

**INVOLVEMENT IN FISH FARMING AND STANDARD OF LIVING OF YOUTH IN  
UGHELLI NORTH LGA, DELTA STATE, NIGERIA.**

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**FACULTY OF AGRICULTURE**

**UNIVERSITY OF BENIN**

**BENIN CITY**

**SEPTEMBER, 2023**

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**A PROJECT SYBMITTED TO THE DEPARTMENT OF  
DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION SERVICES,  
UNIVERSITY OF BENIN, BENIN CITY IN PARTIAL FULFILMENT OF THE  
REQUIREMENT FOR THE AWARD OF BACHELOR OF AGRICULTURE.**

**SEPTEMBER, 2023**

## **CERTIFICATION**

This is to certify that this research work was carried out by AKPO UWEREVU with matriculation number AGR1700073 in the department of Agricultural economics and Extension services, faculty of agriculture, University of Benin, Benin city, Edo State, Nigeria.

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## ABSTRACT

Youths have the potential to overcome some of the major constraints to expanding fish farming in developing countries such as pond construction, disease management, hatchery management, genetic improvement, harvesting and processing because they are often more open to new ideas than adult farmers. In Nigeria, fish farming is still carried out using physical strength, which declines with age. However, empirical evidence on influence of youth involvement in fish farming on their standard of living is scarce. Therefore, involvement in fish farming and the standard of living of youths in Ughelli north local government, delta state, Nigeria were investigated.

The result from the analyses shows that most of the fish farmers were male. The mean age of the farmers was 32 years. Majority(75%) of the respondent were married, majority(81.25%) of the respondent were members of association. Majority( 97.5%) of the respondent family size was 5 and below The mean monthly income from other sources is ₦75,195. Majority(52.5%) of the respondent has experience of between 5-9 years, with a mean years of experience of 8 years. Majority (68.75%) has 1-5 fish ponds with a mean number of fish pond of 6.

The majority(46.3%) of the respondent live in a room and palour self-contain apartment. 23.8% owns the house they live in, while majority(76.2%) rented. Majority owns basic household facilities such as television, telephone, water closet, gas cooker and generator.

Majority (63.8%) of the respondent has a source of mobility. The mean monthly savings of the respondent is ₦51,597. Majority of the respondent spend less than ₦20000 monthly on Food, Shelter, Clothing, Dependents, Internet connection, Electricity and Transportation. High cost of fish feed is a major constraint faced by majority of the respondent.

The study concludes that involvement in fish farming had no significant effect on the living standard of youths involved in fish farming in the study area. Oke and Goosen 2021 reported that Stocking density and number of cycle significantly impacted the final profitability of fish farming enterprise

## **DEDICATION**

This research work is dedicated to almighty God for his endless mercy and grace upon me.

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## TABLE OF CONTENTS

TITLE PAGE.....	ii
CERTIFICATION .....	iii
ABSTRACT .....	iv
DEDICATION .....	vi
ACKNOWLEDGEMENT .....	vii
TABLE OF CONTENTS .....	ix
CHAPTER ONE .....	1
1.0 INTRODUCTION.....	1
1.1 Background of the Study .....	1
1.2 Statement of Problem .....	5
1.3 Objective of the study .....	7
1.4 Hypothesis of the study .....	7
1.5 Justification of the study .....	8
CHAPTER TWO .....	9
LITERATURE REVIEW .....	9

2.1 The Fish industry in Nigeria .....	9
2.2 Benefits of fish farming .....	11
2.2.1 Source of employment .....	11
2.2.2 Good source of animal protein .....	12
2.2.3 Source of income / revenue .....	12
2.2.4 Household food security .....	13
2.3 Gap in fish demand and supply in Nigeria .....	13
2.4 Challenges in fish farming .....	15
2.5 Fish rearing facilities .....	17
2.5.1 Fish ponds .....	17
2.5.1.1. Earthen ponds .....	19
2.5.1.2 Concrete ponds .....	20
2.5.2 Fish Tanks ( tarpaulin tanks) .....	22
2.6 Species of farmed fishes in Nigeria .....	22
2.7 Management operations in fish farming .....	27
2.8 Concept of youth .....	33
2.9 Empirical review .....	36

CHAPTER THREE .....	40
3.0 METHODOLOGY .....	40
3.2 Sampling Techniques and sample size .....	42
3.3 Data Collection .....	42
3.5 Method of Data analysis .....	44
CHAPTER FOUR .....	46
4.0 RESULTS AND DISCUSSION .....	46
4.1 Personal characteristics of youths involved fish farming in ughelli north local government area .....	46
4.1.1 Sex .....	46
4.1.2 Age of respondent .....	47
4.1.3 Education .....	48
4.1.4 Marital status .....	48
4.1.5 Household Size .....	49
4.1.6 Membership of association. ....	49
4.1.8 Where did you learn about fish farming .....	50
4.2 Enterprise characteristics .....	51

4.2.1 Years of experience in fish farming .....	52
4.2.2 Number of fish pond .....	52
4.2.3 Number of fish production cycles per year .....	52
4.2.4 Type of fish rearing facility .....	53
4.2.5 Quantity of fish stocked .....	53
4.2.6: Production cycles and income per cycle .....	53
4.3 Standard of living of youth involved in fish farming .....	57
4.4: The Level of involvement of youth in fish farming .....	62
4.5 Constraints .....	66
4.6 Hypothesis testing .....	70
4.6.1 Influence of involvement on living standard .....	70
CHAPTER FIVE .....	72
5.0 SUMMARY, CONCLUSION AND RECOMMENDATION .....	72
5.1 SUMMARY .....	72
5.2 CONCLUSION .....	73
5.3 RECOMMENDATION .....	74
REFERENCES .....	76

QUESTIONNAIRE ..... 87

## **CHAPTER ONE**

### **1.0 INTRODUCTION**

#### **1.1 Background of the Study**

Fish farming is a subset of aquaculture which deals with the cultivation of fish in a controlled environment for the purpose of consumption or sales. In Nigeria, the fish enterprise is undoubtedly one of the fastest growing agricultural enterprises (FAO, 2012). Throughout the centuries, fish has been an important component of human diet in many parts of the world. Fish catches increased rapidly over the past hundred years due to improved technology which provided more powerful fishing engines and equipment. This led to over fishing, a worldwide decrease in wild stocks and the need to increase fish production via fish farming (Carballo et al., 2008).

The rapid increase in population of the world has resulted in a huge increase in the demand for animal protein (which is essentially higher in quality than plant protein) (Eniola, 2016). The average protein intake in Nigeria which is about 19.38g/output/ day is low and far below FAO requirement of 65g/output/day. The nutritional requirement is particularly crucial in a developing country such as Nigeria where malnutrition and starvation are the major problems faced by million of rural dwellers. The low protein intake is an indication of shortage of high quality protein food in the diet of Nigerians.

According to Datekin *et al.* (2017), fish farming provides significant services such as promoting nutritional health, supplying feedstock for the industrial sector, supporting rural development, increasing export opportunities, more effectively managing natural resources, and preserving biological diversity. A productive way to produce animal protein is through fish farming. It feeds nearly one billion people with vital nutrition, including at least 50% of animal protein for 400 million individuals from the world's poorest countries (WBG, 2011). Aquaculture products will continue to be the most dependable source of protein for many people in developing nations, according to Ayinla (2019). However, in spite of ever increasing biological activity, inadequate attention has not been devoted to the labour force or manpower such as youth participation needed for the viability or efficiency of the business itself. According to Mwangi (2017) fish farming involves more than the biological processes of fish growth. It also includes paying critical attention to the level of stakeholders such as youth involvement in the production.

In Nigeria, fish farming still requires physical strength, especially during pond construction and management practices, which declines with age. The youths have desirable qualities that can promote all the sub-sectors of agriculture but most of them have strong apathy toward it. Youths are the model catalysts for agricultural developmental transformation given their greater ability and willingness to adopt new ideas, concepts and technology which are all critical to transforming the agriculture sector (Afande *et al.*, 2015). These entities called youth has gained a wide currency and has been variously categorized into such age brackets

as 15-24 years (Food and Agriculture Organization of the United Nations (FAO); 15-29 years (Commonwealth Youth Programmes). However, for many countries, the figure differs from 13-18 years, 20-25 years, and 12-20 years (Bello-Kano, 2018). Moreover, in Nigeria situation, the National Youth Development Policy (2009) describes youth as people aged between 18 and 35 and they constitute all young males and females aged 18-35 years which are citizens of the Federal Republic of Nigeria (National Youth Policy of Nigeria, 2009). In order to nurture a country's economic development, the agricultural sector must be feasible and youths should be stimulated to successfully participate. This is because they are important assets that any country can have (Kimaro, 2015) and constitute a significant resource for supporting agricultural productivity which is fundamental for economic expansion (Afande *et al.*, 2015). Fish farming enterprises in Delta State and Nigeria at large till date remains an unexploited goldmine based on the fact that Nigeria is a maritime nation and is also endowed with a vast population of over 160 million people and a coastline measuring about 853 kilometres. According to Central Bank of Nigeria (2012), there are about 1.75 million hectares of suitable land for fish farming in Nigeria and 25 percent of this will yield 656,820 tons of fish per year when placed under farming. Likewise, about 6,450 tons of fish can be produced annually from 75,000 hectares of coastal lagoons. In spite of the countless potentials of aquaculture enterprises in the study area, factors such as inadequate technical knowledge on the part of aquaculture farmers and the high cost of production inputs might inhibit its contribution to increase food supply and poverty reduction. Furthermore, the efficiency or inefficiency of

utilization of available resources for aquaculture farming has stayed an unanswered question in the quest for increased aquaculture production in Delta State, and Nigeria at large.

The Living Standard Measurement Study (LSMS) was established by the Development Research Group (DECRG) to improve on the quality and type of household data collected. Indicators of living standard used include Housing, Education, Consumption, Income, Labour Employment, Health and Healthcare (Grosh and Glewwe, 2015).

Several studies have been carried out on the relationship between agricultural farming and youth standard of living. Ayinde *et.al* (2022) study show that 24.1% out of their total youth recorded low level of involvement, and higher percentage (53.7%) moderately involved. This could be that most of the youth in fish farming had moderate level of involvement. Edeoghon and Anozie, (2015) stated the correlation between consumption level as an indicator of living standard and perceived profitability of vegetable farming is positive. Correlation between health and healthcare as an indicator of living standard and perceived profitability of vegetable farming was also positive implying that respondents can afford improved health care packages. Correlation between education as indicator of living standard and perceived profitability of vegetable farming was positive, implying that youth who could afford formal education for household members.

Youths have the potential to overcome some of the major constraints to expanding aquaculture production in developing countries such as pond construction, disease

management, hatchery management, genetic improvement, harvesting and processing because they are often more open to new ideas than adult farmers. In some countries like Great Britain, Netherlands, Denmark, Germany, the United States of America and Tanzania, the involvement of youths in agricultural production through youth programs had contributed significantly to agricultural development and empowering the citizenry and youths to always meet the full needs and deep seated aspiration to be self-sufficient in food production (FAO, 2017). Indeed, since the youths are the future of any country, it is useful to analyse their level of involvement in aquaculture enterprise (Ajayi, 2016).

