos" now includes beyond the official Lagos State population figures and embraces other people who come from the neighbouring Nigerian state of Ogun and Oyo, as well as the neighbouring country of Benin Republic.

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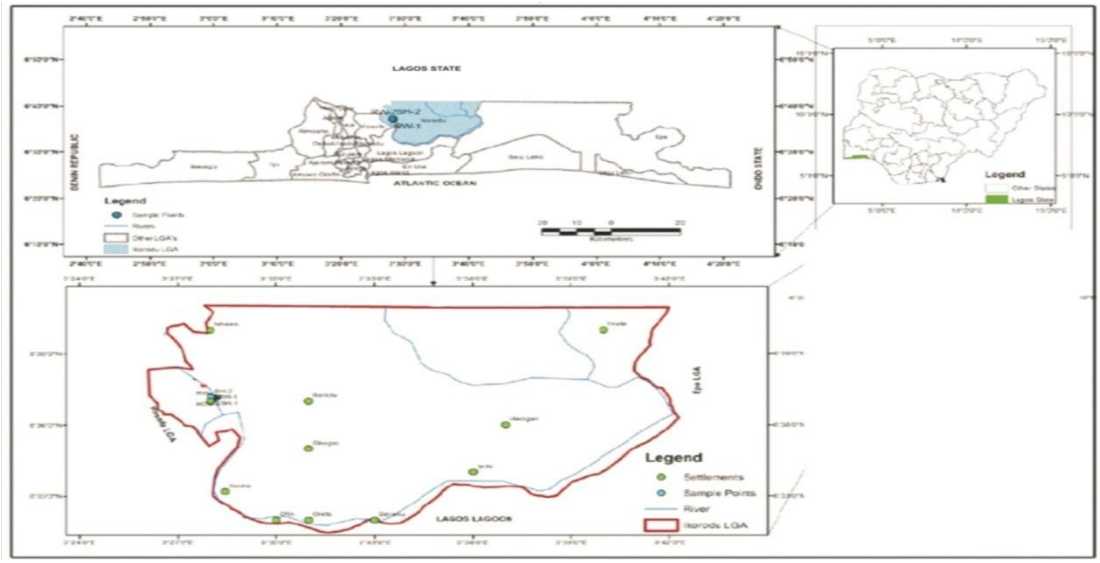

Fig. 1: Map showing Lagos State and Ikorodu

Source: Geographical Information System Office, Lagos.

IV. METHODOLOGY

A. Source and types of data

This study employed both primary and secondary sources of data to reach a meaningful conclusion.

a) Primary source of data and instrument
This is the first-hand data that was collected directly from the study area for the research work through the use of questionnaires and direct observation. These include:

The primary data included:
- Socio-economic characteristic data of ferry passengers in the study area;
- Number of jetties
- Reasons for using ferry water transportation.
- Satisfaction level of passengers
- Perception on ferry service quality

b) Secondary Data
This was the data derived from another source rather than primary source. Details of relevance theories to anchor the study were obtained from publications and seminars, bulletin, learned journal, seminar papers and conference paper. Also map of the study area was obtained from Geographical Information System Office, Lagos.

B. Sampling frame and Sample size

The research adopted a sampling procedure that collected data from the primary source, which involved the data from the patrons and operators of ferry service.

a) Sampling frame
This study categorically identified all the four jetties within the study area, and also took into consideration the target population from each jetty, from which the sample size was also drawn (Table 1). Ikorodu is divided into four Local Development Council Areas. Table 1 shows the four Jetties and their Local Council Development Area. However, this study did not deal with local government areas/districts; rather the study only focused on the private operation of ferry services within these Jetties which were still under Ikorodu, the study area.

	Local Area District	**Sampling Jetty**
a	Ikorodu South LGA	Ebute/Ipakodo Jetty
b	Igbogbo Bayeku L.C.D.A	Bayeku Jetty
c	Ijede LCDA	Ijede Jetty
d	Ibeshe – Igbogbo/ Bayeku LCDA	Ibeshe Jetty

Table 1: Location of Jetties

Source: Author's field work, 2021.

b) Sampling frame of passengers and operators
This study focused on the target population, which was the passenger and operators. The sampling frame was specifically meant to capture the numbers of patrons using the ferry services on a daily basis from the private ferry operators at the different Jetties in the study area, therefore having a sample frame of 2, 970 passengers as shown in Table 2.

Jetties	**Sampling Frame**	**Frequencies**
Ijede	500	Daily
Ebute/Ipako	1,480	Daily
Bayeku	590	Daily
Ibeshe	400	Daily
Total	**2,970**	

Table 2: Passenger sampling frame

Source: Author's field work, 2021.

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C. Sample size

This was primarily affected by the required accuracy of the estimates and the likelihood of their variability which were, of course, set against the limitation of time available for the conduct of the survey. However, in order to obtain adequate samples for the research study from which inferences about the population could be drawn; accidental sampling method was used. According to Neuman (1991) the basic principle guiding the selection of sample size is that the smaller the populations, the bigger the sampling ratios for an accurate sample. Neumann also opines that larger population permit smaller sampling ratio for equally good samples. Hence, it is on these principles that 5% of the sample frame was used as the sample size for only the passengers' questionnaire (Table 3).

Jetties	**Sampling Frame**	**Sample Size (5%)**
Ijede	500	25
Ebute	1480	74
Bayeku	590	30
Ibeshe	400	20
Total	**2,970**	**149**

Table 3: Passenger sample size

Source: Author's field work, 2021.

