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Original Article

Livelihood Characteristics of the Fish Farmers in Ilorin, Kwara State Nigeria

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Abstract

Purpose- Fish farming is an important source of Livelihood and nutrition for several people involved in fishing activities in Nigeria. This study aims to assess the Livelihood characteristics of the fish farmers in Ilorin, Kwara State, Nigeria.

Design/methodology/approach- The study was carried-out in Ilorin Kwara State, Nigeria. Ilorin is the Capital of Kwara State. The Research involved a 3-stage sampling procedure. The first stage involved a purposive selection of two (Ilorin East and Ilorin West) Local Government Areas in Ilorin due to the prevalence of fishing activities in the area. The second stage involved a purposive selection of five fishing settlements along the river bank in each of the two local Government Areas and the third stage involved the random selection of ten fish farmers within the fishing settlements. A total of 150 Fish farmers were randomly selected for this research work. Descriptive statistics such as frequency count, percentage, and mean were employed to analyze the data. The questionnaire was the instrument used for data collection.

Findings Findings: The findings showed that involvement in other income-generating activities (mean=3.81) was the highest-ranked financial asset. Owned/leased fish ponds (mean=3.51) was the highest-ranked physical asset. The ability to network with the extension agents/experts for fish production (mean=3.61) was the highest-ranked social asset. Physically fit to carry out the Fish production activities (mean=3.73) was the highest-ranked human asset. Access to water for Fish production (mean=3.70) was the highest-ranked natural asset. The overall Livelihood status of the fish farmers was High (mean=3.38).

Originality/value: This study is important as it would provide up-to-date information on the livelihoods of fish farmers which would drive the governments' policy and interventions towards the fish farmers in Nigeria. Also, the Agricultural extension programme aimed to improve fish farmers' livelihood outcomes in fish production in Kwara State, Nigeria should improve their skills and information on areas of need which include pond water treatment, construction, and maintenance were the leading information needed by fish farmers, and to help the fish farmers overcome the factors limiting their production.

Keyword: Livelihood, Status, Characteristics, Fish Farmers, Nigeria.

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1. Introduction

Fish Production significantly contributes to the incomes of several people in Nigeria and all over the world (Adisa, Ifabiyi and Opeyemi 2021; Ifabiyi, Banjoko and Komolafe, 2017). It's a vital source of nourishment for the populace. Fish production also helps in ensuring that many Nigerians are food and nutrition-secured. Globally, fish provides micro-nutrients to about 3.3 Billion people and about 600 Million people depend on fisheries and Aquaculture for their Livelihoods (WorldFish, 2024; Ifabiyi *et al.,* 2023). For those with low incomes worldwide, fish represents a significant and reasonably priced source of food (Bene et al., 2015). Because, according to FAO (2018), humans ate around 88.42 percent of the 171 million tons of fish produced, fisheries play a critical role in ensuring the security of food and nutrition worldwide. Fish makes up over 17% of the animal protein that people eat worldwide (FAO, 2018). With the largest market for fish and fisheries products in Africa and a per capita intake of 14.9 kg annually, Nigerians are heavy fish consumers (Olaoye and Oloruntoba, 2011). With its contribution of over one-tenth of the country's GDP to the agricultural sector, the fisheries sub-sector in Nigeria's economy holds a special place (FDF, 2008). Because fish is very inexpensive compared to meat and has a high protein content, Nigerians eat fish and fish products (FAO, 2012). Among animal proteins, it is unique due to its fatty acid profile, low cholesterol level, high vitamin and mineral content (calcium, iron, zinc), and amino acid profile (FAO, 2012). Fish currently makes up 41% of the average Nigerian's animal protein consumption and is gradually replacing meat owing to health and nutritional concerns, even though it is very vulnerable to deterioration in the absence of any preservatives (Okonta and Ekelemu, 2005).