## **1.2 Statement of Problem**

Despite the importance of aquaculture in Nigeria economy it's unfortunate that youths constitute only small proportion of active aquaculture producers which is about 10% that engage in fish farming enterprise (Ifejika *et al*, 2010). In Kaduna State, Jiriko *et al* (2015) found 35% engagement of youths in fish farming as primary occupation. Oluwemimo and Damilola (2013) established that 38.9 years was the mean age of aquaculture farmers. The situation is appalling in south zone with low youth participation in aquaculture production. Youth apathy in aquaculture production has a linkage to the lagging behind of south-south zones. Implication is high fish transportation from other zones to meet fish demand for consumption. The Federal Government's inability to integrate youth into the mainstream of the numerous agricultural development programs carried out over the years is acknowledged

as one of the key obstacles to Nigerian agricultural development programs (Ayinde *et al*, 2016). Nigeria has a severe food shortage, and it is evident that both qualitatively and quantitatively, the country's protein consumption is woefully inadequate (Ayinde *et al*, 2016). Although though aquaculture product is typically thought of as a cheap source of animal protein, future protein deficiencies must be avoided. Yet, a booming aquaculture business has stepped in to the rescue in an effort to close the gap between supply and demand because of its exceptional profitability. This sparked an investigation into youth participation in aquaculture industry in Ughelli Delta State. The ageing of farm labour and the drift of young people out of the countryside presents a serious challenge to the sustainability of the any aquaculture enterprise. The age structure of labour, together with its level of demand and supply raises important questions in relation to agricultural productivity. Hence, there is an urgent need to identify and propose solutions to the problems affecting fish farming labour force in order to improve on the declining trend in the level of fish production in the Ughelli North, Delta State. It's against this background this study will provide answers to the following questions.

1. What are the personal characteristics of youth in Ughelli North Local Government Area?
2. What are the enterprise characteristics of youths in the study area?
3. What is the standard of living of youths involved in aquaculture in Ughelli North LGA?

4. What is the level of involvement of youth in aquaculture?
5. What are the constraints of youth in aquaculture farming in Ughelli North LGA?

### **1.3 Objective of the study**

The main objective of the study is to assess the standard of living of youth involved in fish farming.

Specific objectives are to:

- i. describe the socio-economic characteristics of youth in Ughelli North Local Government Area,
- ii. assess the enterprise characteristics of youths in the study area,
- iii. examine the level of involvement of youth in fish farming,
- iv. determine their standard of living,
- v. identify the constraints of youth involved in Aquaculture in Ughelli North LGA.

### **1.4 Hypothesis of the study**

The hypothesis will be stated in null form as follows:

Ho<sub>i</sub>: There is no significant relationship between youth involvement in fish farming and their living standard in the study area.

## **1.5 Justification of the study**

Despite the potential benefits of involving youth in fish farming in Nigeria, there is a lack of understanding regarding the living standard and factors that contribute to or hinder their participation in the sector. This lack of knowledge makes it challenging for policymakers, development agencies, and other stakeholders to design effective programs and policies to encourage youth involvement in fish farming. Furthermore, there is a limited understanding of the benefits and challenges of involving youth in aquaculture, and the impact it can have on their standard of living.

Therefore, the problem this research aims to address is the need to investigate their living standard, compare how other source of income influence their living standard, the factors that contribute to or hinder youth participation in fish farming in Nigeria and to understand the challenges of involving youth in the sector. This research will examine the socioeconomic factors that influence youth participation in aquaculture, such as access to land, capital, and training. It will also explore the living standard of youth involvement in fish farming, such as improved nutrition, income, and employment opportunities.

By addressing these gaps in knowledge, this research will contribute to a better understanding of the potential of involving youth in fish farming as a means of improving their standard of living. The findings from this research will also be used to inform the development of policies and programs aimed at increasing youth participation in fish farming and promoting sustainable economic development in Nigeria.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 The Fish industry in Nigeria

Fish supply is basically from two sources: capture fisheries (marine and inland) and aquaculture. Capture fisheries depend on naturally recruited and occurring wild populations while aquaculture refers to the culturing of farmed fish and other aquatic organisms (Ipinmoroti, 2012). Nigeria has two major marine fisheries sub-sectors: the artisanal or small-scale and the industrial or trawl fisheries. Marine artisanal fisheries activities are divided into two major components; the brackish water fisheries (with fishing activities in the creeks and estuaries where freshwater flowing down the river mixes with salt water moving up with high tide) and the artisanal inshore fisheries (with fishermen operating in waters of less than 40 m depth).

Fishery contributes about 4% to Nigeria's Agricultural GDP; it is a high foreign exchange earner, generating about 38.3 million USD annually and also provides direct and indirect employment to about 8.23 and 18.27 million Nigerian (FDF, 2012). According to the American Journal of Experimental Agriculture, 2014, the fisheries sector in Nigeria accounts for about two per cent of National Gross Domestic Product (GDP), 40 per cent of animal protein intake and a substantial proportion of employment, especially in the rural areas; the sector is a principal source of livelihood for over three million people in Nigeria. Its advanced

factors such as need for job creation, generation of supplementary income, nutrition improvement in rural areas, and creating multiple income channels for the development of aquaculture serves as attraction into fisheries business.

Nigeria is blessed with over 14 million hectares of reservoirs, lakes, ponds and major rivers capable of producing over 980,000 metric tonnes of fish annually (FDF, 2007).

**a. Artisanal fishing** – Artisanal fishery is the harvesting of fish from rivers, streams and lakes by small scale fishermen using both traditional and modern fishing gears. It entails hunting for fishes in their natural habitats along the coast line and the boundary of inland water bodies e.g. dams, lakes, rivers, lagoon etc. Reminiscent of hunting on land, artisanal fishermen make use of small-medium sized canoes usually between 3-10 meters with basic tools such as traps, nets and hooks for catching fish. Artisanal fisheries in Nigeria account for majority of the country's fish production. Yet, this sector is the poorest in terms of its standard of living, with the fishermen generally making a subsistence living.

**b. Industrial/commercial trawlers** – This refers to industrial fishing in-shore and offshore water of the seas. The UN law of the sea allows Nigeria the exclusive right to fish in zone up to 200 nautical miles (320km) from her coast. This zone is known as the Exclusive Economic Zone (EEZ). The establishment of national jurisdiction offers each country the chance to exploit the benefits of the zone for its use. Intense and uncontrolled exploitation of the fishes

in the EEZ has resulted in dwindling catches and remarkable reduction in the catches of some species.

**c. Fish farming** – Fish culture, or intensive rising of fish, or fish farming, is a type of farming activity. The main objective is to raise the largest amount of fish by the most economical means, which involves, keeping the pond and installations working efficiently, providing the best conditions in the pond for the growth of fish, increasing the natural food in the pond, making the best use of wastes and artificial foods for increasing the amount of fish production (Akankali, Abowei and Eli, 2011). Fish are basically classified into two broad groups, those which possess fins used for movement referred to as fin fishes and those with shells as their outer hard and protective coverings; referred to as shellfish. Fin and shell fishes can be produced in some systems e.g. ponds, cages, pens, raceways etc as a result of over-exploitation from the wild. Any over-exploited species can be hatchery raised/reared and restock into the natural waters.

## **2.2 Benefits of fish farming**

### **2.2.1 Source of employment**

Global statistics revealed that the fish farming sector employs about 25.4 million people in Africa, while more than 17.6 million are involved in other value chain aspects of fish farming (World Bank, 2013; FAO, 2016). Olaoye, Ashley-Dejo, Fakoya, Ikeweinwe, Alegebelye,

Ashaolu and Adelaja (2013) affirmed that fish farming is profitable and can create good job opportunities while contributing to investor's livelihood. Likewise, Iheke and Nwagbara (2014) equally posited that fish farming is a profitable and viable investment capable of sustaining peoples' livelihood.

### **2.2.2 Good source of animal protein**

According to Prein and Ahmed (2000), fish is rich in iron, calcium, iodine and vitamins. Hence, it serves as a source of nutrient to the body. The nutritional benefits derived from fish cannot be overemphasized. It contains nitrogenous compounds, lipids, carbohydrates, minerals and vitamins (FAO, 2006). Fish supplies 20% of proteinous food substances consumed in sub-Saharan Africa, it is also a good food source to millions of Africans, (FAO, 2014).

### **2.2.3 Source of income / revenue**

Income is generated from fish farming from all the value chains of the enterprise (World Bank, 2016). Fish contributed significantly to the Nigerian GDP in 2018 (National Bureau of Statistics, 2018). Islam (2017) also posited that seasonality availability of fish differs from that of crops as it helps in reducing seasonal vulnerability among rural poor fisher folks by providing income and food in lean seasons

#### **2.2.4 Household food security**

Fish farming indirectly contributes to household food security of fisher folks through increasing income from the enterprise which in turn, can be utilised to purchase other staple foods (Béné *et al.*, 2007; Aiga *et al.*, 2009). Given its relatively cheaper cost, fish has become the major source of nutrition for the people of Nigeria, it is the main product consumed in terms of animal protein in Nigeria. Apart from the fact that fishes are great sources of affordable protein which the human body needs in regular and specific quantities, the following can also be derived from fishes:

Fish oil soap

Body cream

Perfume

Beyond the above mentioned, fishes are now being used as raw materials for fillets, canning for eateries and fish feeds etc. The importance of fish is greater today than ever before and is steadily growing.

#### **2.3 Gap in fish demand and supply in Nigeria**

In developing countries including Nigeria, about 60 per cent of the protein requirement comes from fish. Though Nigeria's per capita fish consumption of 11kg against a global average of 21kg is quiet low, available supply still falls short of available demand. Statistics

on fish production and supply in Nigeria have shown a consistent shortfall in the supply of fish, either farmed fish via aquaculture or capture from the wild, in spite of the effort in the past few years to increase production. According to the Federal Department of Fisheries (FDF), national demand in 2012 stood at 2,000,000 tonnes, with supply of 690,000 tonnes and a deficit of 1,329,000 tonnes; in 2014, a deficit of 1,404,000 tonnes was also recorded. Although there has been an increase in fish supply over the succeeding years, the growing population seemed to have paled the effort, especially from aquaculture. According to Fisheries SON (2016), total fish production from all fish activities and sources in Nigeria amounted to 1.7 million tonnes of fish while demand is 2.6 million metric tonnes, leaving a huge shortfall. It has been reported that in order to make up for the shortfall, the nation had embarked on fish importation, which has been a source of drain on the scarce foreign reserve. With this shortfall comes the opportunity for job and wealth creation as the Nigerian Institute of Oceanography and Marine Research (NIOMR) stated that over 10 million Nigerians are actively engaged in the upstream and downstream areas of fisheries operation.

The Minister of State for Agriculture also recently lamented that current annual national fish demand is in excess of 3.2 million metric tones while national production is about 1.1million metric tonnes from all sources, including aquaculture, artisanal and industrial fishing sectors, leading to a supply shortfall of about 2.1 million metric tonnes. According to the 18 minister, Nigeria imported over 2 million metric tonnes of fish before 2015. He however, admitted that fish production had doubled by 600,000 MT in the last three years, after government

restricted food importation by directing fish importers to embrace backward integration through commercial aquaculture. FAO (2000), estimates the projected population and fish demand supply from 1997 to 2025, with domestic fish production by the year 2025 as 1.52 million tonnes

#### **2.4 Challenges in fish farming**

Several constraints inherent in fish farming have been highlighted by various scholars. Baruwa, Tijani, and Adejobi (2012) identified epileptic electricity supply, insufficient capital, high-cost of inputs, high-cost of labor and water pollution. In the same vein, Olaoye, Ashley-Dejo, Fakoya, Ikeweinwe, Alegebelye, Ashaolu and Adelaja (2013) indicated high cost of feeding, lack of storage facilities and predators as major limitations to fish farming. Similarly, Asiedu et al. (2017) equally reported that lack of access to funds and good fingerlings are major reasons fish farmers abandon their fish farms.