D. Sampling techniques and data analysis

Accidental sampling technique was adopted to administer the questionnaire owing to the fact that the research was carried out during the morning peak period when the passengers were usually in a hurry to board a boat. This is to have one on one contact with the passengers at the waiting area of the Jetties to administer the questionnaire, as the passengers arrive at the jetties to embark on their journey. Questionnaires were administered on the passengers as they arrived and waited to board the boat to their destination.

The data collected in these studies was analysed using the descriptive statistical tools. The qualitative data, like socio-economic characteristics of patrons and operators, were processed using exploratory data analysis such as graphs, frequency and percentage tables, graphs and charts.

V. RESULTS AND FINDINGS

A. Introduction

Socio-economic characteristics of the passengers, number of jetties and perception of the passengers on the usage of Ferry were examined and discussed. The first section concentrated on socio-economic attributes of the passengers. While the second section focused on number of jetties and the view of the passengers on the usage of ferry water transportation.

B. Socio-economic characteristics of Passengers

This section documents findings on socio-economic attributes of the ferry operators and patrons. The attributes include: gender, marital status, age, educational status and average monthly income among others.

a) Gender distribution of passengers

As shown in Table 4, the majority (61.1%) of the ferry passengers were male in the study area. Ibeshe Jetty had the highest proportion (70.0%) of male passengers; Ijede had the lowest (44.0%). The percentage of females that patronized the ferry was lesser than that of male. Female passengers account for 38% of the total population. Highest proportion of females was recorded at Ijede jetty (56.0%), while the lowest number of females was observed at Ibeshe jetty (30.0%). This inferred that males are more likely to use water to fulfil daily activities than their female counterparts.

S/n	Jetty	Gender		Total (%)
		Female (%)	Male (%)	
1	Ijede	14 (56.0)	11 (44.0)	25 (100)
2	Ebute/Ipakodo	28 (37.8)	46 (62.2)	74 (100)
3	Bayeku	10 (33.3)	20 (66.7)	30 (100)
4	Ibeshe	6 (30.0)	14 (70.0)	20 (100)
Total		58 (38.9)	91 (61.1)	149 (100)

Table 4: Gender distribution of passengers

Source: Author's field work, 2021.

From Figure 2, which showed the marital status of respondents, the highest patrons of ferry services from all the jetties in Ikorodu are married couples, which is closely followed by the singles, the chart also indicate that Singles make use of the ferry service in all the four jetties of the study area. This inferred that a lesser number of singles patronizes the water ways, while the widow/widower and the separated are far less in using the ferry services to their different destinations.

Also, this shows that the married commuters have more economic reasons to use the ferry service in getting to their destinations compared to singles and widows/widowers. It is also assumed that through water transportation the married commuters find it faster in getting to their different destinations, reducing many hours lost in road traffic and makes more economic sense while using ferry service to get to central Lagos.

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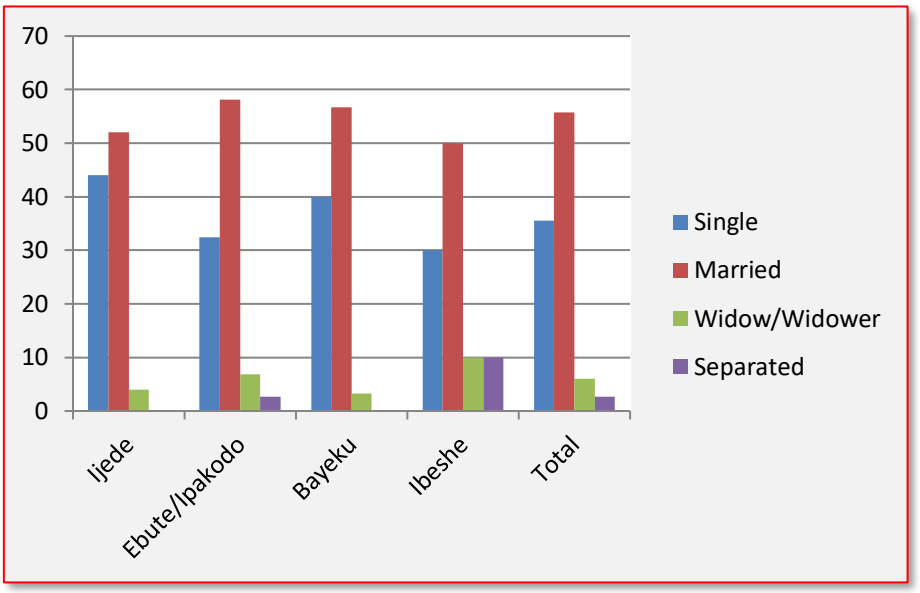

Figure 2: Marital Status of Passengers

Source: Author's field work, 2021.

Table 5, clearly showed that commuters within the age group of 28-37 years using ferries in all the jetties in the study area, were more likely to use ferries to different destinations on the island. Proportion of 37% of the respondents used ferry at Ebute/Ipakodo, Bayeku (46.75%), Ijede (44%) and Ibeshe with 30 per cent respondents while patrons within the age group of 38-47 years were 28%, who commuted through the water transport in all the four jetties of the study area.