Livelihood refers to the process of making a living. Accordingly, a livelihood is considered manageable when 'it can deal with and recover from strains, sustain or improve its capacity, while not depleting the natural resource base'. Turner (2017) idealized sustainable livelihoods to be the outcomes in manageable opportunities for the next generation, paying net paybacks to other livelihoods. Although the sustainable livelihood framework (SLF) has been extensively utilized. it is a suitable model for investigating smallholder livelihoods (Panday *et al.,* 2017).

Sustainable livelihood is an active idea that offers procedures to exterminate poverty and how underprivileged persons organize their lives. Livelihood results are the accomplishments and reimbursements that households anticipate obtaining through the employment of specific activities and approaches. These results can also be designated as the expectations of the household (Nguthi & Niehof, 2008).

There is a huge opportunity for the Fishing sub-sector to boost the nutritional security of Nigerians, (FAO, 2019). This is so as several Nigerians are involved in fish farming activities in the country. Due to the high demand for fish and fish products in Nigeria, several unemployed people have been encouraged to take opportunities in fish farming to enhance their income. However, the Nigerian fishing and aquaculture sub-sector of Agriculture is attributed to be at a small scale, with low levels of technology, marketing problems, and high labour intensity (Ifabiyi, Komolafe and Adisa, 2022 & FAO, 2022). The high cost of fish feeds and medications has been reported to constitute substantive input costs for the farmers (FAO, 2019). These would limit the income and output of the Fish farmers in Nigeria.

Hence, it is essential to carry out a study on the livelihoods of fish farmers that would favourably influence government policy towards the farmers and the other actors in the fish industry. Also, there is a paucity of information on the livelihood attributes of fish farmers in Kwara state, Nigeria. This established the gap that this research would fill. Therefore, this necessitates the need to carry out the study on the livelihood attributes of the fish farmers in Ilorin, Kwara State, Nigeria.

The specific objectives of the study are to:

1. Identify the Enterprise characteristics of the respondents in the study area.
2. Examine the perceived information needs of the fish farmer.
3. Determine the Livelihood Characteristics of fish farmers in the study area
4. Identify the factors affecting fish production in the study area.

2. Research Methodology

The study was carried out in Ilorin Kwara State, Nigeria. *Ilorin* is the capital city of Kwara State located in the North-central region of Nigeria. Ilorin in Kwara State, Nigeria is predominantly agrarian. The sampling procedure involved a three-stage process. The first stage involved a purposive selection of two (Ilorin East and Ilorin West) Local Government Areas in Ilorin due to the prevalence of fishing activities in the area. The second stage involved a purposive selection of five fishing settlements along the river bank in each of the two local Government Areas and the third stage involved the random selection of ten fish farmers within the fishing settlements. A total number of one hundred and fifty (150) respondents were selected for the study.

The perceived information needs of the fish farmers were measured with the use of a 4-scale Likert type scale where not needed =1, slightly needed=2, moderately needed =3 and highly needed =4. The Livelihood outcomes of Fish farmers was measured on a 5-point Likert type scale where strongly disagree=1, disagree=2, undecided=3, agree=4, and strongly agree=5. To categorize the Livelihood Status, the score of 1-5 was added and then divided by 5 to get 3 (1+2+3+4+5/5=3) High Status, ≥3.0, Low Status, ≤ 3.0, The grand mean is the average of the mean scores of all the livelihood outcomes. The data collected was analysed with the use of frequency counts, percentages and means.

3. Research Finding

3.1. Enterprise Characteristics of the Respondents

The result in Table 1 showed that about 45.3% of the respondents used concrete ponds and the average number of ponds utilized for fishing activities was three ponds. The average number of fish stocked was 17,804.93. About 51.3% got water from the river. About 55.3% of the respondents got their stocked fish through the fish breeding farms. The result in Table 1 further showed that about 85.3% farmed catfish. About 57.3% got credit through personal savings. About 72% of the respondents have access to extension services. This finding supports the findings of Ifabiyi, *et al.,* (2023) and Akangbe *et al.* (2015), who found that the majority of fish farmers in Kwara State Nigeria, reared catfish.