Furthermore, Niyonkuru, Nibona and Moreau (2015) grouped major factors militating against fish farming into: physical , technical material and financial factors , while citing topographical and soil constraints as major physical factors, insufficient technical skills as a technical factor and use of rudimentary equipment and poor packaging for transporting fingerlings as major material factors, while extreme poverty, lack of financial support or the lack of micro-finance institution constituted financial factors. In a related development, challenges to fish farming as observed by Akpabio and Iyang (2007) ranges from production

(inadequate pond sizes, unavailability of improved species), environmental (low PH in pond, acidic rainfall), socio cultural (predations by animals), poor access to credit facilities poor policy formulation and implementation by governments, technological (lack of awareness of available technologies, poor yield from local technology), marketing (high cost of marketing fish produce, low selling price of produce).

Studies centered on youths also showed that young fish farmers are faced with myriads of constraints in fish enterprise. For example, Nnodim and Abbey (2019) in a study on constraints to fish farming amongst youths highlighted inadequate farm lands, poor skills in modern fish farming practices, insufficient time for practical sessions, poor fishing gears, poor funding and lack-lustre attitude towards vocational subjects as factors constraining fish farming among senior secondary agricultural students.

Aside production, economic, technological and social cultural constraints, Usman, Girei and Tari (2016) identified lack of access to information and inadequate funding as major challenges in fishing enterprise. Bhuyan, Goswami and Kakati (2017) found that lack of good quality fish seeds (fry/fingerlings) of required size and number at the time of stocking , high cost of inputs like feed, inorganic fertilizer, and medicine constituted the most serious problem among fish farmers in developing countries. Pandey and Dewan(2006) found that pond related problems such as seepage, excess weeds posed negative effect on fish production, while Angral, Gupta, Gupta, Kant, Kumar and Sharma (2017) highlighted lack of

adequate marketing channels, non-availability of insurance coverage, lack of knowledge regarding fisheries scheme as major factors militating fish farming in developing nations.

## **2.5 Fish rearing facilities**

Since fish farming involves the rearing of different species of fish under controlled environment, several facilities exist in aquaculture to achieve this. Some of it is: flow through systems also known as raceways, ponds, cages, tanks and recirculating systems. (Ozigbo, Anyadike, Adegbite, and Kolawole, 2014).

### **2.5.1 Fish ponds**

A fish pond is a controlled structure, artificial lake, or reservoir stocked with fish and used in aquaculture for fish farming, recreational fishing or ornamental purposes. The practice of culturing fish in ponds developed because growing fish in ponds can be a more useful practice for some purposes, when compared to catching fishes from lakes, rivers, or streams (Ozigbo et al, 2014). Freshwater fish ponds differ according to their source of water, the way in which water can be drained from the pond, material and method used for construction and the method of use for fish farming (Ajana, 2003). Fish pond system is the commonest agricultural techniques in Nigeria (FAO, 2002). Tidal ponds, reservoirs, storage tanks, raceways and fish farm tanks are not referred to as fish ponds (Wilcox, 1985).

Fish ponds may have any shape, as shown by barrage ponds whose shape depends exclusively on the topography of the valleys in which they are built. Also the feeding of fishes raised in ponds can be planned to be better suited to market demands. Size of ponds must be adapted to the species but also be easy to manage. If the width exceeds 50 metres, it becomes difficult to pull nets for harvest (e.g. 3 to 4 men on each side are necessary to pull a 22 60 m. net) rendering the ponds impractical. A good pond will show the following characteristics:

- A well designed water supply but also easy drainage.
- The drainage outlet (standpipe or monk) must be studied with care.
- Water inlet and outlet will be at opposite ends in order to ease water exchange within the pond.
- Good impermeability of the pond as a whole and strength/integrity of the pond's walls and edges.
- Access and possibility to work around the pond which must be accessible to vehicles (tractors/trucks & trailers etc.).

These ponds are usually equipped with water inlets and outlets to permit independent control of water addition and discharge. They are stocked with a specific quantity of fingerlings.. Fishes are harvested after reaching their market sizes. In a complete harvest, the pond is drained and all animals are removed from the pond for processing. In a partial harvest, only a portion of the animals are removed from a full pond using a seine net . Additional juveniles are often stocked into the pond after a partial harvest, and the production cycle is continued.

Channel catfish, tilapia and carp family are often cultured in earthen ponds. Earthen ponds are more commonly used in tropical fish farming and represent the oldest fish farming facility.

#### **2.5.1.1. Earthen ponds**

These are artificial dams, reservoir, or lakes constructed for different species of fishes in order to retain some features of the natural aquatic environment. Earthen ponds are constructed manually, or mechanically, in a carefully selected site with high water retention ability. Earthen ponds were usually constructed with the use of shovels and diggers. However, in recent times, the use of excavators to dig ponds has been on the increase. An excavator can dig a pond that ten men will ordinarily dig in five days within just ten hours (Abiodun, 2016). For commercial pond construction, the use of excavator is more cost effective than manual construction. It also saves time and can attain good depths in hours. The choice of land for earthen pond must take into cognizance availability of water. Other factors that must be considered include soil type, soil texture and soil permeability. A site located in an area that mainly has sandy soil costs more when it comes to construction because ponds constructed in such areas will need sandbagging to prevent the collapse of such a pond. Earthen ponds are very common in Nigeria. According to Ozigbo et al (2014), advantages of earthen pond over other types of ponds are:

1. It is similar to the natural habitat of fishes.
2. Fishes grow better in an earthen pond than in every other type of pond.

3. Maintenance cost is cheaper.
4. It can support different kinds of feed.
- 5 .It has natural capacity to control pollution.
6. Electric aerator is not needed to boost the oxygen level.
7. It allows fishes to grow faster.
8. It allows for easy water management

### **2.5.1.2 Concrete ponds**

Concrete ponds are used in intensive fish farming systems. Here, 4-5 courses of blocks are used to construct the pond above the ground level, using cement, sand and gravel in ratio 1:2:4 respectively with water. The pond floor can be well concreted to a thickness between 7.5cm- 10cm. Walls are plastered to a thickness of 5cm. The bottom can also be in concrete but for reasons of construction costs, only if the pond size does not exceed 200 m<sup>2</sup> . Brick or stone walls must have strong foundations and, if they are built with bricks or blocks, they must be plastered, in order to avoid the effects of erosion. They are usually smaller than earthen ponds and should not exceed 1,000 m<sup>2</sup> surface area. This type of pond is more expensive to build and, therefore, should be made profitable by a higher production per volume utilised. Construction of concrete ponds is often handled by highly skilled professionals in civil/construction engineering. For any concrete pond to stand the test of time it must be well constructed. Conversely, the firmer walling reduces maintenance and re-

building costs that will be necessary after a few years of operation, Concrete tanks for catfishes can be constructed below or above the earth surface. Using concrete ponds allow farmers monitor the hygiene factors in fish farming. Concrete ponds are most popular in urban areas where catfish farming are practiced. Abiodun (2016) further listed the advantages of concrete pond over earthen ponds as:

#### **Advantages of Concrete Pond over Earthen Ponds**

1. It is easy to manage; e.g. counting, sorting, sales and other management practices.
2. It is better for production of fingerlings and juveniles.
3. It can be constructed on dry land.
4. It cannot be flooded.
5. It has manageable surface area.
6. Diseases are easily detected and controlled.
7. Predators can be kept away or easily controlled.
8. Concrete ponds do not need demudding.
9. Waste feed can easily be discovered in concrete ponds.
10. It cannot be affected by weed and chemical pollution.
11. It may not need major maintenance for years.
12. Growth of fishes can easily be monitored.
13. Usage requires less manpower.

### **2.5.2 Fish Tanks ( tarpaulin tanks)**

Fish farming can also be carried out in outdoor or indoor, tarpaulin or plastic tanks. Production tanks varies in size and shape, however, round tanks between 5,000 to 10,000 liters are most commonly used (Aquatic life Support Systems, 2013). Tanks should be noncorrosive, therefore, plastic or tarpaulin is usually recommended. Smooth round tanks with a conical shaped bottom are considered advantageous as this will assist with waste solids disposal during draining. Abiodun, (2016), listed the advantages of using rubber/plastic Tank.

1. They can be used to raise fishes almost everywhere.
2. They can easily be moved from one place to the other.
3. They can be used to raise fingerlings before they are transferred to the main ponds.
4. They are safe and secure because they can be used to raise fishes indoor.
5. They pose no threat to the environment i.e. they are environment friendly.
6. They can be used to learn the art and science of fish farming.
7. They are cheap and less expensive to maintain.

Aquatic life Support Systems (2013) reported that the advantages of using fiberglass tank is its ease of management, portability/movability and ease of fish monitoring at a glance.

### **2.6 Species of farmed fishes in Nigeria**

**a. Carp family:** - Carp are prolific and breed rapidly, and they are bred and fished commercially in Asia, Europe, southern Africa, and, on a smaller scale, the United States. As

bottom feeders they stir up mud and uproot vegetation, often driving out other fish; on the other hand, they can survive in stagnant or polluted waters that most other fish do not inhabit.

The types of carp we have are

- Tench
- School of Koi
- Common carp fish

The carp was a luxury food in the middle and late Roman period, and it was consumed during fasting in the middle Ages. The fish were kept in storage ponds ('piscinae') by the Romans, and later in fish ponds constructed by Christian monasteries. The body of Carp is elongated and somewhat compressed. The fish has thick lips, two pairs of barbels at angle of mouth, shorter ones on the upper lip and an anal fin with 6-7 soft rays. Carps are omnivorous, with a high tendency towards the consumption of animal food, such as water insects, larvae of insects, worms, molluscs, and zooplankton. Zooplankton consumption is dominant in fish ponds where the stocking density is high. They also consume the stalks, leaves and seeds of aquatic and terrestrial plants, decayed aquatic plants, etc. (FAO, 2009). There are many advantages of carp fish farming, they are highlighted below as stated by Roysfarm (2016):

1. Eat feed from variety of levels.
2. Fish does not fight with each other for feed.
3. Each fish stay in their own level.
4. They are not cannibalistic

5. Good disease resistance.
6. Quickly gains weight and grow faster
7. Eat low cost subsidiary feed.
8. Tasty to eat and high demand in market.
9. Have economic value.

Carp fish farming methods depends on the area or environment, availability of equipment, financial situation, knowledge and skills of farmer.

**b. Catfish:** Catfish are named for its feelers, or barbells, suggesting the whiskers of a cat. These feelers are used for finding food. The mud cat fish (*C. gariepinus*) popularly cultured fish in Nigeria is an omnivore in the wild with propensity of being carnivorous when starved (Abiodun, 2016) *Clarias* is a hardy fish and can survive in waters with low oxygen content because it can absorb oxygen directly from the air. The interest in culturing *Clarias gariepinus* arises from the fact that it is highly cherished and commands high market value. In other words, if the cost of production could be brought down considerably a good number will have the opportunity of buying it and this will undoubtedly increase protein intake which as at now is substandard. The dorsal and pectoral fins are often edged with sharp spines that are used for defense. The body is scaleless, either naked or with bony plates. They have an elongated cylindrical body with dorsal and anal fins being extremely long (nearly reaching or reaching the caudal fin)

both fins containing only soft fin rays. The outer pectoral ray is in the form of a spine and the pelvic fin normally has six soft rays. The head is flattened, highly ossified with the skull bones (above and on the sides) forming a casque. The body of catfish is covered with a smooth and scale less skin which is generally darkly pigmented on the dorsal and lateral parts of the body. The colour is uniform marbled and changes from greyish olive to blackish according to the substrate. On exposure to light, the skin colour generally becomes lighter. This African catfish is relatively insensitive to disease and does not have high water quality requirements.