Table 5, further showed in that Ijede Jetty, 40% of the respondents were within the age group of 38-47 years. Ebute-pakodo (29.7%), Bayeku (20%), and Ibeshe (25%) uses the ferry. This analysis shows that younger people within the age bracket of 28-37 years in Bayeku which forms the highest (46.7%) used the ferry services to Ikorodu and to other various destinations in this study while patron from Ijede within the age group of 38-41years (40%) among the jetties ply the waterways in Ikorodu to different destinations on the Island in Lagos State. The above analysis showing the correlation between age bracket 38-47years and 38-41years, implies that more middle age commuters were more likely increase to access ferry services due to the fact that Lagos Island is a commercial nerve centre of metropolitan Lagos, Hence embarking on daily activities in getting to their different offices, places of business and other economics reasons would definitely attract more patrons to embrace ferry service in the nearest future.

S/n	Jetty	Age Distribution					Total (%)
		<18years (%)	18-27years (%)	28-37years (%)	38-47years (%)	>47years (%)	
1	Ijede	0 (0.0)	3 (12.0)	11 (44.0)	10 (40.0)	1 (4.0)	25 (100)
2	Ebute/Ipakodo	4 (5.4)	13 (17.6)	29 (39.2)	22 (29.7)	6 (8.1)	74 (100)
3	Bayeku	0 (0.0)	9 (30.0)	14 (46.7)	6 (20.0)	1 (3.3)	30 (100)
4	Ibeshe	1 (5.0)	4 (20.0)	6 (30.0)	5 (25.0)	4 (20.0)	20 (100)
Total		**5 (3.4)**	**29 (19.5)**	**60 (40.3)**	**43 (28.9)**	**12 (8.1)**	**149 (100)**

Table 5: Age distribution of passengers

Source: Author's field work, 2021.

Table 6 shows that patrons with HND/BSc (47.7% of the total respondent in all the jetties in the study area) commute through the ferry water transport services. This was closely followed by the patrons with secondary school leaving certificate. This inferred that HND holders are more likely to continue to use the ferry services to their places of work because the different destination falls within the central business district of metropolitan Lagos. Also Table 6 indicated that 22.1% respondents with secondary school leaving certificates used the ferry services to their different destinations in all the jetties in the study area. It could also be presumed that the working class commuter prefer to ply through the ferry service because they find it faster, convenient and reliable to their different destinations.

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S/n	Jetty	Educational Status						Total (%)
		Illiterate (%)	Primary (%)	Secondary (%)	ND/NCE (%)	HND/BSc (%)	Post-Graduate (%)	
1	Ijede	0 (0.0)	0 (0.0)	2 (8.0)	2 (8.0)	17 (68.0)	4 (16.0)	25 (100)
2	Ebute/Ipakodo	1 (1.4)	0 (0.0)	11 (14.9)	14 (18.9)	42 (56.8)	6 (8.1)	74 (100)
3	Bayeku	3 (10.0)	0 (0.0)	11 (36.7)	4 (13.3)	10 (33.3)	2 (6.6)	30 (100)
4	Ibeshe	2 (10.0)	1 (5.0)	9 (45.0)	4 (20.0)	2 (10.0)	2 (10.0)	20 (100)
Total		**6 (4.0)**	**1 (0.7)**	**33 (22.1)**	**24 (16.1)**	**71 (47.7)**	**13 (8.7)**	**149 (100)**

Table 6: Educational status of passengers

Source: Author's field work, 2021.

Table 7, indicates that 31.5% of the total respondents in all the four jetties of the study area used ferry services to their various private establishments while 21.5% of the total respondents in all the four jetties are traders that make use of the ferry services. Civil servants made up to 16% of the total respondents in all the jetties, closely followed by artisans (12.8%) of respondents in all the jetties of the study area make use of the ferry service.

The summary of this is that most commuters working under private establishments are more patronizing the ferry services. The implication of this, is that, the different destinations captured under the study are within the central business district of Metropolitan Lagos. Hence, private companies' establishments have the highest proportion of people within the central business area of Lagos State.

S/n	Jetty	Occupation Distribution								Total (%)
		Farming (%)	Trading (%)	Private establishment (%)	Artisan (%)	Civil service (%)	Professional (%)	Student (%)	Others (%)	
1	Ijede	0 (0.0)	7 (28.0)	8 (32.0)	9 (36.0)	1 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)	25 (100)
2	Ebute/ Ipakodo	2 (2.7)	16 (21.6)	13 (17.6)	7 (9.5)	21 (28.4)	2 (2.7)	8 (10.8)	5 (6.8)	74 (100)
3	Bayeku	0 (0.0)	5 (16.7)	22 (73.3)	0 (0.0)	2 (6.7)	0 (0.0)	1 (3.3)	0 (0.0)	30 (100)
4	Ibeshe	1 (5.0)	4 (20.0)	4 (20.0)	3 (15.0)	0 (0.0)	6 (30.0)	2 (10.0)	0 (0.0)	20 (100)
Total		**3 (2.0)**	**32 (21.5)**	**47 (31.5)**	**19 (12.8)**	**24 (16.1)**	**8 (5.4)**	**11 (7.4)**	**5 (3.4)**	**149 (100)**

Table 7: Occupation distribution of passengers

Source: Author's field work, 2021.

The income distribution of passengers using ferry service within the study area has a significant influence on the patrons of the ferry service. Table (8) shows that income earners within the bracket of ₦30,000 and ₦40, 000 which is (25.5%) of the total respondent from the different jetties of the study area make use of the ferry services. This was closely followed by respondents that earned between ₦45,000 and ₦59, 000, which was 22.8% of the total respondents in all the four jetties in the study area. Respondents who earned less than ₦30,000 (22.8%) in all the study areas were also very significant in assessing the ferry service in Ikorodu. From the Table (8), it could be inferred that more traders and income earners of ₦45,000 and ₦59,000 (22.8%) patronizes ferry services while the income earner of ₦30,000 – ₦44,000 (25.5%) used ferry from Ikorodu to other destinations.