Table 1- Fish Farming Enterprise Characteristics of Respondents

Variables	Frequency	Percentage	Mean	Std. Deviation
Types of fish pond				
Earthen pond	66	44.0		
Concrete pond	68	45.3		
Plastic pond	6	4.0		
Tarpaulin	10	6.7		
Number(s) of Fish Pond used for fish farming				
1 – 2	60	40.0		
3 – 4	67	44.7	3.04	1.15
5 and above	23	15.3		
Total Number(s) of Stocked Fish in Pond(s)				
≤ 10,000	89	59.3		
10,001 – 20,000	48	32.0	17804.93	32888.82
20,001 and above	13	8.7		
Main sources of water for Fish Farming				
Borehole	33	22.0		
Rivers	77	51.3		
Wells	24	16.0		
Rainfall	9	6.0		
Pipe Borne Water	7	4.7		
Size of Fish at the Stocking Stage:				
Juveniles	97	64.7		
Fingerlings	51	34.0		
Fray	2	1.3		

Variables	Frequency	Percentage	Mean	Std. Deviation
Main Source of the Stocked-Fish you Rearing				
Fish Breeding Farm	83	55.3		
Fingerlings/Frays Vendor	34	22.7		
Open Fish Market	31	20.7		
Ministry of Agriculture	2	1.3		
Specie(s) of Fish Stocked:				
Cat Fish only	128	85.3		
Tilapia only	13	8.7		
Both Cat Fish & Tilapia	9	6.0		
Pond Ownership Type				
Owned the Pond	76	50.7		
Lease/Rent the Pond	74	49.3		
Pond Operating Period:				
Raining Season-only	52	34.7		
All Year Round	98	65.3		
Sources of Credits				
Personal Savings	86	57.3		
Family/Neighbours	15	10.0		
Friends	27	18.0		
Cooperative Societies	14	9.3		
Banks	8	5.3		
Access to Extension Services				
Yes	108	72.0		
No	42	28.0		

Source: Field survey, 2024

The result displayed in Table 2 showed that pond water treatment (mean=2.29) ranked first, pond construction (mean=2.21) ranked second and pond maintenance information (mean=1.93) ranked third position. This finding implies that information on pond water treatment, construction, and maintenance was the leading information fish farmers needed in the study area. This result denotes that fish farming is a vital source of livelihood to the farmers as several resources/assets were utilized to enhance their productivity. The provision of information on will enhance the capacity of the fish farmers as Adisa et al., (2018) reported that farmers must acquire new ideas and techniques in order to be more productive and to make more profits.

Table 2- The Perceived Information Needs of the Respondents

Information Needs	Not Needed	Slightly Needed	Moderately Needed	Highly Needed	Mean(SD)	Rank
Feed formulation	32(21.3)	32(21.3)	26(17.3)	60(40.0)	1.76±1.19	4th
Pond construction	5(3.3)	28(18.7)	48(32.0)	69(46.0)	2.21±0.86	2nd
Liming of ponds	32(21.3)	49(32.7)	46(30.7)	23(15.3)	1.40±0.99	10th
Pond water treatment	2(1.3)	24(16.0)	52(34.7)	72(48.0)	2.29±0.78	1st
Pond maintenance information	24(16.0)	19(12.7)	51(34.0)	56(37.3)	1.93±1.07	3rd
Fish processing	40(26.7)	19(12.7)	53(35.3)	38(25.3)	1.59±1.14	9th
Fish preservation	41(27.3)	23(15.3)	38(25.3)	48(32.0)	1.62±1.20	8th
Fish medication	19(12.7)	56(37.3)	31(20.7)	44(29.3)	1.67±1.03	7th
Fertilization of ponds	34(22.7)	23(15.3)	44(29.3)	49(32.7)	1.72±1.15	5th
Weather/Climatic information	38(25.3)	16(10.7)	49(32.7)	47(31.3)	1.70±1.16	6th
Branding/Packaging of Fish products	45(30.0)	46(30.7)	20(13.3)	39(26.0)	1.35±1.17	11th