The male and females of *C. gariepinus* can be easily recognized because the male has a distinct sexual papilla, located just behind the anus. This sexual papilla is absent in females. Species of *Clarias* are not easy to identify because they all look very similar. Two species of *Clarias* have been described from West Africa (FAO, 2012):

1. *Clarias gariepinus*,
2. *Clarias submarginatus*,

Colouration is variable and there is probably more variation in colour between individuals of the same species than between those of different species. *Clarias* may be almost completely black, or black with dark green mottling or olive, the belly is always white), *C. gariepinus* is the most important *Clarias* sp used in African agriculture. This is because of its ability to adapt to extreme pond conditions. The species has a high potential for culture because of its high growth rate, very efficient feed conversion, acceptance of relatively

cheap feed and ability to withstand high stocking densities. It is also disease resistant and acceptable by consumers (Roysland Farm, 2015).

The kinds of cat fish are:

- Brown Bull Head Cat fish
- Channel Cat fish

Catfish makes up about 80 per cent of Nigeria aquaculture production while Tilapia constitutes 20 per cent (Small Holders Foundation, 2013).

**c. Tilapia:** The name tilapia actually refers to several species of mostly freshwater fish that belong to the cichlid family. Although wild tilapias are native to Africa, the fish has been introduced throughout the world and is now farmed in over 135 countries (FAO, 2014). It is an ideal fish for farming because it can survive in crowded environment, grow quickly and consume a cheap vegetarian diet. These qualities translate to a relatively inexpensive product compared to other types of seafood. The benefits and dangers of tilapia depend largely on differences in farming practices, which vary by location. Unlike carnivorous fish, tilapia can feed on algae or any plant-based food. This reduces the cost of tilapia farming, reduces fishing pressure on prey species, avoids concentrating toxins that accumulate at higher levels of the food chain, and makes tilapia the preferred "aquatic chickens" of the trade (Barlow, 2015). Because of their large size, rapid growth, and palatability, tilapia cichlids are the focus of major farming efforts (Andreas and

Olrich, 2013). Like other large fishes, they are a good source of protein and popular among artisanal and commercial fisheries. In temperate zone localities, tilapia farming operations require energy to warm the water to tropical temperatures. Commercially grown tilapias are almost exclusively male. This is typically done by adding male sex hormone in the food to the tilapia fry, causing any potential female tilapia to change sex to male (Boruchowitz, 2006). Males are preferred because they grow much faster than females. Additionally, because tilapia are prolific breeders, the presence of female tilapia results in rapidly increasing populations of small fish, rather than a stable population of harvest-size animals. At 1.3 million tonnes per annum, China is the largest tilapia producer in the world, followed by Egypt with 0.5 million (FAO, 2018).

## **2.7 Management operations in fish farming**

Management practices in fish farming range from pond fertilization, which increases the number of natural food organisms, to provision of a complete, formulated feed that supplies all nutrients necessary for growth

### **a. Pond Preparation**

Ponds are totally drained and the pond bottoms dried prior to the application of pesticides. Tobacco dust is usually used to combat predators and/or wild species that may eventually compete with the cultured organisms for food and space. Ponds with acid-sulphate soils are repeatedly dried and flushed, i.e. filled and drained to remove the acids formed by

pyrite oxidation. Agricultural lime is then applied to correct soil pH and bring it up to at least 6.5. Brackish water ponds are usually treated by spreading 1.5 l of agricultural lime per ha, followed by another 1.5 l worked into the soil. To stimulate and maintain the growth of natural plankton, organic (e.g., chicken manure) or inorganic fertilizer (e.g., urea, ammonium phosphate) are applied to the pond bottom. After fertilizer application, water is let in to a depth of about 20-40 cm and gradually increased to 1 m a week after fertilization. Intensively managed ponds or ponds where artificial feeding shall be given, do not need to be fertilized. Extensive ponds need regular fertilization during the culture period to maintain the growth of natural food. Semi-intensive ponds may use a mix of fertilization and supplementary feeding. Ponds are stocked (i.e., live fish are put into the ponds) with fingerlings to make the best use of the naturally available foods in the pond..

#### **b. Feeding**

Fish/shrimp grown in semi-intensive and intensive culture ponds are given supplementary and full artificial feeds, respectively, the former to augment the natural food in the pond, the latter to totally replace the natural organisms in the water as a source of nutrition. A wide variety of feed ingredients is used to prepare supplemental/artificial feeds. The simplest fish feeds are prepared at the pond site using locally available raw materials like rice or corn bran, copra meal, and rice mill sweepings as sources of carbohydrates. These are usually mixed with animal protein like trash fish/fish meal, shrimp heads, and snail meat. Supplemental feeds for tilapia are prepared

using 80% rice bran and 20% fish meal. Those for shrimps in improved extensive culture (low-density stocking but given dietary supplements for increased growth/production) usually include fresh raw materials like snail/mussel/clam meat or carabao hide and other slaughterhouse leftovers. Commercial feed preparations are also available now in a wide range of brand names, mostly for semi intensive and intensive shrimp culture. These commercial diets consist of a number of ingredients like fish meal, blood meal, bone meal, and shrimp head meal (to serve as attractant for the shrimp), together with vitamin and mineral premix and carbohydrate sources like rice/corn bran or wheat. The crude protein (CP) content of these shrimp feeds is generally not lower than 30% to satisfy the high animal protein requirement of shrimps, actually estimated to be about 40% during the earlier stages of growth.

Commercial feeds usually come in various formulations to match the protein requirement of the culture organism, which as a rule, decreases with age. Thus, fish/shrimp feeds come in different forms as starter, grower, and finisher, with starter feeds having the highest CP content of about 40% and finisher feeds having the lowest CP content of about 20%. Starter feeds are usually given on the first month of culture, finisher feeds on the last month, and grower feeds in between. The feeding rate is computed as a percentage of the estimated animal biomass in the pond, with higher rations given when the animals are small and gradually decreasing as they become bigger. The daily feeding rate usually starts at 5% and 10-15% of estimated biomass of fish and

shrimps, respectively, and decreases to a low of 2% and 5%, for fish and shrimps, respectively, toward harvest. The daily feed rations are given in equal portions during the course of a day. Freshwater fish like tilapia are usually fed twice a day - early morning and late

### **c. Water Management**

Water in the pond is kept at certain levels for optimal fish growth. In general, a pond water depth of 1 meter is considered best for culture of tilapia, carps, and shrimps. Pond water is not just maintained at a certain depth; its quality must also be kept high to ensure optimal growth of the culture organism. This is particularly important in semi-intensive and intensive culture systems where large amounts of metabolites are continuously excreted into the pond and where excess, unconsumed feeds add to the bottom load and serve to pollute the water. To prevent the deterioration of the pond environment, pond water is continuously freshened by the entry of new water from the river or water source (through the supply canal) while old water is drained through the outlet/drainage gate and through the drainage canal into the sea or river.

A flow-through system of water management that allows the simultaneous entry and exit of water into and out of the pond is essential in any high-density culture system. This is effected by the provision of separate inlets and outlets for all the ponds, each inlet regulating the flow of water from the supply canal to the pond and each outlet controlling

the discharge of water out of the pond into the drainage canal. Both the supply and drain gates are so designed as to bring water into and out of the lower levels of the pond, where water quality tends to get poorer faster as a result of the accumulation of wastes and their subsequent decomposition. Pond water is also regularly sampled and measurements taken of basic/essential parameters, particularly dissolved oxygen, pH, and salinity. This is important for the purpose of determining the need for corrective/remedial action to bring water quality to optimum levels and obtain good yields.

Dissolved oxygen levels are kept, as much as possible, above 5 ppm by pumping and aeration. Problems of acidity are corrected by liming. Salinity is an important parameter for penaeid culture and has to be maintained within a range of 15-25 ppt for best results. During summer months, high-salinity water can be diluted by mixing with fresh water from springs or deep wells.

#### **d. Pond Maintenance**

##### **i. Fertilization**

Aside from feeds and water management, the following pond maintenance procedures are carried out: regular application of fertilizers, lime, and pesticides; prevention of entry of predators; monitoring of the stock for growth rate determination as a basis of feeds and water management; and regular pond upkeep and maintenance. Extensive ponds are fertilized regularly using either organic fertilizers like chicken, cow, or pig manure, or inorganic fertilizers like urea, ammonium phosphate, or both, to maintain the plankton

population in the pond. The fertilizers are either broadcast over the pond water surface or kept in sacks suspended from poles staked at certain portions along the pond periphery. Semi-intensive and intensive culture systems do not require fertilization since they are not natural food-based, except for those which grow plankton-feeders like milkfish whose diet is largely algae dependent.

#### **ii. Liming**

In addition to fertilization, ponds also need to be given regular doses of lime to maintain water pH at alkaline or near-alkaline levels (preferably not lower than six). Agricultural lime is broadcast over the pond and applied on the sides of the dikes to correct soil and water acidity.

#### **iii. Elimination of Pests and Predators**

Unwanted and predatory species which may have survived the application of pesticides during pond preparation or which were able to enter the pond through the gate screens or through cracks in the dikes, are eliminated by the application of pesticides, preferably organic, into the pond. It is also important that the gates are properly screened and the screens kept whole, to prevent the entry of small unwanted fish into the pond. Double screens are usually installed at the main intake to ensure that pests and predators are prevented from entering the pond system.

#### **iv. Stock Monitoring**

The culture organisms are monitored closely and regularly to determine their rate of growth and the general condition of the stock. They are regularly sampled for length-weight measurements as a basis for determining/estimating their biomass in the pond and therefore their daily feed rations, as well as for making projections on harvest schedules and procurement of pond inputs.

**v. Regular Upkeep and Maintenance of Facilities**

The pond dike and gates are checked regularly for cracks that could lead to seepages and losses of stock. The dikes are best planted with grass or vegetative cover to prevent erosion. The gates and other support infrastructure are properly maintained for efficient operation.

vi. **Harvesting** Marketable-size fish are harvested at the end of the culture period by draining the pond and using harvesting nets to catch the fish. Tilapia is harvested using seine nets after the pond water is drained to half-level the night before. The fish in the catching pond are then harvested by seining and the rest hand-picked

**2.8 Concept of youth**

The conception of youth is not fixed but dependent on the subjective realities that shape the socio-cultural and spatial interpretations of its meanings (Ansell, 2005; Spence,

2005; Hine, 2009). This explains why policies and programs with respect to youth development are country-specific as noted by UNDP (2014).

The conceptualization of “youth” is believed to have dual meanings. Justifying this assertion, Jones (2009) that the word youths may be used to describe both ‘an individual’ and a ‘fraction of the life journey’. However, when the meaning of youth is compared with the transition theory, the conceptualization of ‘being youth’ or ‘becoming’ an adult, conceptualizes youth as a ‘transitional period’ or ‘transitional concept’ (Wyn and White, 1997; Spence, 2005).

Previous study has shown that the conceptualization of youth has remained imprecise due to its differential meanings and multidisciplinary perspectives in which the construct is conceptualised within specific cultures. In this light, youth studies as a ‘broad church’ has not only embraced research on all aspects of young people’s lives, it has focused on multidisciplinary interpretation of youth constructions in the social sciences (Heath et al, 2009).

Based on context and time in social history, youth is described as the process of becoming an adult (Annett, 2000; Ansell, 2005; Ezeah, 2012). Conversely, transition theory conceptualizes youth as a transitional period of becoming an adult (Wyn and White, 1997; Spence, 2005). Conversely, it can be considered as a transitional period from ‘childhood’, to becoming ‘young adults’.

Furthermore, youth can be conceptualized from biologically related constructs or perspective based on age related definitions (Wyn and White, 1997). For example, The 2003 World Youth Report (WYR) defined youth as a group of people between ages 15 and 24. This provides a comparative platform for understanding the complexities of the socioeconomic and political limitations that impede youth transition and development. Although meaning of youth primarily focuses on ‘young men and women ages 15 -24’, the ‘expansion’ of this age range to accommodate ages 25-30 (and above) are premised on realities of context, legal frameworks and youth policies obtainable per time in a country (UNFPA, 2010; UNDP, 2013). Adisa (2013) views a youth as a person between a childhood and adulthood age.

