

The Prospects and Effects of Agro-preneurs in Nigeria Economy. A Case of Fish Farming

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ABSTRACT

The study seeks to examine the prospects and effects of agro-preneurs in Nigeria economy, a case of fish farming. The main objective of the research was to critically examine the influence of training and manpower development programs on workers' efficiency. Related and relevant information was collected from the primary data source, which is the questionnaire. To achieve the stated objective for the study hypotheses were formulated and tested using the Kolomogorov-Smirnov Test. The result shows that: Cost and return has a positive and significant effect on the number of fish farmers in Nigeria; Access to credit has a positive and significant effect on fish farming in Nigeria; Lack of experience of farmers has a positive and significant effect on fish farming in Nigeria and that Fish farming has a positive and significant effect on the Nigerian. This therefore means that the alternative hypotheses are accepted. the study, recommended that Government promotion on fish farming is inadequate. There is a need for establishing modern fishery hatcheries by the government in the study area to supply quality fingerlings. Government should establish a feed mill in the study area. Government of the State, should regulate cost of production that will increase output.

Key word: Prospects, Effects, Agro-preneurs, Economy.

Introduction

Aquaculture plays an important role in the development of many national economies and a key role in the socio-economic resilience of rural areas, potentially offering valuable and skill-based employment opportunities, and in some cases stabilizing the economic base of otherwise fragile communities (Edwards, 1999; Haylor & Bland, 2001 and: Muir, 1999). It provides livelihood options in rural areas of the

developing world, as well as income and employment in both remote regional and more developed economies.

Aquaculture according to Ayinla (2003) is the fastest-growing food-producing industry in the world. He stated that global aquaculture production has quadrupled over the past twenty years and that aquaculture production is likely to double in the next fifteen years, as a result of wild fisheries approaching their biological limits and the world demand for cultured fish continuing to increase. Though aquaculture has grown strongly in most regions of the world where the potential exists, it has not done so in Sub-Saharan Africa. Despite various efforts since the 1950s, returns on government and international aquaculture investments appeared to be insignificant (FAO, 2004) with less than 5% of the suitable land area being used. Sub-Saharan Africa contribution to world aquaculture production is less than 1% (Hecht, 2006).

In Nigeria, the annual fish demand as of 2012 is 2.66 million metric tonnes with supply being only 1.32 million metric tonnes. Out of this figure, local production is 0.62 million metric tonnes while 0.7 million metric tonnes is from importation. Of the total fish supply, aquaculture accounts for only 200,000 metric tonnes. The current aquaculture production is a far cry from its potential production of 2.5- 4.0 million metric tonnes. Nigeria is a coastal state bordered in the South by the Atlantic Ocean. It has a landmass of 923,766 km², with about 1.75 million hectares of suitable sites for aquaculture development. The aquaculture sub-sector is considered a very viable alternative to meeting the nation's need for self-sufficiency in fish production. This is based on its high reliability in return on investment and low capital intensity, relative to capture fisheries. To support future needs, capture fisheries will need to be sustained and if possible enhanced, and aquaculture developed rapidly, to increase by over 260% i.e. an annual average of more than 8.3% by 2020 in sub-Saharan Africa alone (Muir, 2005), which is significantly higher than recent levels.

Positioning Statement

More than 120 million People throughout the World are estimated to depend on fish for all or part of their income (<http://wif.Jcs.net>), thereby ensuring food security and raising the protein level of the Nation's populace, and improving their welfare. Fisheries resources are also known to serve for recreation and international trade aiding foreign exchange and increasing revenue of a country (Godwin, & James, 1990). Although fishery resources are known to play vital roles in national development, the performance of the fisheries sector in Nigeria is below expectation with low supply. This is evident in the fact that Nigeria still imports fish into the country to supplement fish production.

According to the proceedings of the fisheries society of Nigeria (FISON), about 50% deficit the supply of requirement is met through importation, which constitutes a huge avoidable drain of Nigeria's scarce foreign exchange (Anko & Eyo, 2001; Ele, Ibok, Antia-Obong, Okon & Udoh, 2013). The contribution of domestic fish production to the country's fish sector cannot be over-emphasized. Fish farming has the potential of contributing to domestic fish production and reducing the amount of money spent on fish

importation. Hence, this gap is what this research hopes to fill, providing theoretical and empirical information. Accordingly,

Objectives of the Study

The broad objective of the study is to examine the problems and prospects faced by fish farmers in Nigeria. The specific objective of this study is stated below;

- I. Examine whether cost has an effect on fish farmers in Nigeria.
- II. Find out if lack of access to credit has an effect on fish farming in Nigeria
- III. Find out if lack of experience of farmers has an effect on fish farming in Nigeria
- IV. determine if fish farming affects the Nigeria economy

Research Questions

- i. What consequence of cost of fish farmers in Nigeria?
- ii. What effect does access to credit have on fish farming in Nigeria
- iii. What consequence does lack of experience of farmers have on fish farming in Nigeria?
- iv. What influence does fish farming have on the Nigerian economy?

