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Assessment of the Impact of Extension Services on Fish Farming in Ekiti State, Nigeria

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Abstract

The study was carried out to assess the impact of access to extension services on fish farming in Ekiti State, Nigeria. Specifically, the study investigated the socio – economic characteristics of fish farmers, information disseminated to fish farmers, attributes of extension agents, and farmers’ access to extension services and farmers profitability. A well-structured questionnaire was used to collect information from the farmers and a sample size of 90 fish farmers was selected from the six local government selected. Analysis of data was carried out using frequency and percentage tables and Gross Margin analysis was used to determine the profitability of the farmers. There was relationship between farmers’ access to extension services and their profitability. It was recommended that extension agents should intensify their efforts in reaching farmers and passing useful information to them in order to increase farmers’ profitability.

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Introduction

The term extension was derived from the practice of British Universities of having one educational programme within the premises of the university and another away from the university buildings. The programme conducted outside the university was described as “extension education”. The expression connoted an extension of knowledge from the university to places and people far beyond. The term “Extension Education” was first introduced in 1873 by Cambridge University in England to describe a particular system dedicated to the dissemination of knowledge to rural people where they lived and worked. Within a short time, the idea had spread to other parts of Britain, Europe and North America and Africa. (Kelsey and Heame, 1966).

Agricultural extension has three main facets: -

- As a discipline it deals with the behaviour of people: - It is educational in content and purposive in approach. Whether the content consists of agriculture, medicine, education, engineering etc, extension is always dependent on a firm knowledge and expertise.
- As a process, agricultural extension seeks to influence the behaviour of rural through education and information exchange.
- As a service, agricultural extension makes the government ministry, the university or voluntary agency as useful as possible of the people who support it through taxes and donations.

Agricultural Extension is defined by Ekpere, (1990) as the discipline which seeks to develop professional competencies essential to the operation of a system of services which assist rural people through educational programmes of improved farming methods and techniques, increased production efficiency and income, level of living and achievement of a more fulfilling rural life. The extension agents carried out the responsibilities of educating and disseminating useful and timely agricultural information to the farmers. Williams (1978) reported that the conduct of agricultural extension work in Nigeria shows that one of the primary responsibilities is to help farmers make efficient use of available resources to meet the nation’s food needs. The goal of agricultural extension services in Nigeria is to facilitate farmers acceptance while the ultimate goal of agricultural extension is to improve standard of living through the transfer of improved farming practices to the rural people.

Information is an indispensable factor in agricultural practices and it is the basis of extension service delivery. It is defined by Adereti et al. (2006) as data that have been put into a meaningful and useful context which is communicated to recipient who uses it to make decision. Fish farming information can be considered as all published or unpublished knowledge in all aspects of culture fish production. Adereti et al (2006) stated that the quality of information rests solidly on three pillars

which are: accuracy, timeliness and relevance. Accuracy implies that information is free from bias; timeliness means that recipients can get information when they need it, while relevance implies whether the piece of information specifically answers the user's question. An individual consciously or unconsciously engages in information search in order to find appropriate information which can fill the information gap there by regaining physiological and psychological balance.

Information needed by fish farmers include information on pond construction, stocking, pond management, fish breeding, credit, fish harvesting, feed formulation, group formation and marketing outlets etc. However, Agricultural extension agents carry out this particular responsibility by using various strategies to encourage farmers to adopt agricultural innovations. These strategies include establishment of farm institutes, extension work station, experimental farms, visits to farms and various types of farm settlement schemes. Each strategy has met with some amount of success but the rate of farmers' acceptance and use of Agricultural innovations is still low. The importance of fish in human nutrition as a major source of protein cannot be over emphasized as it touches the lives of a large percentage of the population of the world. As population increases, the demand for fish and fish products increases, especially with its nutritional advantage over meat. This calls for improved fish farming technologies and other information needed for improved production level. Therefore this study aimed at assessing the impact of access to extension services on fish farming in Ekiti State Nigeria. This is to have right assessment of the extension agent's performance in the study area. In Nigeria today, the population keeps increasing and these made the consumer demand for fish to increase since fish is a good source of protein. In order to meet this demand private sector were encouraged to invest in fish production and this has led to positive result in the production of fish to the populace. However, Fisheries Department has been the most important source of information for fish farmers and this is why a fish farming extension service is needed in fishery sector.

Objectives of the Study

The main objective of the study is to assess the impact of access to extension services on fish farming in Ekiti State, Nigeria.

The specific objectives are: -

- i. To determine the socio-economic characteristic of the fish farmers in Ekiti State.
- ii. To determine farmers profitability in relation to access to extension services.

- iii. To identify the information been disseminated to fish farmers by the extension agents.
- iv. To determine farmers' perception of extension agents in the area of information dissemination.

Present Level of Fish Production in Nigeria

In Nigeria, fish alone contributes on the average 20 – 25% per caput animal intake and could be as high as 80% in coastal and riverine communities (FAO, 2000). Tobor (1992) and Ajana (2002) reported that the average annual demand for fish in Nigeria between 1995 and 2000 was estimated at 1.22 million metric tonnes and that this might increase to about 1.425 million metric tonnes by the year 2005.