S/n	Jetty	Income Distribution (Naira)						Total (%)
		<₦30, 000 (%)	₦30, 000-₦44,000 (%)	₦45,000-₦59,000 (%)	₦60,000-₦74,000 (%)	₦75,000-₦89,000 (%)	>₦89, 000 (%)	
1	Ijede	0 (0.0)	4 (16.0)	11 (44.0)	8 (32.0)	2 (8.0)	0 (0.0)	25 (100)
2	Ebute/Ipakodo	30 (40.5)	17 (23.0)	18 (24.3)	3 (4.1)	3 (4.1)	3 (4.1)	74 (100)
3	Bayeku	4 (13.3)	10 (33.3)	3 (10.0)	3 (10.0)	0 (0.0)	10 (33.3)	30 (100)
4	Ibeshe	0 (0.0)	7 (35.0)	2 (10.0)	2 (10.0)	3 (15.0)	6 (30.0)	20 (100)
Total		**34(22.8)**	**38 (25.5)**	**34 (22.8)**	**16 (10.7)**	**8 (5.4)**	**19 (12.8)**	**149 (100)**

Table 8: Income Distribution of Passengers

Source: Author's field work, 2019.

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From Figure 3, more Christians patronized the ferry water transport, than the commuters practicing Islam. The correlation of this religious belief to the study might be insignificant, because the respondents that were picked at random in all the four jetties of the study area could only be a co-incidence and this might not really determine the patronage level in ferry operation within the study area.

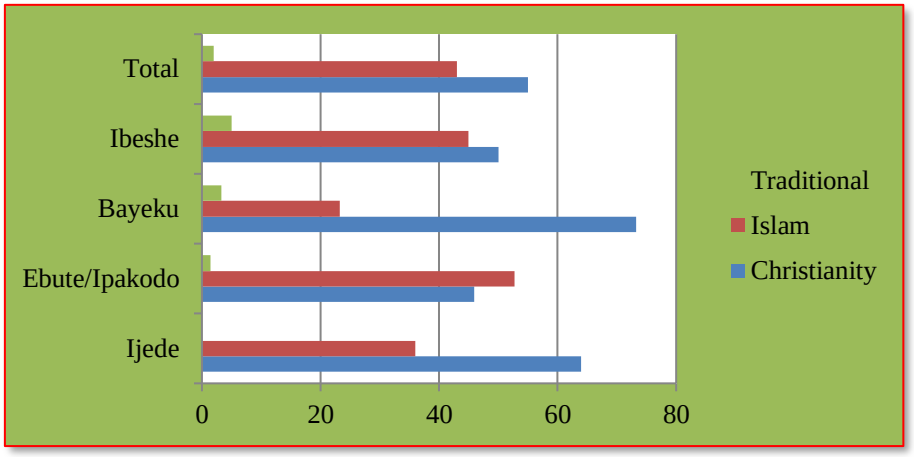

Fig. 3: Religious Belief of Passengers

Source: Author's field work, 2021.

Figure 4 clearly shows that Yorubas had the highest patronage of ferry service in all the four jetties of the study area in Ikorodu, which was closely followed by the Igbo and others respectively. This might be due to the dominant populations of the Yoruba ethnic group in Lagos.

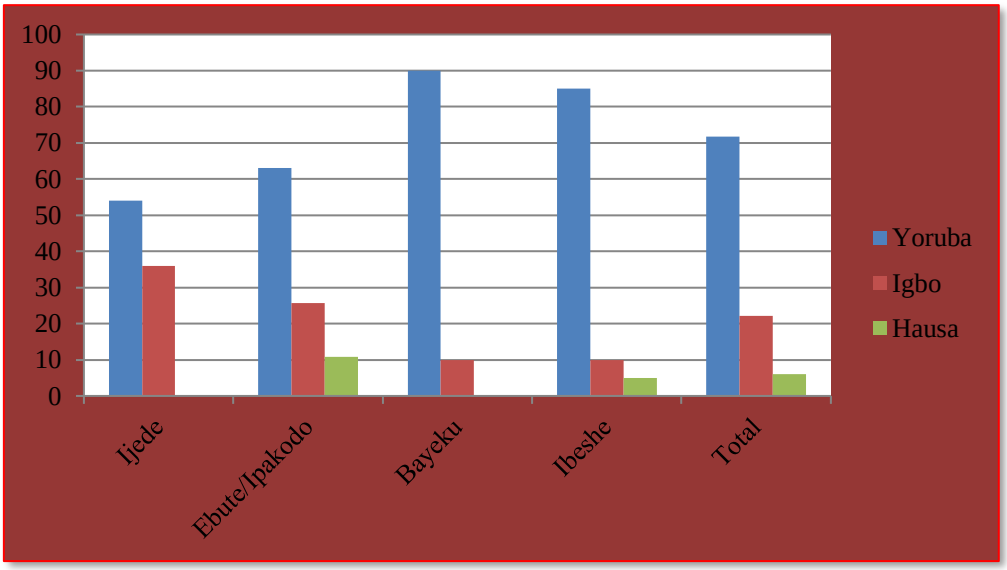

Fig. 4: Tribe of Passengers

Source: Author's field work, 2021.