Hypotheses

H1: Cost have no significant effect on the number of fish farmers in Nigeria

H2: Access to credit has no significant effect on fish farming in Nigeria

H3: Lack of experience of farmers has no significant effect on fish farming in Nigeria

H4: Fish farming has no significant effect on the Nigerian economy

Literature Review

Conceptual Framework

Fish Production in Africa and Nigeria

Fish has existed in Africa since 2000 BC (Jim, 2001) and are known as Tropical fishes. Although fish is not a major staple food in the Savannas and highland zones of Africa where there is a relative abundance of Livestock as a source of protein, however, in the tropical forest margins of the West African coast, fish is a crucial source of protein and the dried form, a common condiment. Over 3,000,000 people in developing countries depend directly or indirectly on fisheries and aquaculture for their livelihood (Keith, 2010). The principal grounds for marine fishes such as Tuna, Sardines, and Hake are the West African coast from Morocco to Senegal and from Angola and Namibia. The Nile, Niger, Congo, and Senegal River, and Lake Victoria, Tanganyika, Malawi, and Chad are major sources of freshwater fish. The most common fresh Water catch is the Nile perch.

Fish farming is a vibrant and dynamic commercial sector in Nigeria ripped with investment and employment opportunities. The Aquaculture industry is not new to Nigeria, the first documented fish farm dates back to 50 years. Oladejo (2010) stated that Fish production is projected to exceed 150 million tons by the year 2010. Eze and Ogbara

(2010) reported that pond fishery is being practiced in Nigeria on large scale for better augmentation of fish products. While the African catfish *Clarias gariepinus* is widely cultivated in Africa and it is an important commercial mudfish for the Nigerian fishing industry and it is mostly cultivated in KaJola fish farm Ibadan, Nigeria (Fafioye, 2011).

Aquaculture Potential in Nigeria

The growth of a country's population is usually accompanied by increases in the demand for the necessities of life including water, food, and shelter. This is the case with the unrestricted increases in the demand for protein-rich food items of animal origin. The Food and Agriculture Organization (FAO, 1991), recommended that an individual takes 35 grams per caput of animal protein per day for sustainable growth and development. However, the animal protein consumption of Nigerians is less than 8 g per person per day, which is a far cry from the FAO minimum recommendation. The major animal protein sources in the country include cattle, goats, sheep, poultry, and fish. Out of these sources fish and fish products provide more than 60% of the total protein intake in adults especially in the rural areas (Adekoya & Miller, 2004). Therefore, the importance of the fishing industry to the sustainability of animal protein supply in the country cannot be over-emphasized.

Regrettably, the supply of food fish has been on the decline. This is due to consistent decline from the country's major source of food fish, (Global Agriculture Information Network (Gain, 2007). Currently, domestic fish production is put at 620,000 metric tons as against the present national demand of about 2.66 million metric tons (Ayinla, 2012). It has been asserted by Adediran (2002) and Ugwumba (2005) that the only way of boosting fish production and thereby move the country towards self-sufficiency in fish production is by embarking on fish farming especially catfish farming. This has prompted the Federal Government of Nigeria to package the Presidential Initiative on fisheries and aquaculture development in 2003 to provide financial and technical assistance to government programs and projects encouraging fish production. Similarly, the Delta State government initiated an agricultural microcredit support scheme with emphasis on fisheries, to complement the Federal Government's effort at attracting investment into this all-important sector.

Rationale for Investment in Aquaculture

Fish stocks, aquatic resources, and the aquatic environment are generally public goods requiring coherent public policies and their effective application. In addressing these issues, the World Bank has the comparative advantage of its convening power, its experience in economic and sector analysis and strengthening public governance, in developing cross-sector solutions, in fostering effective and transparent natural resource management, and in being able to provide substantial investment funding to support strategic sectors such as. Fish is the principal animal protein consumed by about one billion people worldwide. The export value of world trade in fish-US\$58 billion in 2002 is more than the combined value of net exports of rice, coffee, sugar, and tea. Demand for

fish products is increasing rapidly as income levels rise in Asia and the population grows in Africa. Led by Asia, developing nations now produce nearly three times as much fish as the developed countries (Delgado, Wada, Rosegrant, Meijer & Ahmed, 2003). Aquaculture, The Fisheries sub-sector investment addresses a range of ubiquitous bank issues such as poverty, governance, knowledge, and environment, poverty, and economic development The fisheries sector is an essential source of employment and income for millions of women and children who catch, process, transport, or market fish and fish products.