Young people’, ‘young adults’ and most recently ‘emerging adulthood’, have been used to refer to youths (Annett, 2000; Ezeah, 2012). Honwana and De Boeck (2005) viewed youths as a socially defined group characterised by societal responsibilities and manifestations. Basically consideration youths from the perspective of social responsibility.

The youth, constitute the most important sector in any society. They serve as channels for the transmission of culture and the perpetuation of recognizable identity (Ansell, 2005). They also provide the manpower for the socio-economic development of the society. In the rural sector, youth provide opportunities for generating the farming entrepreneurs and other rural professions. In addition, rural youth enjoy certain life

experiences, which can be considered advantageous. These include a greater frequency of interaction with family, and hence less emotional problems. They also enjoy earlier and greater involvement in work roles, and have opportunity of becoming economically independent earlier than their urban counterparts (Adisa, 2013). Furthermore, the rural youth's contribute to family labour, they also constitute a moving force in the development of their communities.

## **2.9 Empirical review**

Ayinde *et.al* (2022) study assessed youth's involvement in fish enterprise in Lagos state, Nigeria. Specifically, it described socio-economic characteristics of the youth involved and factors constraining their level of involvement. A structured interview scheduled was used to elicit information from 104 respondents who were selected through A multistage sampling procedure . The data collected were analysed using descriptive and inferential statistics. Results showed that 71.2 percent of male youth were involved in fish enterprise with mean age of  $28.17 \pm 7.99$  years, year of formal education  $13.35 \pm 3.05$  years and monthly income of  $\text{N}29,510.00 \pm \text{N}14,286.04$ . They were involved in various types of fish enterprises which included but were not limited to production, processing and marketing. About 51.9 percent of the respondents had moderate level of involvement in fish enterprise. Occupation ( $\chi^2= 59.021$ ) had significant association with youth's involvement at  $P \leq 0.01$  just as years of experience ( $r = 0.207$ ) was a positive correlate of involvement at 0.05 probability level. Ayinde *et al.*,

(2022) concluded that fairly good percentage of the youth involved in the enterprise were in their active age and that relatively fair average income of the enterprise might make it attractive to army of unemployed youth in the country. This attractiveness is hampered by inadequate credit for the youth. It was, therefore, recommended, among others, that stakeholders should collectively put in place adequate cooperative groups to facilitate the provisioning of credit scheme for the youth involved in the enterprise.

Ifejika *et al.*, (2015) study on how Aquaculture production provides an entry point to create jobs for youth which prompted the study to determine their choice of enterprise in aquaculture production across gender in Abia State. Interview schedule was used to elicit information from 171 randomly selected respondents in six local government areas which was analysed with cross tabulation along gender and t-test. The result affirmed that aquaculture met youth inspiration on economic drive as prime motive to seek for job and be independent. Both genders were attracted to aquaculture production enterprise for monetary purpose rather than food and pleasure. Interestingly, youths indicated more interest in rearing of table size fish production enterprise than fingerling and brood-stock enterprises. Also, youths got to know about aquaculture through eight information mediums mostly through mobile phone, television and friends. Result of t-test established that significant difference exists between the men and women gender as calculated t-ratio (2.18) was greater than the t-critical (.160). It indicates that men made better choices than women on motivation, information sources and on choice of enterprise in aquaculture production. Ifejika *et al.*,

(2015) finding shows that communication strategy for youth sensitization and promotion on aquaculture production enterprises should consider mobile phone in combination with other mass media, interpersonal and group methods. Meanwhile, emphasis should be placed on table size aquaculture production enterprise that most youths showed curiosity. Therefore, concerted effort should be directed towards promotion and empowerment of desiring youths with capacity building and credit facilities to realise the dream in aquaculture production enterprise for job creation.

Ifeonu, (2019) study determined the challenges of youths involved in fish farming in the Federal Capital Territory, Abuja, Nigeria. Multi-stage sampling procedure was used to select and interview a total of 54 youth fish farmers' from 18 villages in three area councils of the FCT, Abuja. Results of the analysis were presented using percentage, frequency counts, and mean scores. Results reveal that majority (57.4%) of the respondents had fish farming as their major occupation. The majority (87%) of respondents adopted the monoculture system of fish production. However, the major challenges faced by the youths were high cost of feed (=2.76) and poor access to credit facilities (=2.17). The farmers' perceived solutions to the challenges were access to loans and grants, provision of feed subsidy, access to affordable land, provision of infrastructure (such as good roads, better markets, and better power supply), proper training of fish farmers on management practices, increased research and extension services. Ifeonu, (2019) study points to the need for public-private partnership intervention geared towards improving the entrepreneurial drive of the youths through focused training

and other empowerment activities to enable them address the challenges facing fish farmers in the area.

## **CHAPTER THREE**

### **3.0**

### **METHODOLOGY**

#### **3.1 The Study Area**

The study area is Ughelli North Local Government Area. Ughelli North Government Area comprises of seven communities which are, Ughelli, Agbarho, Agbarha Otor, Orogun, Ogor, Ewreni, and Uwheru. It has an area of 818 km<sup>2</sup> and a population of 321,028 people (NPC, 2006). The primary occupation of the people is agriculture and fish farming.

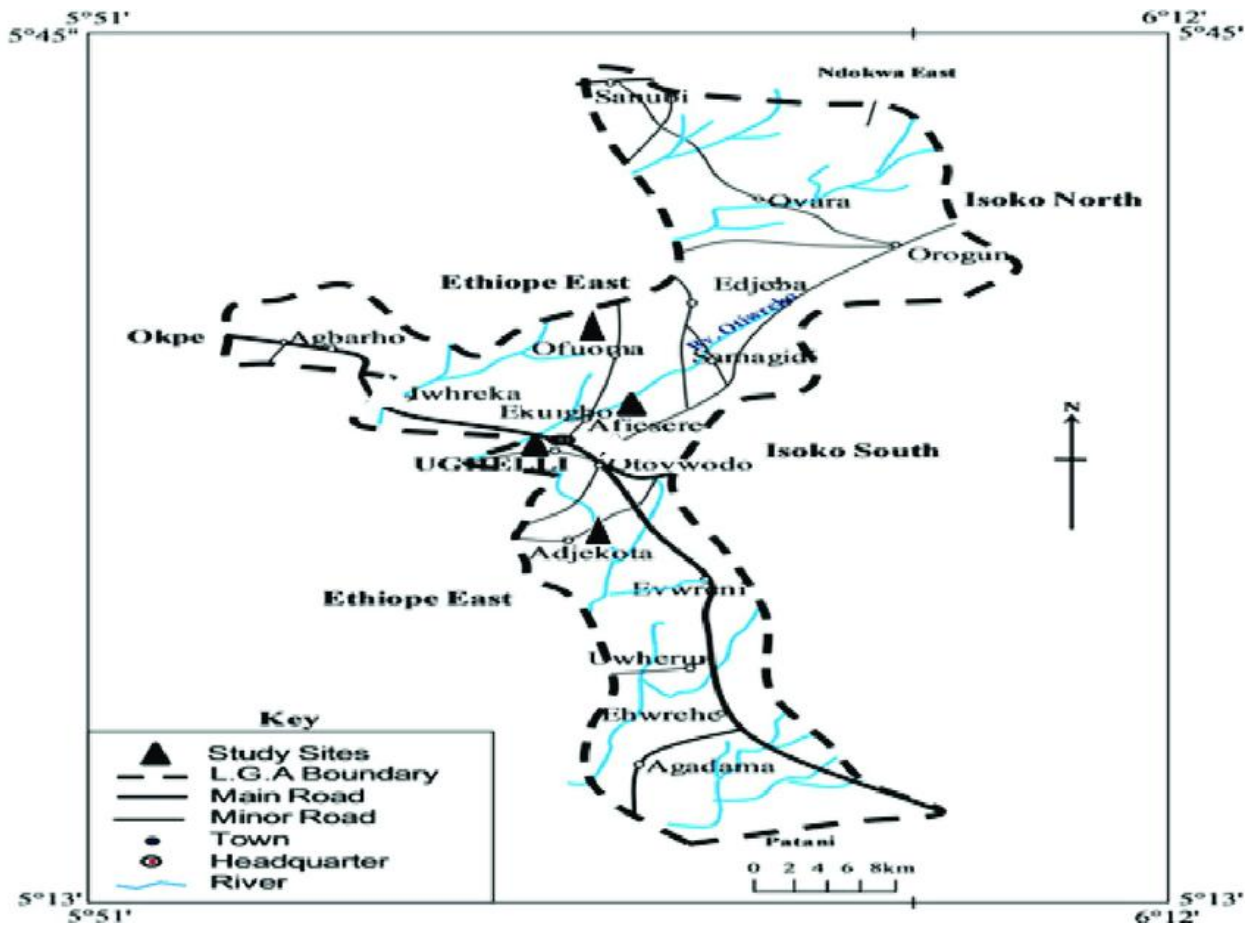


Figure1: Map of Ughelli North showing the study area (Google Maps, 2014).

### **3.2 Sampling Techniques and sample size**

A two-stage sampling procedure will be used in selecting the respondents. The first stage involves a purposive sampling of five town/communities from the Local Government Area based on the population of youth and record of youth participation in aquaculture. The following communities were selected; Agbarho, Ughelli, Orogun, Ewreni, and Agbarha-otor. The second stage involves the use of simple random sampling technique of the minimum of 80 youths who are involved in fish farming across the five communities.

### **3.3 Data Collection**

The data to be used for this study will be generated from one major source viz: primary source. The primary source comprised the questionnaire and interview schedule which was structured according to the specific objectives of the study. The data consists of the information on socio-economic characteristics of the youth, standard of living of youth involved in fish farming, level of involvement of youth in aquaculture and the constraints in fish farming Ughelli North LGA.

### **3.4 Measurement of variables**

#### **A. Personal characteristics**

Sex: This will be measured at nominal level with option of female (1), and male (2).

Age: The age of the respondents will be measured in years.

Level of education: Respondents will be asked to indicate their level of education. This will be measured with the option of, non-formal (1) primary education (2) secondary education (3) tertiary education (4) others (5).

Marital status: This will be measured at the nominal level using option of single (1) married (2) divorced (3) widowed (4) and others (5)

Level of experience: This will be measured at intervals in years.

Farm size: Respondent will be asked to indicate their farm size in hectares.

Monthly income: The respondent will be asked to indicate their monthly income in naira.

### **B. Enterprise characteristics**

#### **C. Standard of living of youths involved in aquaculture in the study area**

The respondent will be asked to select which indicators of standard of living they can afford. this is measured using Yes and No. where Yes =1, No = 0

#### **D. Level of involvement of youth in aquaculture in the study area**

The respondent will be asked to indicate their level of involvement in aquaculture. This will be measured using a 3 point scale of always involved (3) sometimes involved (2) never involved (1)

#### **E. Constraints of youth involved in aquaculture in the study area**

The respondent will be asked to indicate their constraints. This will be measured using a 3 point scale of not a constraint, minor constraint and major constraint.