C. Origin- destination of passengers

Table 9 showed that from the four jetties of the study area, Apapa passengers accounted for 29.6% of the total origin- destination with the use of ferry to different locations of the study areas. Lekki passengers accounted for 25.5%, CMS passengers accounted for (22.1%), Langbasa passengers were 12.7%, Falomo passengers were 9.4% and Addax were 0.7%, respectively. The analysis inferred that more Apapa passengers make use of ferry from different jetties under coverage, closely followed by Lekki passengers and CMS passengers respectively. It is also important to know that the passengers' origin-destination to this major location might improve because this destination is a major part of the central business district within the Lagos mega-city and also there could be significant increase if the convenience, effectiveness and efficiency of the ferry service could be greatly improved. Plate 1 and 2 clearly shows passengers at Ikorodu ebute/ipakodo ferry terminal queuing up to buy tickets to all the different destinations under this study.

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S/n	Jetty	Origin-Destination						Total (%)
		CMS (%)	Falomo (%)	Addax (%)	Lekki (%)	Apapa (%)	Langbasa (%)	
1	Ijede	5 (20.0)	1 (4.0)	0 (0.0)	13 (52.0)	3 (12.0)	3 (12.0)	25 (100)
2	Ebute/Ipakodo	28 (37.8)	13 (17.6)	1 (1.4)	14 (18.9)	14 (18.9)	4 (5.4)	74 (100)
3	Bayeku	0 (0.0)	0 (0.0)	0 (0.0)	11 (36.7)	15 (50.0)	4 (13.3)	30 (100)
4	Ibeshe	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	12 (60.0)	8 (40.0)	20 (100)
Total		**33 (22.1)**	**14 (9.4)**	**1 (0.7)**	**38 (25.5)**	**44 (29.6)**	**19 (12.7)**	**149 (100)**

Table 9: Origin-Destination of Passengers

Source: Author's field work, 2021.

Plate 1: Ebute/Ipakodo, Ikorodu Ferry Terminal

Source: Author's fieldwork, 2021.

Plate 2: Passengers queuing for ticket at Ebute/Ipakodo, Ikorodu terminal to different destinations on the Island

Source: Author's fieldwork, 2021.

D. Trip purpose by the Jetties

The analysis from Table 10 shows that the trip purposes by passengers from all the four jetties under the study area were work trip purposes. Trip for work purposes accounted for 51%, trading 17.4%, appointments 15.4%, recreation 11.4% and education and research 2.7%. The relevance of the above breakdown to this study is significant because it has shown that more people commute through the water to their different destinations due to the favourable conditions of ferry services that had greatly improved. The table also showed that more people would prefer the ferry services in future in order to avoid daily traffic congestion experienced on most Lagos roads during the morning and afternoon peak periods. The table also indicates that more trips to work would greatly increase, because more people embark on journeys to the central business area for different trips reasons, daily. Plate 3 showed passengers queuing for different destinations, and also indicates that many people move with this means of transport.

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S/n	Jetty	Trip Purpose						Total (%)
		Work (%)	Trading (%)	Recreation (%)	Appointment (%)	Education & Research (%)	Others (%)	
1	Ijede	12 (48.0)	3 (12.0)	2 (8.0)	7 (28.0)	0 (0.0)	1 (4.0)	25 (100)
2	Ebute/Ipakodo	34 (45.9)	17 (23.0)	9 (12.2)	11 (14.9)	3 (4.1)	0 (0.0)	74 (100)
3	Bayeku	25 (83.3)	3 (10.0)	0 (0.0)	2 (6.7)	0 (0.0)	0 (0.0)	30 (100)
4	Ibeshe	5 (25.0)	3 (15.0)	6 (30.0)	3 (15.0)	1 (5.0)	2 (10.0)	20 (100)
Total		**76 (51.0)**	**26 (17.4)**	**17 (11.4)**	**23 (15.4)**	**4 (2.7)**	**3 (2.0)**	**149 (100)**

Table 10: Trip Purpose

Source: Author's fieldwork, 2021.

Plate 3: Picture of passengers queuing up for different destinations at Ebute Ipakodo Jetty terminal

Source: Author's fieldwork, 2021.

E. Reasons for patronising Ikorodu ferry

Figure 5 clearly indicated the various reasons why commuters prefer to patronize the ferry services of Ikorodu water transport. Over 80% of respondents from the four jetties of the study attest to the fact that ferry water transport was faster, as it saved time in getting to their different destinations around the central business district in Lagos Island and was more convenient. This implied that the majority of the passengers using the ferry services were more satisfied.

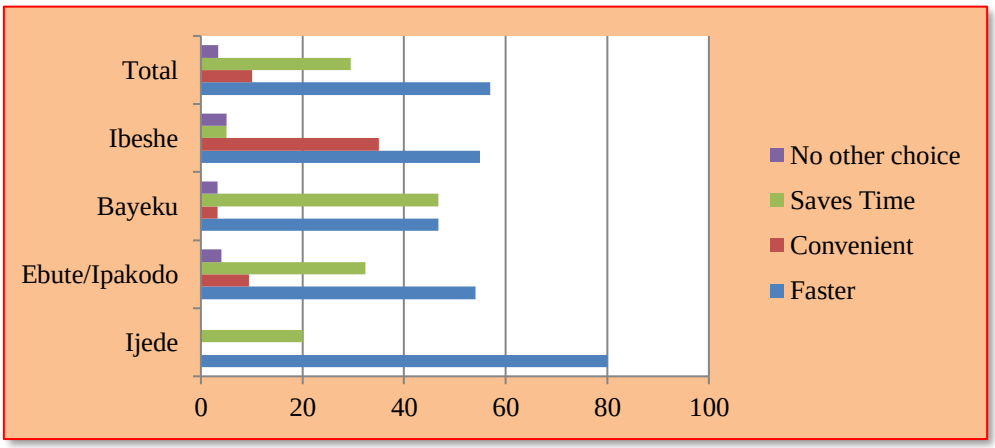

Fig. 5: Reason for ferry usage

Source: Author's field work, 2021.