a) Provision of Employment

With the increase in fish production, employment in fisheries and aquaculture has continued to increase in many countries. Many people had engaged in fishing and fish farming as a full-time occupation (Jim, 2001). Employment in the primary capture fisheries and aquaculture production sector has remained relatively stable since 1995 and was estimated to be about 35 million in 2000. More than 120 million people throughout the world are estimated to depend on fish for all or part of their income (<http://wif.jcs.net>). While over 500 million people in developing countries depend directly or indirectly on fisheries and aquaculture for their livelihoods (Keith, 2010).

b) Fisheries Resources in International Trade and Foreign Exchange

Fish products are among the most widely traded foods, with more than 37 % (by volume) of world production traded internationally (FAO, 2009). Godwin and James, (1990) reported that international trade in fish production has increased to a new record of US \$55.2 billion, continuing the last decade accounting for over 4% annual growth in fisheries trade. The net export trade from the developing countries increased from \$10 billion in 1990 to \$18 billion in 2000. The increasing demand for seafood has led to a complex global system of trade in fisheries products. Japan is the largest importer (Anderson, 2009).

c) Ensure Food Security and welfare of a nation's population

Fisheries and aquaculture contribute significantly to food security and livelihood. According to Godwin, and James (1990), the United Nation's Food and Agriculture Organization (FAO) opined that global production from capture fisheries and aquaculture is the highest fish supply currently on record and remains very significant for global food security, providing more than 15 % of the total animal protein supplies and at least 50 percent of animal protein and minerals to 400 million people in developing countries (Keith, 2010). China remains the largest producer with reported fishery production of 41.6 million tons (17 million tons from fisheries and 24.6 million from aquaculture).

Challenges and Constraints of Fishery Resources in Nigeria

Regardless of the efforts by Federal Government, to increase fish production, meeting the fish demand of the country has remained a mirage. This has been due largely to the poor National Fisheries Development plans and Policies, which was focused on the

development of Industrial Fisheries, a sector that is not capable of a further increase in production, to the detriment of aquaculture (Tobor, 1997).

Under the technical consideration, poor understanding of the biology of the fish, logistics hindering effective training of personnel, and extension support activities among others were mentioned. Ajana (2007) listed about ten major constraints to include inadequate site selection, poor designs and construction of fish pond, low level of fish farm management techniques, high cost of pelleted fish feeds, inadequate hatchery facilities, and poor record-keeping. Although fishery resources are known to play vital roles in national development, a lot of constraints militate against the achievement of rapid development of the fishery sub-sector. Among such factors as mentioned above are:

a) Government Policies

Most government policies are aimed at accelerating growth through technological and infrastructural development, and market-led economic policies but are not focused on improving the living conditions of the poor, hence the continued level of poverty in small-scale fishing communities of the world. This sub-sector, therefore, requires a holistic concern.

b) Poverty

The skills involved in fisheries are multi-disciplinary and poverty has remained a major constraint to fishery resources development (Binjin, 2008). Ahmed and Krishen (2007) also stated that fishing communities are frequently identified as being among the poorest of the poor of the world, characterized by over-crowded living conditions, inadequate social services, low level of education, and lack of skills and assets, particularly land that would permit a diversification of their livelihood. Similarly, Oabokaba et al (2005).

c) Climate Change

Climate change is modifying fish distribution and the productivity of marine and freshwater species. This has an impact on the sustainability of fisheries and aquaculture and the livelihood of the communities that depend on fisheries. The effect of sea-level rise due to flooding means the coastal fishing communities are on the front line of climate change. While changing rainfall patterns and water use impact negatively on inland (freshwater) fisheries and aquaculture, Keith (2010) states that the increase in Greenhouse emission (GHGE) has led to changing rainfall patterns, rising ocean temperature, and acidification, which has radically altered aquatic ecosystem.

Empirical Review

Rabo, Zarmai, Jwanya, and Dikwahal (2014) examined the role of Fisheries resources in National development and found that the fishery subsector has some constraints such as catch, improper funding, poor input facilities, poverty in fishing communities, water barriers, the effect of climate change and lack of comprehensive

manpower development and training programs. Ekelemu (n.d.) did A Review of Aquaculture Production in Nigeria and examining the Problems and Prospects. He found that Aquaculture though a veritable means is faced with a lot of constraints ranging from the Government's wrong focus on industrial fisheries instead of aquaculture, poor policy formulation, and non-implementation fisheries development programs.