Source: Field survey, 2024, Not Needed=0, Slightly Needed=1, Moderately Needed=2, Highly Needed=3

The result in Table 3 revealed that involvement in other income-generating activities (mean=3.81) was the highest-ranked financial asset. Owned/leased fish ponds (mean=3.51) were the highest-ranked physical asset. The ability to network with the extension agents/experts for fish production (mean=3.61) was the highest-ranked social asset. Physically fit to carry out the Fish production activities (mean=3.73) was the highest-ranked human asset. Access to water for Fish production (mean=3.70) was the highest-ranked natural asset. The finding further divulged that the overall Livelihood Status of the fish farmers (3.38) was categorized as high. The provision of timely, relevant and needed information to the fish farmers will enhance their productivity as Adesope, Asabiaka and Agumagu (2007) stated that those who possess appropriate and timely information will make a more rational decision than those without.

Table 3- Livelihood Characteristics of the Fish Farmers

Livelihood Outcomes	Strongly Disagree	Disagree	Undecided	Agree	Strongly agree	Mean(SD)	Rank
Financial Assets							
Income able to meet basic needs	67(44.7)	24(16.0)	8(5.3)	27(18.0)	24(16.0)	2.45±1.57	4th
Able to save money from fish farming	2(1.3)	14(9.3)	35(23.3)	72(48.0)	27(18.0)	3.72±0.91	2nd
Access to credit through cooperative society and banks	8(5.3)	10(6.7)	23(15.3)	94(62.7)	15(10.0)	3.65±0.94	3rd
Involve in other income generating activities	4(2.7)	19(12.7)	6(4.0)	94(62.7)	27(18.0)	3.81±0.97	1st
Physical Assets							
Possess fish farming inputs /Equipment	18(12.0)	24(16.0)	26(17.3)	33(22.0)	49(32.7)	3.47±1.40	2nd
Own/lease a pond	6(5.3)	24(16.0)	22(14.7)	75(50.0)	21(14.0)	3.51±1.09	1st
Live in cement and zinc roof house	25(16.7)	25(16.7)	21(14.0)	50(33.3)	29(19.3)	3.19±1.43	8th
Possess power generator	26(17.3)	22(14.7)	29(19.3)	36(24.0)	37(24.7)	3.24±1.42	7th
Possess radio/TV	45(30.0)	25(16.7)	18(12.0)	38(25.3)	24(16.0)	2.81±1.50	11th
Possess smart phone	30(20.0)	16(10.7)	12(8.0)	66(44.0)	26(17.3)	3.28±1.41	6th
Possess freezer/cold room for preservation	31(20.7)	30(20.0)	25(16.7)	42(28.0)	22(14.7)	2.96±1.38	10th
Possess car/motorcycle/tri-cycle for transportation	32(21.3)	14(9.3)	38(25.3)	49(32.7)	17(11.3)	3.03±1.32	9th
Possess fish processing equipment	15(10.0)	24(16.0)	20(13.3)	68(45.3)	23(15.3)	3.40±1.22	4th
Use of solar energy to power house	21(14.0)	12(8.0)	42(28.0)	42(28.0)	33(22.0)	3.36±1.30	5th
Possess water pumping machine	9(6.0)	27(18.0)	30(20.0)	58(38.7)	26(17.3)	3.43±1.15	3rd
Social Assets							
Ability to network with other farmers /agencies for resources	12(8.0)	28(18.7)	27(18.0)	70(46.7)	13(8.7)	3.29±1.12	4th
Membership of fish farmers related associations	14(9.3)	19(12.7)	39(26.0)	61(40.7)	17(11.3)	3.32±1.13	3rd
Ability to attract customer/markets	8(5.3)	19(12.7)	37(24.7)	68(45.3)	18(12.0)	3.46±1.03	2nd
Ability to connect with extension agents/experts for fish production	10(6.7)	15(10.0)	25(16.7)	73(48.7)	27(18.0)	3.61±1.10	1st
Participation in social gatherings	20(13.3)	35(23.3)	12(8.0)	67(44.7)	16(10.7)	3.14±1.32	5th