### 3.5 Method of Data analysis

Descriptive statistics and inferential statistics will be used to analyse the data collected from the respondents. Objectives (i), (ii), (iii) and (iv) were achieved using descriptive statistic such as frequency count, mean, percentages and charts. Hypothesis will be tested using regression analysis

#### The Regression Model

The regression model is explicitly stated as followed:

$$Y_i = b_0 + b_1X_1 + b_2 X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + U$$

Where:

$b_0$  = regression constant

$b$  = slope of the linear regression

$U$ =error term

$x_1$  =age (years)

$x_2$  = sex

$x_3$  = marital status

$x_4$ = household size (number)

$x_5$  = education (years)

$x_6$  = contact with extension agents (number of visit)

$x_7$  = size of farm (stocking density)

$x_8$  = years of experience (years)

$x_9$  = category of farmer (Dummy skilled = 1, otherwise = 0)

$x_{10}$  = income (naira)

$x_{11}$  = training attended(dummy, yes = 1, otherwise 0)

$X_{12}$  = standard of living

## **CHAPTER FOUR**

### **4.0 RESULTS AND DISCUSSION**

This chapter present the result, interpretation and discussion of the data collected for this study. The result are presented and discussed under main sections; personal characteristics, enterprise characteristics, constraints, standard of living and level of involvement of youth.

#### **4.1 Personal characteristics of youths involved fish farming in ughelli north local government area**

##### **4.1.1 Sex**

Table 4.1 shows the result on the sex of youths involved in fish farming in the study area. Majority (77.5%) of the youths involved in fish farming were male, while 22.5 % were female. Ele et al. (2013) equally revealed that the males (81%) were actively involved in fish farming than the females (19%) in Cross River State. The higher percentage of male to female catfish farmers indicates that fish farming involvement in the study area is gender sensitive. This could be attributed to the fact that agricultural production is faced with a lot of risk and uncertainties and women are risk averse

#### **4.1.2 Age of respondent**

The result in table 4.1 displays respondents' ages. Majority (72.5%) of youths involved in fish farming in the study area were between 31 and 35 years of age, with an overall mean age of 32.6 years. This mean, agrees with the result of Samuel (2022) who reported an average age of 32.6 years for youths involved in fish farming from the study conducted in south-western Nigeria. This age range gives a picture of a greater dominance of more matured youths amongst youths involved in the fish farming business. The figure shows that youths below 31 years are only about 27.5%. This indicates that such youths might not have the wherewithal in terms of experience, resources and capabilities to embark on the fish venture. At ages above 30 however, most youths are likely to become better empowered socially, financially and emotionally, they become more aware of their life purpose, responsible and focused and thereby increase their pursuit of financial dependence, stability and achievement of life goals. Also, at ages above 30, using the Maslows hierarchy of needs theory, youths would be highly concerned with meeting their psychological needs and self actualisation desires. Adeyemo (2010) asserted that thirty is an age that causes concern for many people leaving their 20s, he described life as getting "super serious at age 30, and many people get more focused with their career or take a career change at this time of their lives.

### **4.1.3 Education**

The result showed that 57.5% of the youth involved in fish farming in the study area has secondary school certificate, while 42.5% of the youth has tertiary education. Agboola (2011), study showed that about half (43%) of the fish farmers in Osun State had tertiary educational qualification while few (13.3%) had primary educational qualification. Also, Anyanwu et al. (2009) reported that most of the fish farmers had secondary school education from his study of fish farmers in Imo state. The result of the current study shows that majority of the respondents were well educated which is in line with other previous research studies as elucidated above. It is clearly suggested that youths in fish farming are well educated class and some even possess tertiary education and post graduate degrees. This could imply that the fish farming enterprise requires application of technical and scientific knowledge. Youths are therefore at an advantage as their level of education should give them an edge in running the business, and maximising farm operations.

### **4.1.4 Marital status**

Result as shown in table 4.1 reveals that majority (75%) of the respondents were married, 23.7.% were single and 1.3% were divorced. The result of Awoyemi and Ajiboye (2011) previously reported that majority (67.7%) of the fish farmers in Osun State were married. The predominance of married youths over single youths therefore confirms the earlier position of this study that majority of youths involved in the business are matured youths.

#### **4.1.5 Household Size**

From the result, majority (97.5%) had a household of between 1 - 5 persons with a mean of 3.01. Henri-Ukoha (2012) reported that most (63.3%) of the fish farmers had household size of 1 to 5 persons with a mean household sizes of 5 persons. The mean household size obtained in this study, is however a bit lower than the average household size reported by henri-Ukoha (2012) This could be because respondents are younger and still in their child bearing age, with greater possibility of bearing more children in the nearest future. Level of education might have affected the size of households. Akpotu (2008) observed that as level of education increased in households, its size decreases, which will lead to increase in standard of living.

#### **4.1.6 Membership of association.**

Capital is very vital to agricultural production in general and fish farming in particular. This necessitates small scale farmers to rely on capital sources from personal savings, relations, cooperatives and contributions. These sources of capital are grossly inadequate and ineffective in providing the necessary assistance to farmers. Many farmers have therefore turned to self help groups for assistance (Alufohai, 2006).

Majority (81.25%) of the youths in this study belonged to one association or the other (Figure 15). Mignouna (2011) observed that membership of association enhances social trust, idea and the exchange of information in peoples' lives.

#### 4.1.7 Monthly income from other sources

Monthly income from other sources helps to augment income made from fish farming. From the result of the study, 46.25% earns between ₦61000 to ₦90000, 23.75% earns between ₦31000 to ₦60000 and 18.75% earns above ₦90000 while a minority at 11.25% earns below ₦30000 monthly. With an average of ₦75195

#### 4.1.8 Where did you learn about fish farming

From the result obtained from the study, 56.25% learnt about fish farming through informal means, 16.25% learnt about fish farming from training ground, while 27.5% learnt about fish farming from school. This indicates that majority learnt about fish farming from informal sources.

**TABLE 4.1: Personal characteristics**

<b>Sex</b>	<b>Freq., n = 80</b>	<b>%</b>	<b>Mean</b>	<b>Std. Dev.</b>
Male	62	77.5		
Female	18	22.5		
<b>Age in years</b>				
21.00 - 30.00	22	27.5	32.60	3.06
31.00+	58	72.5		
<b>Level of Education</b>				
Non formal				
Primary school certificate				
Secondary school certificate	46	57.5		
Tertiary education	34	42.5		

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<b>Marital status</b>				
Single	19	23.8		
Married	60	75		
Divorced	1	1.3		
Widowed				
<b>Household size</b>				
<= 5.00	78	97.5		
6.00+	2	2.6	3.01	1.48
<b>Do you belong to any fish farmers association</b>				
	65	81.25		
<b>Monthly income from other sources (₦)</b>				
<30,000	9	11.25		
30,000 - 60,000	19	23.75	75,195.88	13,819.31
60,001 - 90,000	37	46.25		
90,001 and Above	15	18.75		
<b>Where did you learn about fish farming?</b>				
School	22	27.5		
Training ground	13	16.3		
Informal training	45	56.3		

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**Source:** Field survey, 2023

## 4.2 Enterprise characteristics

Enterprise characteristics are traits or features particular to a business. Enterprise characteristics studied in this research work were years of experience of the enterprise owners, number of fish ponds, number of fish cycles, type of fish ponds, number of employees, number of fish stocked, annual income.

#### **4.2.1 Years of experience in fish farming**

Results from Figure shows that a little above half (52.5%) of the youths surveyed had between 5-9 years of experience in fish farming, while 31.25% had between 1-5 years of experience. The average years of experience obtained was 8.18 years. The number of years of experience indicates that majority of the respondents are not new to fish farming. Hence, it is expected that more of the youths will have higher risk mitigating and constraints facing abilities, higher productivity and better efficiency in managing costs, time and other factors of production. This is consistent with the findings of Jiriko *et al* (2015) who reported an average of eight years of fish farming experience among youths in Nigeria.

#### **4.2.2 Number of fish pond**

The number of ponds owned by fish farmers determine the capacity to produce. reveals that more (68.75%) of the youths possessed between 1-5fish ponds, 17.5 % of youths possessed 5-10 fish ponds while only 13.75% had above 10 ponds. This result suggests a dominance of fish farmers with just one to five ponds among the youths. Results of this study is similar to that of Edet *et al* (2009) who reported that the number of operational ponds per individual fish farmer studied in Akwa ibom was mostly on small size less than 5 ponds (53.4%), with 33.3% having 5- 10 ponds while just 13.3% had over 10 pond.

#### **4.2.3 Number of fish production cycles per year**

The mean number of fish cycle per year was 3.77. This result suggests the dominance of fish farmers with three fish cycles per annum; implying maximization of fish cycles possible for a fish pond per year.

#### **4.2.4 Type of fish rearing facility**

Earthen pond (45%) was prominently reported among fish farmers in the study area, this is closely followed by tarpaulin pond (40%) and concrete ponds (15%). This finding is in agreement with Ogundari and Akinbogun (2010) who reported that earthen pond was the major pond type used by fish farmers in Nigeria. The reason for the use of earthen pond could be attributed to its low cost compared to concrete and tarpaulin ponds.

#### **4.2.5 Quantity of fish stocked**

An average of 1009, 838, 1506, and 2100 fingerlings were respectively stocked across cycle 1, 2, 3 and 4. The quantity of fish stocked per cycle is an indication of the scale of operation. Most of the ponds had less than 2000 fishes stocked per cycle. This compares with the result of Oluwasola and Ajayi (2013) that studied fish farmers in Ogun state and reported that majority (76.0%) of the fish farmers stocked less than 2,000 fishes. The fish stocking rate is low and adequately falls into the small scale category of fish farmers. This will expectedly affect profit from the business.

#### **4.2.6: Production cycles and income per cycle**

Table 4.3 showed production cycles and income per cycle among fish farmers. The mean result showed that the first production circle was superior in stocking density compared to second production circle. The highest (mean = 2100.05) number of fishes stocked was recorded in the fourth production circle while the least (mean = 838.64) was recorded in the second production circle. The result also showed that in the first production circle, ₦656,123.77 was realised, at second circle, ₦577616.83 was realised, at third circle,

₦979297 was realised while at fourth circle ₦1641033 was realised. The result indicated that the highest income was generated in the fourth production circle.

The high superiority of the mean and income in the fourth production circle can be attributed to several factors. Firstly, the higher stocking density in the fourth production circle (mean = 2100.05) implies that more fishes were raised in this cycle compared to others. This increased population may be a sign of more efficient feeding schedules, suitable environmental settings, and good management techniques—all of which lead to healthier and more prolific fish.

Second, the size and weight of the fish at the time of sale affect the revenue made in each production circle in addition to the quantity of fish planted. The fish in the fourth production circle might have reached a desirable weight and size, which would have increased their market value. This could be the outcome of enhanced husbandry techniques during this specific cycle, better feeding techniques, and better water quality (Niyonkuru *et al.*, 2015). Additionally, the fourth production circle might have implemented advanced technologies and techniques in aquaculture, such as efficient aeration systems, water quality monitoring, and disease control measures. These technological advancements can enhance the overall growth rate and health of the fishes, leading to a more profitable harvest (Nnodim and Abbey, 2019).

Furthermore, the farmers in the fourth production circle might have engaged in strategic marketing practices, tapping into lucrative markets or securing contracts with buyers willing to pay a premium for high-quality fish. Effective marketing and sales strategies can

significantly impact the overall income generated from the fish farming venture (Angral *et al.*, 2017).

**TABLE 4.2: Enterprise characteristics**

	<b>Freq.</b>	<b>%</b>	<b>Mean</b>	<b>Std. Dev.</b>
<b>Years of experience in fish farming</b>				
<5	25	31.25		
5 -9 yrs	42	52.5	8.18	2.29
10-14yrs	9	11.25		
15 years and above	4	5		
<b>Number of fish ponds</b>				
1-5p	55	68.75		
5-10p	14	17.5	6.11	1.13
10 p and above	11	13.75		
<b>How many fish cycles are you able to do per year</b>			3.77	1.19
<b>How many employees do you have</b>			3.31	0.75
<b>Type of fish pond</b>				
Earthen Pond	36	45		
Concrete Pond	14	15		
Tarpaulin pond	32	40		

Source: Field survey, 2023.