Adeoye, Akegbejo-Samsons, Omoniyi, and Dipeolu (2012) examined challenges and investment opportunities for large-scale aquaculture farmers in Nigeria. Findings deduced from the study reveals that the unprofitable operation of fish farms in Nigeria could be broadly attributed to two factors: poor production planning and inadequate technical know-how.

Oluwemimo and Damilola (2013) examined the socioeconomic and policy issues determining sustainable fish farming in Nigeria. Regression and budgetary analyses were used to analyze data obtained from 100 fish farmers in ten local government areas of Osun State. The result showed that the average net income in the study area was N318,640.75 while the gross margin waN457,327.95. The benefit-cost ratio was 1.5 indicating that for every N100 invested, the enterprise yields an additional N50. The regression analysis showed that the experience of farmers in fish farming, quantity of feed used, access to credit, and size of the pond were significant determinants of fish farm production in Nigeria.

Theoretical Framework

a) Catch-and-hold theory

Fish and other aquatic products have always been held in high esteem by the early rulers of big empires. At the same time, it was a practice to build water areas as a source of water, recreation, or a means of defense around castles. Such water areas were not intended for rearing fish but some of the rulers demanded fish, regardless of the season so that the responsible officers around these rulers had to provide means to obtain fish even during winter. Due to this necessity, the practice has developed to stock fish caught from natural waters into the water areas constructed around castles or communities. As it turned out, some of the fish planted in these artificial waters were able to survive and grow while others perished. Over time, the species that survived and grow such as the common carp were selected for this catch-and-hold system of providing fish. As a further development, stocking of the right amount and kind of fish and feeding them when necessary also developed resulting in actual aquaculture practice. The monasteries of Europe and the palaces of emperors and other rulers exemplified this type of venue for aquaculture development. (Rabanal, 1998).

b) Classical Fisheries Management Theory

Classical fisheries management is premised on a single stock paradigm which essentially argues that the productivity of a stock is a function of its size and its reproductive potential (Hoggarth, Abeyasekera, Arthur, Beddington, Burn, 2006). Subsequently, it is argued that the basic objective of fisheries management is to exploit

this stock at a level where its reproductive ability is equal to its natural mortality (Ricker 1945; Hoggarth et al, 2006) through mesh regulations/ selective fishing (Ricker 1945). Therefore, the classical approach to fisheries management necessitates the need to estimate growth and mortality parameters from exploited populations (Hoggarth et al, 2006; Sparre & Venema, 1998), which are then used as input parameters to estimate MSY (Gayanilo & Pauly, 1997), which is the key objective of fisheries management (Rounsefell & Everhart, 1953). This fisheries management philosophy is codified in Beverton and Holt's (1957) yield-per-recruit model which is a major seminal work in fisheries literature (Pauly, 1998). Over time, regulations were gradually introduced to manage fisheries resources to achieve optimum utilization (i.e. maximum sustainable yield) of the fish resources. According to Pauly (1997), some of these include reducing fishing effort, mesh regulations, closed fishing seasons, and fishing gear restrictions. Welcomme (2007) defines these as technical measures (e.g. mesh and gear limitations, closed seasons, etc), input controls (e.g. licensing to control effort and access, ownership, etc), and output controls (e.g. quotas, size limits on fish landed, etc). These classical regulations have subsequently been assiduously implemented in floodplain fisheries (Malasha, 2003 and: Pauly, 1999).

Several management approaches, based on the classical paradigm, have been developed to manage fisheries resources globally. Because one of the premises of classical fisheries management is Hardin's (1968) Tragedy of the Common's scenario, the basic approach to mitigate against this has been to privatize fisheries resources. Subsequently, Pauly (1999) proposes individual transferable quotas (ITQ) as an alternative approach to privatize the commons, ostensibly to inculcate a conservation ethic in exploitation regimes. Other classical management approaches to safeguard fish resources include the delineation of fish refuges, known as marine protected areas (Ngwenya & Mosepele, 2008; Conover & Munch, 2002) which are essentially meant to act as game reserves or national parks used in wildlife management. Other approaches include the ecosystem approach (Hall & Mainprize, 2004), multi-species models (James & Stark (1982); Nnyepi, Ngwenya & Mosepele (2007), dynamic system models (Christensen, 1996). The fundamental question that this paper highlights then, is whether these approaches are relevant towards management of floodplain fisheries, when the very premise of classical approaches, that of a "constant parameter system (Sparre & Venema, 1998)", are nullified?