F. Duration of usage of ferry water transportation by the passenger

Analysis from Table 11 showed the duration of usage of ferry water transportation by the respondents. The highest percentage of passengers of 68.0% was at Ijede jetty terminal, ebute/ipako (62.2%) and Bayeku with 56.7% of the passengers have been using ferry between 1-5 years while 65.0% of the passengers have been using ferry at Ibeshe between 6-10 years. From Table 11, just few of the passengers used ferries between 11-15 years in all the four jetties. The results indicate that many people used the ferry in recent times owing to the improvement in ferry services and better operation services rendering to passengers.

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S/n	Jetty	Duration of ferry usage				Total (%)
		< One year (%)	1-5 years (%)	6-10 years (%)	11-15 years (%)	
1	Ijede	5 (20.0)	17 (68.0)	2 (8.0)	1 (4.0)	25 (100)
2	Ebute/ Ipakodo	27 (36.5)	46 (62.2)	1 (1.4)	0 (0.0)	74 (100)
3	Bayeku	3 (10.0)	17 (56.7)	8 (26.7)	2 (6.7)	30 (100)
4	Ibeshe	0 (0.0)	4 (20.0)	13 (65.0)	3 (15.0)	20 (100)
Total		**35 (23.5)**	**84 (56.4)**	**24 (16.1)**	**6 (4.0)**	**149 (100)**

Table 11: Duration of ferry usage

Source: Author's field work, 2021.

G. Satisfaction level of passengers with available boats

The study further examined the satisfaction and reasons of non-satisfaction of patrons using the ferry service within the study area. Operators' mode of operation was also carefully analysed with their safety precaution mechanism.

a) Passengers satisfaction level with the available boat in all the jetties

Table 12 shows the level of satisfaction of the passengers on the types of boat used for ferry operation within the study in all the jetties under coverage. Many of the respondents of up to 30.0% in all the jetties noted that the available boats were safe, more convenient and reliable, only that they are rusty and of low quality standard, but it still manageable. This implies that in the near future the type of boat used for ferry operation in the study area could affect the level of patronage if passengers were not satisfied with the quality of boat use for the ferry services within the study area.

S/n	Jetty	Dimensions of passengers' satisfaction										
		Convenience		Effective customer care		Modern technology		Reliability		Safety		Total (%)
		F	%	F	%	F	%	F	%	F	%	
1	**Ijede**	6	22	5	20	4	16	5	20	5	20	25(100%)
2	**Ebute/Ipakodo**	17	23	10	13.5	7	9.5	19	26	21	28	74(100%)
3	**Bayeku**	8	27	5	17	2	6	6	20	9	30	30(100%)
4	**Ibeshe**	6	30	3	15	1	5	5	25	5	25	20(100%)
	Total											149(100)

Table 12: Satisfaction level with the available boat

Source: Author's fieldwork, 2021.

H. Perception on ferry service quality

Table 13 shows that 32.0% of the passengers at Ijede jetty, 24.3% at Ebute/Ipako, 33.3% at Bayeku, and 25.0% at Ibeshe jetty indicated that they were satisfied with ferry service due its convenience. In this same vein, 36.0% passengers at Ijede jetty, 33.8% at Ebute /Ipako, 20.0% at Bayeku and 35.0% at Ibeshe noted that it was because of its safety. Also, up to 20.0% of the passengers in all the jetties noted that they were satisfied with the ferry service because it was more reliable while some passengers noted that it was due to the effective customer care and lower percentage noted that it was due to its modern technology.

The results inferred that the satisfaction of passengers towards the ferry service varies based on the way each individual views it. However, it implies from the results that many of the passengers preferred the usage of the ferry owing to its safety, convenience and reliability. This encourages more passengers to make use of the ferry mode of transportation.

S/N	Jetty	Perception on Ferry Service										Total (%)
		Convenience		Effective customer care		Modern technology		Reliability		Safety		
		F	%	F	%	F	%	F	%	F	%	
1	Ijede	8	32.0%	2	8.0%	2	8.0%	4	16.0%	9	36.0%	25 (100%)
2	Ebute/Ipakodo	18	24.3%	6	8.1%	10	13.5%	15	20.3%	25	33.8	74 (100%)
3	Bayeku	10	33.3%	2	6.7%	6	20.0%	6	20.0%	6	20.0%	30 (100%)
4	Ibeshe	5	25.0%	2	10.0%	2	10.0%	4	20.0%	7	35.0%	20 (100%)
Total												**149 (100%)**

Table 13: Perception on ferry service quality

Source: Author's field work, 2021.

I. Satisfaction with mode of operations of ferry operators

Figure 6 shows that over 80% of the passengers are satisfied with the mode of operations of ferry operators in all the jetties of the study area.