**TABLE 4.3: Production cycles and income per cycle**

	<b>Cycle 1</b>		<b>Cycle 2</b>		<b>Cycle 3</b>		<b>Cycle 4</b>	
	<b>Mean</b>	<b>Std. Dev.</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Mean</b>	<b>Std. Dev.</b>
No of fish stocked	1009.42	120.61	838.64	61.53	1506.61	59.57	2100.05	73.71
Income per cycle	656,123.7		577616.8		979297	291581	1641033	317126
	7	213.16	3	159.49				

Source: (Field survey, 2023).

### **4.3 Standard of living of youth involved in fish farming**

Table 4.4 revealed the living conditions of the respondents. The result showed that majority (46.3%) of the respondents live in a room and parlour self-contain, 21.3% stayed in 2 bedroom flat, 13.8% live in a single room, 12.3% lived in 3 bedroom flat while those that stayed in duplex constituted 6.3%. Table 4.4 showed that majority (76.2%) of the respondents lived in rented house while 23.8% were house owner.

Table 4.4 also indicates the household facilities owned by the respondents. The result indicated that 82.5% of the respondents have television in their house, 15.0% have radio, 18.8% have Computer/ laptop, 23.8% had acquired Cd/dvd player, 58.8% owned Refrigerator, 41.3% owned washing machine, 63.8% have generator, 15.0%, owned water heater, all the respondents (100%) have telephone, 61.3% owned gas cooker, 88.8% owned water closet and 8.8% have air conditioner.

Table 4.4 revealed the type of mobility used by the respondents. The result showed that 3.8% of the respondents used bicycle and tricycle, 17.5% used motorcycle, 32.5% used car while 6.3% transport through bus. The result also showed that majority (76.3%) of the respondents afforded primary health care, 73.8% could afford buying of prescribed drugs while 5.0% were able to afford routine medical check-up for self.

The majority (76.2%) of the respondents lived in rented houses likely due to several reasons. The financial difficulties that young people engaged in fish farming may be facing could be

one of the main causes. Land, equipment, and fish stock must all be purchased with substantial capital in order to start and run a fish farming operation. As a result, these young farmers may not have enough money to buy a property outright. A more cost-effective housing alternative is renting, which enables them to devote their meager financial resources to their fish farming endeavors. Furthermore, renting provides flexibility (Béné *et al.*, 2007; Aiga *et al.*, 2009). These people may need to move for better farming possibilities or other personal reasons, and renting makes it possible for them to do so without having to deal with the hassles of selling a piece of real estate.

All the respondents (100%) having telephones can be attributed to the widespread availability and affordability of mobile phones in recent years. Being able to use a phone has become essential in today's connected environment. Having a phone is essential for those who raise fish for a variety of reasons. It makes it easier to communicate with other farmers, customers, and suppliers. Through phone calls, text messaging, or internet services, they can obtain crucial information regarding agricultural practices, weather forecasts, and market pricing. Additionally, a phone gives farmers a way to ask for help in an emergency, protecting their safety and security. The majority (76.3%) of the respondents affording primary health care could be due to the emphasis on preventive healthcare and the availability of government-sponsored health programs. Fish farming, like any other agricultural activity, involves potential health risks due to exposure to various environmental factors. Therefore, ensuring access to primary healthcare services is essential for the well-being of the farmers. Additionally, preventive healthcare measures, such as vaccinations and regular check-ups, can help in early detection and management of health issues, preventing them from escalating into more serious and costly conditions. The availability of affordable healthcare services,

coupled with the awareness of its importance, likely contributes to the majority of respondents being able to afford primary health care. From table 4.4, majority (76.3%) of the young fish farmers can afford primary health care for self also majority(73.8%) of the respondent can afford prescribed drugs. There is a sharp decline in the percentage that can afford routine medical check-up for self, as only 5% of the total respondent can afford routine medical check-up. This agrees with Edeoghon and Anozie (2015), their study also indicated that respondents could afford the necessary health care packages for themselves and their household, however, their income might not be enough for them to acquire routine medical check-up. Again the health and health care of respondents depends on their level of income. This agrees with Nugent, (2000) who stated that high living standard is associated with high income level and consumption.

**TABLE 4.4: LIVING CONDITIONS**

<b>Type of house you live in?</b>	<b>Freq., n= 80</b>	<b>%</b>
Single room	11	13.8
Room and parlour self-contain	37	46.3
2 bedroom flat	17	21.3
3 bed room flat	10	12.5
duplex	5	6.3
<b>Is the house owned or rented?</b>		
Owned	19	23.8
Rented	61	76.2
<b>Household facilities**</b>		0.0
Television	66	82.5
Radio	12	15.0
Computer/ laptop	15	18.8
Cd/dvd player	19	23.8
Refrigerator	47	58.8
Washing mchine	33	41.3
Generator	51	63.8
Water heater	12	15.0
Telephone	80	100.0
Gas cooker	49	61.3
Water closet	71	88.8
Air conditioner	7	8.8
<b>Own source of mobility?</b>	51	63.8
<b>If yes, what type of mobility?</b>		
Bicycle	3	3.8
Motorcycle	14	17.5
Tricycle	3	3.8
Car	26	32.5
Bus	5	6.3
Can you afford primary health care services for self	61	76.3
Can you afford routine medical check-up for self	4	5.0
Can you afford prescribed drugs	59	73.8

Source; Field survey, 2023.

**TABLE 4.5: Monthly savings**

<b>Monthly Savings/month in naira</b>	<b>Freq</b>	<b>%</b>	<b>Mean</b>	<b>Std. Dev</b>
<=20000	29	36.3		
20001-50000	17	21.3	51597.15	10471.22
50001 -80000	21	26.3		
80001 and above	13	16.3		

Source; Field survey, 2023.

**TABLE 4.6: Percentage expenditure on items monthly**

	<b>Below 5000</b>	<b>5000-10000</b>	<b>10000-20000</b>	<b>20000-30000</b>	<b>30000-40000</b>	<b>Above 40000</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Food			26.12	35.13	20.6	18.15
Shelter	5.71	39.71	32.55	4.17	16.22	1.64
Clothing		9.64	30.19	58.17	2.00	
Dependents	73.15	26.80	0.50			
Internet connection	100.00					
Electricity	95.4	4.6				
Transportation	33.51	58.77	7.72			

Source: Field survey, 2023

#### **4.4: The Level of involvement of youth in fish farming**

Table 4.7 revealed the Level of involvement of youth in fish farming. The mean result indicates the level of involvement. Means above 2.0 indicates high involvement while mean below 2.0 indicate low involvement. The mean result ( $m = 2.91$ ) shows that the youths in the study area are involved in input purchase and liming of pond ( $m = 2.55$ ). The mean result shows that majority of the youth are involved in stocking of ponds and fish pond management ( $m = 2.99$ ), feed production ( $m = 2.20$ ), feeding of fish ( $m = 2.86$ ), medication ( $m = 2.09$ ), water management ( $m = 2.43$ ) and harvesting ( $m = 2.36$ ). The mean result also shows that majority of the youth are involved in sourcing of market ( $m = 2.33$ ), weighing ( $m = 2.09$ ) and selling of fish ( $m = 2.05$ ). The mean result however, indicated that production activities such as specie selection ( $m = 1.43$ ), feed production ( $m = 0.15$ ), spawning ( $m = 1.29$ ), fish sampling ( $m = 1.12$ ), grading ( $m = 1.27$ ) and packaging ( $m = 1.09$ ).

The majority of the youth are involved in input purchase and liming of the pond because these activities are foundational to successful fish farming. One of the most important parts of running a fish farm is purchasing inputs, which includes things like medicine, equipment, and fish feed. The youths are probably engaged in this activity to make sure they have the proper supplies at the appropriate time, which has an immediate effect on the wellbeing and development of their fish. On the other side, pond liming is essential for maintaining the pH balance of the water and making sure fish can thrive there. By participating in this activity,

youth can guarantee that the pond's conditions are ideal for fish growth and a successful harvest (Maggino and Ruviglioni, 2011).

The majority of the youth are involved in stocking and fish pond management because these tasks are central to maintaining a productive fish farm. Healthy fish are added to the pond during stocking, and pond management includes keeping an eye on the water's quality, managing illnesses, and making sure it has enough aeration. Participation from youths in these programs protects the fish's health and fosters their development as well as the general productivity of the farm. Through proactive pond management, these youths may provide an appropriate living environment for their fish, resulting in a profitable and long-lasting fish farming endeavor (Tsue *et al.*, 2013).

The majority of the youth are involved in sourcing for markets because finding reliable and profitable markets is essential for the economic viability of their fish farming business. They may sell their produce at competitive prices by actively seeking out markets, which guarantees a consistent flow of cash. Directly participating in market sourcing also helps them to understand market demands, build relationships with buyers, and negotiate better prices. Through this involvement, the youths are given the ability to make well-informed judgments regarding the kinds of fish that are in demand and their pricing methods, which eventually helps them maximize revenues and continue their fish farming ventures.

Samuel (2021) study affirmed that less youth are involved in specie selection. This result suggests respondents attach a good level of significance to liming of pond and purchasing of fish inputs. Andy, Charles, and Craig (2013) reported that the carbonate component in lime raises the soil's total alkalinity, pH, microbial activity in the pond soil, and increases the availability of phosphorous to phytoplankton, thus confirming the importance of this activity to fish farming. In addition, Emmanuel, Adegbite and Kolawole (2014) also confirmed the sensitivity of liming practice to a successful fish farming cycle, they stated that 'the amount of lime to be used should be carefully calculated to avoid inducing an excessively high water pH, which may increase ammonia toxicity and mortality of the fish stocked.

**TABLE 4.7: THE LEVEL OF INVOLVEMENT OF YOUTH IN FISH FARMING**

<b>Pre-production</b>	<b>Mean</b>	<b>Std. Dev</b>
Input purchases	2.91	0.22
Specie selection	1.43	0.12
Liming of pond	2.55	0.19
<b>Production activities</b>		
Stocking	2.99	0.09
Fish pond management	2.99	0.09
Feed production	0.15	0.27
Feed purchases	2.20	0.32
Feeding of fish	2.86	0.06
Medication	2.09	0.14
Spawning	1.29	0.37
Water management	2.43	0.41
Fish sampling	1.12	0.22
Harvesting	2.36	0.14
<b>Marketing</b>		
Sourcing for markets	2.33	0.02
Grading	1.27	0.29
Weighing	2.09	0.32
Packaging	1.09	0.19
Selling	2.05	0.06

Source: Field survey, 2023.

Mean > 2.0 = High involvement

#### 4.5 Constraints

Table 4.8 indicates the constraints to youth involvement in fish farming. The mean result indicates the level of constraint. Means above 2.0 indicates major constraint while mean below 2.0 indicate minor constraint. The mean result shows that Lack of technical know how (m = 2.53) and Inadequate access to extension agent (m = 2.87) were major constraints to youth involvement in fish farming. The result shows that Inadequate access to credit/capital (m = 2.39), High cost of feed (m = 2.99) and Inadequate access to information (m = 2.06) were major constraints to youth involvement in fish farming. The result indicates that Labour availability (m = 1.92), Flooding (m = 1.42), Poaching (m = 1.99), Distance to the farm (m = 1.39) and Prevalence to diseases (m = 1.77) were minor constraints to youth involvement in fish farming.

The lack of technical knowledge is a major constraint because fish farming is a complex and technical field that requires specific skills and expertise. Youth farmers may find it difficult to maintain a healthy fish population if they lack sufficient understanding about appropriate fish farming techniques, disease management, water quality control, and feeding practices. This restriction may result in low yields, higher death rates, and general operational inefficiencies. Furthermore, producers may find it difficult to implement creative and sustainable practices without technical know-how, which could impede the expansion and production of their fish farms (Adeleke, 2008). This result in this study is in line with Odoemenem and Obinne (2010) who both pointed out that constant meeting /frequency of

extension contact between the extension personnel and farmers would enlighten them and create better awareness for the potential gains of improved agricultural innovations.