Livelihood Outcomes	Strongly Disagree	Disagree	Undecided	Agree	Strongly agree	Mean(SD)	Rank
Holds executive position in social /community organizations	17(11.3)	41(27.3)	33(22.0)	46(30.7)	13(8.7)	2.98±1.18	6th
Human Asset							
Possess fish farming knowledge and skill competency	13(8.7)	20(13.3)	31(20.7)	74(49.3)	12(8.0)	3.35±1.09	5th
Possess good health condition	6(4.0)	25(16.7)	12(8.0)	82(54.7)	25(16.7)	3.63±1.07	3rd
Physically fit to carry out fish farming activities	6(4.0)	16(10.7)	21(14.0)	77(51.3)	30(20.0)	3.73±1.03	1st
Knowledge of how to obtain credit facilities and grants	23(15.3)	14(9.3)	21(14.0)	69(46.0)	23(15.3)	3.37±1.29	4th
Knowledge of how to secure the farm from theft	12(8.0)	6(4.0)	30(20.0)	68(45.3)	34(22.7)	3.71±1.11	2nd
Natural Assets							
Access to water for production	16(10.7)	8(5.3)	7(4.7)	93(62.0)	26(17.3)	3.70±1.15	1st
Access to secure and safe pond sites	25(16.7)	6(4.0)	40(26.7)	58(38.7)	21(14.0)	3.29±1.26	5th
Access to pond site in a conducive environment for fish farming	12(8.0)	0	41(27.3)	69(46.0)	28(18.7)	3.67±1.04	2nd
Access to land/drainage to release waste water into	11(7.3)	14(9.3)	12(8.0)	92(61.3)	21(14.0)	3.65±1.07	3rd
Access to an area that has basic facilities like motorable road, electricity etc.	12(8.0)	6(4.0)	38(25.3)	68(45.3)	26(17.3)	3.60±1.07	4th
Grand Mean Score/Overall Livelihood Status						*3.38±1.34	

Source: Field survey 2024, ***High Status,** ≥3.0, Low Status, ≤ 3.0,

3.2. Factors Affecting Fish Production

The finding presented in Table 4 showed that unavailability of machine/equipment (mean=1.58) was ranked the first factor affecting fish production, low patronage/consumption of locally farmed fish (mean=1.40) was ranked second factor and the incessant occurrence of drought during the dry season (mean=1.33) was ranked third factor. This result showed that the unavailability of machines/equipment, low patronage of locally farmed fish, and incessant occurrence of drought were the main constraints affecting fish farmers in the study area. This result is in contrast with the findings of Ogunlade (2007) who reported that major constraints facing the fish farmers were capital, security, feed and fingerlings procurement.