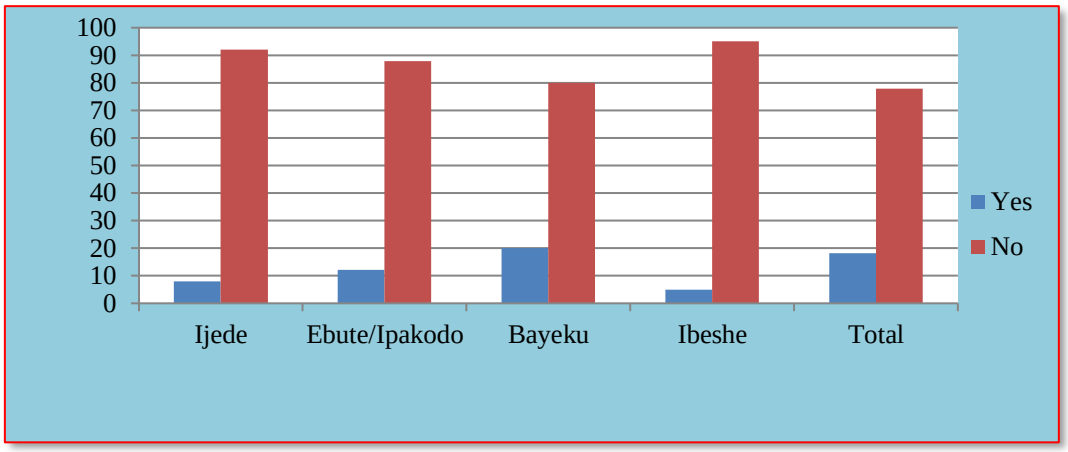

Fig. 6: Satisfaction with Operators' mode of operation

Source: Author's field work, 2021.

Jetties

J. Usage of life jacket

The results in Table 14 inferred that most of the respondents in all the jetties of the study areas attested to the fact that (92.6%) of passengers put on life jackets before embarking on any journey through the ferry transport (Plate 4).

S/n	Jetty	Life Jacket Usage		Total (%)
		Yes (%)	No (%)	
1	Ijede	20 (80.0)	5 (20.0)	25 (100)
2	Ebute/Ipakodo	70 (94.6)	4 (5.5)	74 (100)
3	Bayeku	28 (93.3)	2 (6.7)	30 (100)
4	Ibeshe	20 (100.0)	0 (0.0)	20 (100)
Total		**138 (92.6)**	**11 (7.4)**	**149 (100)**

Table 14: Life Jacket Usage

Source: Author's field work, 2021.

Plate 4: Picture of passengers putting on life jacket

Source: Author's fieldwork, 2021.

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K. Problem of ferry operation observed by the ferry passengers

The respondents (ferry passengers) stated the problems identified with ferry operation in the study area. The identified problems include inadequate number of boats, water hyacinth, government policy and overloading. Figure 7 shows that more respondents, of over 90% noted that inadequate number of boats is a major problem why ferry operation could not be sustained in other to meet the high demand of passengers embarking on water transport from Ikorodu to other destinations under the study area (Plate 5). 30% accounted that water hyacinth was the reason for ferry operation. 19% of the respondents noted overloading as a problem while the remaining 10% identified government policy as an issue towards the ferry operation impediment within the study area.

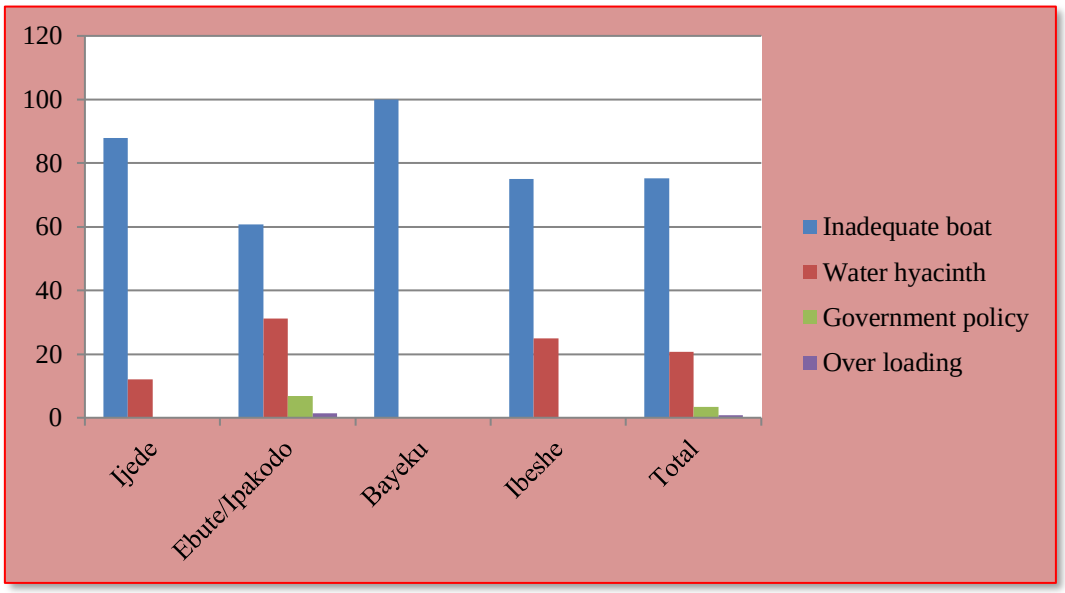

Fig. 7: Problem of Ferry Operation

Source: Author's field work, 2021.

Plate 5: Picture showing passenger about to board a boat at Ebute / Ipakodo Jetty

In addition, ferry passengers in all the jetties noted that they have witnessed at least an accident using the mode. Figure 8 shows that over 90% of the passengers have witnessed one accident or the other on the water ways.