Methodology

Research Design

The research design for this research work takes the form of a descriptive survey,

Population of the Study

All fish farmers in Benin City metropolis in Edo State for.

Sample size. Sample size of thirty (30) was adopted

Method of Data Analysis

This response which has a higher percentage will be accepted as the population decision. The hypotheses were tested of significance with the use of the Kolomogorov-Smirnov Test.

Test of Hypotheses

In this part of the research emphasis was on testing the hypotheses put forward in chapter one. The test was aimed at verifying the validity of the hypotheses and to ascertain whether they could hold or not. The hypotheses to be tested are restated below in their null form;

H1: Cost have no significant effect of fish farmers in Nigeria.

H2: Access to credit has no significant effect on fish farming in Nigeria.

H3: Lack of experience of farmers has no significant effect on fish farming in Nigeria.

H4: Fish farming has no significant effect on the Nigerian economy

To test for the hypothesis, the response was subjected to Kolomogorov-Smirnov analysis using the SPSS. The result of the Kolomogorov-Smirnov analysis is presented below;

To test this hypothesis, table 4.7 to table 4.10 are used.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of cost and return have an effect of the number of fish farmers in Nigeria is normal with mean 1.39 and standard deviation 0.50.	One-Sample Kolmogorov-Smirnov Test	.002	Reject the null hypothesis.
2	The distribution of access to credit have an effect on fish farming in Nigeria is normal with mean 1.43 and standard deviation 0.51.	One-Sample Kolmogorov-Smirnov Test	.004	Reject the null hypothesis.
3	The distribution of lack of experience of farmers have an effect on fish farming in Nigeria is normal with mean 1.17 and standard deviation 0.39.	One-Sample Kolmogorov-Smirnov Test	.000	Reject the null hypothesis.
4	The distribution of fish farming have an effect on the Nigerian economy is normal with mean 1.26 and standard deviation 0.45.	One-Sample Kolmogorov-Smirnov Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Findings field work 2021

Based on the findings, it is As can be seen from the table above, showing the test of hypotheses, all four hypotheses have been rejected. This therefore means that the alternative hypotheses are accepted as described bellow

- 1: Cost and return has a positive and significant effect on the number of fish farmers in Nigeria
- 2: Access to credit has a positive and significant effect on fish farming in Nigeria
- 3: Lack of experience of farmers has a positive and significant effect on fish farming in Nigeria
- 4: Fish farming has a positive and significant effect on the Nigerian economy

Empirically, this study evaluates the prospects and problems faced by fish farmers in Nigeria. Because of this overall objective, the data collected were subject to empirical analysis. The findings of the study were that;

1. Cost and return has a positive and significant effect on the number of fish farmers in Nigeria
2. Access to credit has a positive and significant effect on fish farming in Nigeria

3. Lack of experience of farmers has a positive and significant effect on fish farming in Nigeria
4. Fish farming has a positive and significant effect on the Nigerian economy

Conclusion

The main objective of this study was to examine the problems and prospects faced by fish farmers in Nigeria. Deduced from the findings, it can be seen that integrated fish farming varies from one area to another in terms of product combination, rates, and sizes. It is more profitable than a unitary system of farming as it ensures a spread of financial risk for its varied and diversified nature in the rearing of fish, animals, and crops; it has the capacity of making more food available thus enhancing food security and creating more jobs for the teeming unemployed masses in the country. Before this potential can be fully realized, its ecological importance must be taken into consideration, as this will dictate the pace for effective management that will lead to its maximum yield. Clear and explicit linkages between aquaculture and the environment must be defined and the complementary role of aquaculture in contributing to environmental suitability must be developed and made known to all stakeholders in the aquaculture industry for effective and efficient ecological management which will in no time facilitate optimum yield.

Recommendations

Recommended therefore that

1. Government promotion on fish farming is inadequate therefore there is a need for more public enlightenment. This was one of the major reasons why most farms were not functional.
2. There is a need for establishing modern fishery hatcheries by the government in the study area to supply quality fingerlings. Most farmers had small farm sizes in terms of fished stock because of the high cost of fingerlings. This would reduce the cost of production, reduce susceptibility to early mortality, improve the production of fast-maturing fish and thereby increase general output level.
3. Government should establish a feed mill in the study area. Because most feed used by farmers is brought in from other states. This will assist the majority of fish farmers in the Local Government of the State, reduce the cost of production and increase output.

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