Extension agents play a critical role in disseminating knowledge, providing training, and offering on-the-ground support to farmers. Youth who don't have access to these professionals lose out on important advice and support. Extension specialists can support farmers in overcoming obstacles, implementing best practices, and solving problems immediately. Without their assistance, young farmers may find it difficult to solve issues, enhance their methods, and maximize their output, which would ultimately reduce the likelihood that their fish farming ventures will be successful (Odoemenem and Obinne (2010). The high cost of fish feed is a major constraint because it significantly impacts the operational expenses of fish farming. Feed accounts for a significant amount of aquaculture's overall costs. Young farmers' profit margins are directly impacted by excessive feed prices. Fish with stunted growth and poor health may result from farmers having to make compromises on the quantity or quality of feed given to them due to high feed costs. Furthermore, it would discourage young people who would otherwise want to become farmers from entering the field altogether, which would restrict the aquaculture sector's ability to grow and sustain itself in the area (Adeleke, 2008).

Insufficient access to credit or capital restricts the financial resources available to youth farmers. Investments in infrastructure, gear, fish stocks, and operating expenses are necessary for fish farming. Young farmers can find it difficult to grow their farms, buy the supplies they

need, or invest in equipment that would increase output without sufficient finance. Restricted credit availability may also make it more difficult for them to take advantage of opportunities or handle emergencies, which will limit their total potential for growth and ability to contribute economically to the society (Mohammed and Andrew 2008). Tijani, and Adejobi (2012) identified epileptic electricity supply, insufficient capital, high-cost of inputs, high-cost of labor and water pollution. Olaoye, *et al.*, (2013) indicated high cost of feeding, lack of storage facilities and predators as major limitations to fish farming. Niyonkuru, Nibona and Moreau (2015) grouped major factors militating against fish farming into: physical , technical material and financial factors. Usman, Girei and Tari (2016) identified lack of access to information and inadequate funding as major challenges in fishing enterprise

**TABLE 4.8: Constraints**

<b>Constraints</b>	<b>Mean</b>	<b>Std. Dev</b>
Lack of technical know how	2.53	0.13
Inadequate access to extension agent	2.87	0.08
Labour availability	1.92	0.38
Flooding	1.42	0.71
Poaching	1.99	0.33
Distance to the farm	1.39	0.62
Prevalence to diseases	1.77	0.48
Inadequate access to credit/capital	2.89	0.12
High cost of feed	2.99	0.09
Inadequate access to information	2.06	0.29

Source: Field survey, 2023.

Mean > 2.0 = Major constraints

## **4.6 Hypothesis testing**

The study seeks to investigate the effect of involvement in fish farming on standard of living of youths.

### **4.6.1 Influence of involvement on living standard**

The regression result shows that there was a significant relationship between youth involvement in fish farming and their living standard in the study area. The null hypothesis stated earlier is therefore rejected.

Numerous important, interconnected elements can be linked to the strong association between the living standards of young people in the research area and their involvement in fish farming. First off, youth who actively engage in fish farming have access to a steady stream of cash that allows them to pay for improved housing, healthcare, and education—all of which raises their general level of living (Akankali *et al.*, 2011). Their improved financial security has a beneficial knock-on effect that raises everyone's level of living their families, communities, and themselves. Second, the employment opportunities created by fish farming improve the community's economic prospects, both directly inside the industry and indirectly through related activities like marketing and transportation. This boost in employment leads to higher incomes for households, fostering economic growth and improving the quality of life for a larger segment of the population (Akankali *et al.*, 2011).

**TABLE 4.9: Influence of involvement on living standard**

	B	Std. Err.	Beta	t-sta	Sig.
Involvement	0.271	0.09	0.012	3.01	0.005

Source: Field survey, 2023.

\*significant at 0.05 level of significance

R-squared = 0.519

## CHAPTER FIVE

### 5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

#### 5.1 SUMMARY

The study assessed the standard of living of youth involved in fish farming in Ughelli north local government area, Delta state, Nigeria. A two-stage sampling procedure was adopted for the study, the following communities were selected; Agbarho, Ughelli, Orogun, Evwreni, and Agbarha-otor. Primary data were collected using by the use of questionnaire which was administered to 80 respondent. The respondents are youths of 18-35 years practicing fish farming in the study area. Data collected were analysed using percentages, mean, frequency distribution and multiple regression.

The result of the analyses shows that most of the fish farmers were male. The mean age of the farmers was 32 years. Majority(75%) of the respondent were married, majority(81.25%) of the respondent were members of association. Majority( 97.5%) of the respondent family size was 5 and below The mean monthly income from other sources is ₦75,195. Majority(52.5%) of the respondent has experience of between 5-9 years, with a mean years of experience of 8 years. Majority (68.75%) has 1-5 fish ponds with a mean number of fish pond of 6.

The majority(46.3%) of the respondent live in a room and palour self-contain apartment. 23.8% owns the house they live in, while majority(76.2%) rented. Majority owns basic

household facilities such as television, telephone, water closet, gas cooker and generator.

Majority (63.8%) of the respondent has a source of mobility. The mean monthly savings of the respondent is ₦51,597. Majority of the respondent spend less than ₦20000 monthly on Food, Shelter, Clothing, Dependents, Internet connection, Electricity and Transportation.

Majority of the respondent were highly involved in the following fish farming activities; input purchases, liming of pond, stocking, fish pond management, feed purchases, feeding of the fish, medication, water management, harvesting, sourcing for markets weighing and selling.

Majority identified the following constraints as having major effect; lack of technical know how, inadequate access to extension agent, inadequate access to credit, high cost of feeding and inadequate access to information. With high cost of feeding topping the list of constraints.

## **5.2 CONCLUSION**

In conclusion, the study paints a comprehensive picture of the youth involvement in fish farming in Ughelli North Local Government Area, Delta State, Nigeria. The results show that most of the respondents, who work in different facets of fish farming, deal with similar issues such a lack of technical expertise, restricted access to resources, and expensive feeding expenses. Notwithstanding these obstacles, the study emphasizes how resilient the youth are

in actively engaging in a variety of fish farming activities, indicating their dedication to the sector.

Most importantly, the study highlights how fish farming raises these youth's standards of living. By working in this industry, people not only create jobs and revenue but also make a substantial contribution to food security and family development. The study's results emphasize the vital role played by youth in sustaining local economies and enhancing their own livelihoods.

### **5.3 RECOMMENDATION**

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

1. The dominance of male over the female youths involved in fish farming should be tackled. Special intervention programmes aimed at female youths should be designed and implemented by various stake holders.
2. Agric extension agents can help young fish farmers by exposing them to modern and cheaper fish farming systems, feeding alternatives and cheaper credit sources.

3. Media programmes displaying the success and progress of youths in fish farming can be embarked on to motivate genuine interest for other non-involved youths.
  
4. Stakeholders should be actively involved in encouraging youths to join fish farming associations at all level as membership will positively impact their standard of living.
  
5. Further studies should be carried to assess the standard of living of youth involved in various fish enterprise

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**QUESTIONNAIRE**

**DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION SERVICES**

**FACULTY OF AGRICULTURE**

**UNIVERSITY OF BENIN**

**BENIN CITY, EDO STATE, NIGERIA**

Dear sir/ma

I am a final year student of the above named institution and department. I am making a research on a topic titled **INVOLVEMENT IN FISH FARMING AND STANDARD OF LIVING AMONG YOUTHS IN UGHELLI NORTH LOCAL GOVERNMENT AREA, DELTA STATE, NIGERIA**. The purpose of this questionnaire is to obtain the necessary information needed for this study. The research is strictly for academic purpose and therefore your honest and accurate response is required, be rest assured that your response will be treated with utmost confidentiality.

Yours Faithfully

Akpo UWEREVU

**SECTION A: PERSONAL CHARACTERISTICS OF RESPONDENTS**

**Please indicate as appropriate**

1. Sex: Male { } Female { }
2. Age: .....years
3. Level of Education: Non { } Primary school certificate { } secondary school certificate { } Tertiary education { } others \_\_\_\_\_
4. Marital status: Single { } Married { } divorced { } widowed { } others { }
5. Household size:.....
6. Do you belong to any fish farmers association? Yes { } No{ }]
7. Monthly income from other sources (~~N~~):.....

8. Where did you learn about fish farming? (a) School ( ), (b) Training ground ( ), (c) informal training ( ), (d) Others, specify: .....

**SECTION B: ENTERPRISE CHARACTERISTICS**

9. Years of experience in fish farming? State actual years { }
10. Number of fish ponds { }
11. How many fish cycles are you able to do per year? Please state actual number { }
12. How many employees do you have? Please state actual number { }
13. Type of fish pond: a. Earthen Pond { } b. Concrete Pond { } c. Tarpaulin pond { }
14. Please state your Income from fish farming per cycle? -----
15. Please state your income from fish farming per year? -----
16. Scale of fish production

		Cycle 1	Cycle 2	Cycle 3	Cycle 4
	No of fish stocked				

- 15 Do you have any other sources of Income? Yes { } No { }

If yes, please state other businesses you have and how much income do you receive from it

	Other business	Income per week	Income per month
1			
2			
3			

**SECTION C: STANDARD OF LIVING OF YOUTH INVOLVED IN AQUACULTURE**

**LIVING CONDITIONS**

Type of house you live in? a. Single room { } b. Room and parlour self-contain { } c. 2 bed room flat { } d. 3 bedroom flat { } e. 4 bed room flat { } f. duplex { }

16. Is the house owned or rented? a. Owned { } b. Rented

17. House Facilities.

**Indicate the facilities that is owned**

Household facilities	Yes	No
Television		
Radio		
Computer/ laptop		
Cd/dvd player		
Refrigerator		
Washing machine		
Generator		
Water heater		
Telephone		

Gas cooker		
Water closet		
Air conditioner		

18. Do you own your own source of mobility? yes { } no { }

19. If yes, what type of mobility? Bicycle { } Motorcycle { } Tricycle { } Car { } Bus { }

**20. Health and health care**

	Yes	No
Can you afford primary health care services for self		
Can you afford routine medical check-up for self		
Can you afford prescribed drugs		

21. How much do you save in a month in naira?.....

**MONTHLY EXPENDITURE**

Please indicate how much you spend on the items listed below on a monthly basis in Naira

S/ N		Below 5000	5000- 10000	10000- 20000	20000- 30000	30000- 40000	Above 40000
1.	Food						
2.	Shelter						
3	Clothing						

4	Dependents						
5	Internet connection						
6	Electricity						
7	Transportation						

#### SECTION D: THE LEVEL OF INVOLVEMENT OF YOUTH IN AQUACULTURE

Fish farm Activities	Always involved	Sometimes involved	Never involved
<b>Pre-production</b>			
Input purchases			
Specie selection			
Liming of pond			
<b>Production activities</b>			
Stocking			
Fish management			
Feed production			
Feed purchases			
Feeding of fish			
Medication			
Spawning			
Water management			
Fish sampling			
Harvesting			
<b>Marketing</b>			
Sourcing for markets			
Grading			
Weighing			
Packaging			
Selling			

#### SECTION E: Constraints of youth involved in Aquaculture

Constraints	Not a constraints	Minor constraint	Major constraint
1. Lack of technical know how			

2. Inadequate access to extension agent			
3. Labour availability			
4. Flooding			
5. Poaching			
6. Distance to the farm			
7. Prevalence to diseases			
8. Inadequate access to credit/capital			
9. High cost of feed			
10. Inadequate access to information			