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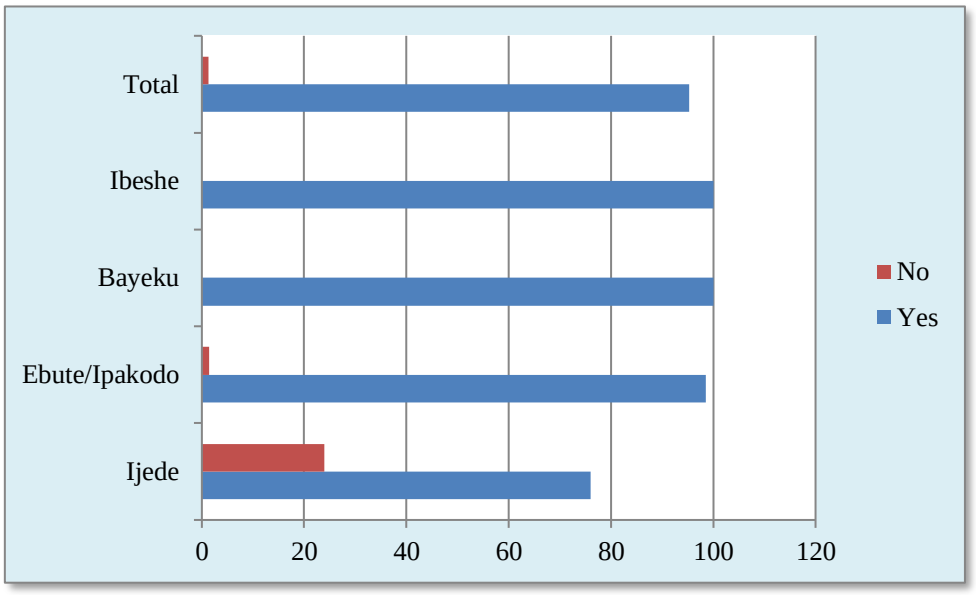

Fig. 8: Accident witnessed

Source: Author's field work, 2020.

Table 15 clearly indicated that most of causes of boat accident are usually caused by over speeding. Most of the passengers (64.4%) in all the jetties of the study area attest to the fact that over speeding by captains of boat operator are causes of most accident, while (35.6%) of passengers in all the jetties think otherwise, that overloading was a major causes of boat accidents (Plate 6). This implied that there was likelihood for more boat accidents to occur if urgent and pragmatic steps were not taken by the Lagos State Water Authority (LASWA) which is the government agency monitoring the operation of ferry service in Ikorodu. It was equally important to also note that boat operators must always be cautious during sailing, and a speed control mechanism must be put in place to avert any future boat mishap in the future.

s/n	Jetty	Causes of Accident		Total (%)
		Yes (%)	No (%)	
1	Ijede	10 (40.0)	15 (60.0)	25 (100)
2	Ebute/Ipakodo	25 (33.8)	49(66.2)	74 (100)
3	Bayeku	11 (36.7)	19 (63.3)	30 (100)
4	Ibeshe	7 (35.0)	13 (65.0)	20 (100)
Total		**53 (35.6)**	**96 (64.4)**	**149 (100)**

Table 15: Causes of Accident

Source: Author's field work, 2021.

Plate 6: Picture showing passengers being rescued by LASWA Emergency Response Team

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L. Monitoring of ferry operators by the government

Table 16 clearly shows that (95.3%) of passengers respondents attest to the fact that governments monitoring of ferry operators are very inadequate while other passenger's respondents indicate that inadequate government presence in monitoring accounted for (1.3%), just adequate (1.3%) and adequate (1.3%). The analysis from the table clearly showed that in all the four jetties of the study area, the number of government monitoring mechanisms in checking and regulating ferry operators operation was insignificant within the study area. And this could also be attested to the level of dissatisfaction from passengers about the mode of operations of ferry operators within the study area.

S/n	Jetty	Adequacy of Government Monitoring					Total (%)
		Very inadequate (%)	Inadequate (%)	Just adequate (%)	Adequate (%)	Very adequate (%)	
1	Ijede	22 (88.0)	1 (4.0)	1 (4.0)	1 (4.0)	0 (0.0)	25 (100)
2	Ebute/Ipakodo	71 (95.9)	0 (0.0)	1 (1.4)	1 (1.4)	1 (1.4)	74 (100)
3	Bayeku	30 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	30 (100)
4	Ibeshe	19 (95.0)	1 (5.0)	0 (0.0)	0 (0.0)	0 (0.0)	20 (100)
Total		**142 (95.3)**	**2 (1.3)**	**2 (1.3)**	**2 (1.3)**	**1 (0.7)**	**149 (100)**

Table 16: Adequacy of government monitoring of ferry operation

Source: Author's field work, 2021.

VI. CONCLUSION AND RECOMMENDATIONS

The findings revealed that despite the problems and challenges of ferry operations experienced by the ferry passengers, they still preferred the usage of the waterway transportation because it was faster, convenient and reliable. More concentration and improvement in the efficient operation service of ferry water transportation by the operators would encourage more people to embrace its usage. Government should therefore provide necessary facilities that can assist in the improvement of ferry service operation for sustainable means of transportation to reduce traffic congestion on the road. Enabling environment should also be provided to enable private sector participation in water transportation services in order to drive competition for a healthier and efficient service delivery.

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