Table 4- Distribution of Respondents by Factors Affecting Fish Production

Factors	Not a factor	Less Severe	Highly Severe	Mean(SD)	Rank
Lack of start-up capital	41(27.3)	43(28.7)	66(44.0)	1.21±0.94	8th
Non-availability of high-quality breeds of fingerlings	22(14.7)	83(55.3)	45(30.0)	1.15±0.65	11th
Unavailability of machine/equipment	8(5.3)	47(31.3)	95(63.3)	1.58±0.59	1st
Insufficient water in the dry season	27(18.0)	52(34.7)	71(47.3)	1.29±0.76	5th
Inadequate Technical Know-how	38(25.3)	50(33.3)	62(41.3)	1.16±0.8	10th
Low patronage/consumption of locally farmed fish	16(10.7)	58(38.7)	76(50.7)	1.40±0.68	2nd
Annual Flooding of Ponds	34(22.7)	73(48.7)	43(28.7)	1.06±0.72	15th
Lack of adequate information/Extension services on fishery practices	30(20.0)	76(50.7)	44(29.3)	1.09±0.7	13th
Incessant occurrence of drought during dry season	11(7.3)	79(52.7)	60(40.0)	1.33±0.61	3rd
High Cost of pond construction	24(16.0)	71(47.3)	55(36.7)	1.21±0.7	9th
Theft	27(18.0)	82(54.7)	41(27.3)	1.09±0.67	14th
Predators problems	27(18.0)	63(42.0)	60(40.0)	1.22±0.73	7th
Marketing Problems	28(18.7)	46(30.7)	76(50.7)	1.32±0.77	4th
High cost of Feeds	35(23.3)	58(38.7)	57(38.0)	1.15±0.77	12th
Fish disease outbreak/High Mortality	17(11.3)	76(50.7)	57(38.0)	1.27±0.65	6th

Source: Field survey, 2024; Not a factor=0, Less Severe=1, Highly Severe=2

5. Discussion and Conclusion

The study on the livelihood characteristics of the fish farmers shows that a large population of fish was stocked by the farmers in the study area. This implies that the river is an important source of water for the fish farmers in the study area. The result indicates that catfish are the most reared fish in the study area. This finding supports the findings of Ifabiyi, *et al.,* (2023) and Akangbe *et al.* (2015), who found that the majority of fish farmers in Kwara State Nigeria, reared catfish. This implies that the extension service providers are reliable and provide up-to-date and relevant information to the fish farmers in the study area. The study shows that information on pond water treatment, construction, and maintenance were the leading information needed by fish farmers in the study area.

The finding indicates that the income obtained through other income-generating activities could be invested in fish farming. Also, the fish farmers' access to assets could increase their chances of participating in other business ventures that would enhance their output and income. Access to fish ponds is an important asset for the farmers as the ponds provide shelter for the fish. The result showed that access to water is also an important asset for fish production as water is needed for all year-round fish farming activities. This result denotes that fish farming is a vital source of livelihood to the farmers as several resources/assets were utilized to enhance their productivity. This further infers that fish production contributes to the livelihood of the fish farmers in the study area. This result concurred with the findings of Komolafe, *et al.,* (2022) who stated that agricultural enterprises are the key sources of income and livelihood for several people in developing nations of the world. This result indicates that Fish farmers have high livelihoods. The high livelihood status is expected to have positive effects on their standard of living. The adduced reason for the high livelihood status could be attributed to the fact that the farmers had formal education, access to information through diverse sources, involvement in other income-generating activities and the ability to connect with other farmers. This finding concurred with Ifeanyi-obi and Mathews-Njoku (2014) who disclosed that most of farmers in the South Eastern States of Nigeria have a high Livelihood Status. This indicates that the unavailability of machine/equipment, low patronage/consumption of locally farmed fish, and incessant occurrence of drought during dry

season were the severe factors affecting fish farmers in the study area. This confirms preceding study that similarly found that lack of equipment and tools as a problem facing farmers in Kwara State, Nigeria (Olorunfemi *et al*., 2019).

The study concluded that the fish farmers have high livelihood status and the unavailability of machine/equipment, low patronage/consumption of locally farmed fish, and incessant occurrence of drought during dry season were the severe factors affecting fish farmers in the study area.

I. The study therefore recommends that Agricultural extension programme aimed to improve fish farmers' livelihood outcomes in fish production should improve their skills and information on top areas of needs which include pond water treatment, construction, and maintenance were the leading information needed by fish farmers needed in the study area.

II. Agricultural extension agents, relevant government agencies and NGOs should design innovative programme to help the fish farmers overcome the problems unavailability of machine/equipment, low patronage/consumption of locally farmed fish, and incessant occurrence of drought during dry season in the study area.

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Authors' contributions

The authors equally contributed to the preparation of this article.

Conflict of interest

The authors declare no conflict of interest

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