Adamu (2007) however, gave the actual total domestic fish production in 2005 as 579,500 tonnes, while production from aquaculture was 56,300 tonnes in the same year (Table 2.1). Fasasi (2003) put the demand – supply gap of fish in Nigeria as 1.0 million metric tonnes while fingerlings demand – supply gap is over 500 million. According to Satia (1990), Artisanal fisheries contribute about 491 million tones, Aquaculture, about 57 million tonnes, Industrial (Trawler), about 33 million tonnes and Distance fishing (Imports) about 612 million tonnes. From the above analysis, less than 50% of the total annual fish consumed by Nigerians are produced locally. There is, therefore, the need not only to maximize the exploitation of our fishery resources but to concentrate more on the development of aquaculture which has the greatest potential to increase fish production for local consumption and export.

Overview of Fish Farms in Ekiti State

Ekiti State is a non – coastal state, fish production in the state comes from rivers, man-made lakes, earthen and concrete fish ponds and backyard fish ponds. The most common method of fish farm development in Ekiti State involves construction of one or more earthen ponds, with or without small dug out ponds downstream and construction of concrete ponds.

Access to adequate information is very essential to increased agricultural productivity (Mgbada, 2006). The information on fish farming needed for farmers cover pond construction, stocking, pond management, fish breeding, water quality management, credit, fish harvesting, feed formulation, group formation and marketing outlets.

Methodology

The research was carried out in Ekiti State. The State is situated entirely within the tropics in the South West Nigeria. It is located between longitude 4⁰ 45¹ and 5⁰ 45¹

East of the Greenwich Meridian and Latitude $70^{\circ} 15'$ and $80^{\circ} 5'$ North of the Equator. It lies South of Kwara and Kogi State and by Ondo State in the East and in the South. The state enjoys tropical climate with two distinct seasons. These are rainy season between April and October, and dry season between November and March. Temperature ranges between 21°C and 28°C with high humidity. The state is endowed with water resources. Some of its major rivers are Ero, osun, Ose, Ogbese and Oni.

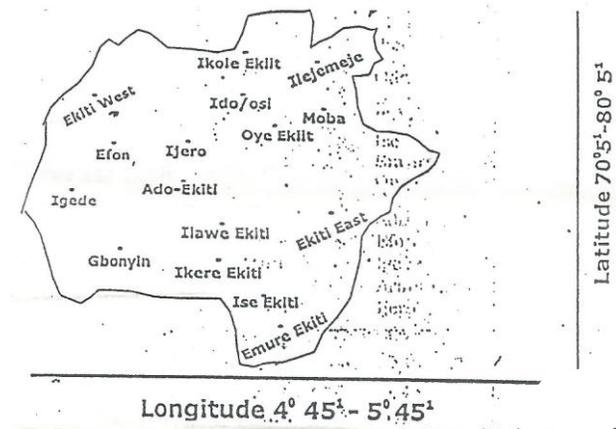


Figure 1: Map of Ekiti State

The primary data source for this study was a well-structured questionnaire. However, personal interview was conducted for those who could not read and write base on the items on the questionnaire. The secondary data was collected from Ekiti State Ministry of Agriculture and Rural Development, Department of Fisheries. Information collected are the socio – economic characteristics of the farmers, extension information disseminated to the farmers, farmers perceptions of the extension agents, farmers annual variable cost and annual yield.

The dependent variable is the farmer’s profitability which was determined by using Gross margin Analysis to compare the profitability of those that has access to extension service and those that doesn’t have access. The independent variables consist of the socio – economic characteristics of the fish farmers and access to extension services. Multi – stage sampling was applied in the study. Six Local Government Areas were randomly selected from the sixteen Local Government Areas that constitute the study area.

Fifteen fish farmers were then selected purposively from each of the local government selected to give a total of 90 respondents. Descriptive Statistics was used to describe the socio – economic characteristics of the farmers and for analyzing the data that needed no inferential analysis. Gross Margin Analysis (GM) was used to estimate the

profitability of fish farmers that has access to extension services and was compared with those farmers that does not have access to extension services in the study area.

The GM is the difference between the Total Revenue (TR) and the Total Variable Cost (TVC). Total Variable Cost is operating expenses. The GM was thus operationalized as the profit residual after payment for the variable costs of production $\text{Total Revenue} = \text{yield (kg/ha)} \times \text{market price}$; $\text{GM} = \text{TR} - \text{TVC}$. The greater the GM, higher the profitability.

Result and Discussion

Table 1: Socio – Economic Characteristics of Respondents

Socio – economic characteristics	Frequency	Percentage
Age (years)		
Below 20	0	0
21 – 30	9	10
31 – 40	52	57.8
41 – 50	26	28.9
Above 50	3	3.3
Level of education		
Primary education	4	4.4
Secondary education	10	11.1
Tertiary education	75	83.3
No formal education	1	1.1
Gender		
Male	86	95.6
Female	4	4.4
Marital status		
Single	14	15.6
Married	71	78.9
Divorced	2	2.2
Widowed	3	3.3
Fish farming experience (years)		
< 5	56	62.2
5 – 10	24	26.7
11 – 15	8	8.9
Above 15	2	2.2
Membership of social group		
Co-operative society	25	27.8
Fish farmers association	4	4.4
Monthly or daily contribution	8	8.9
None	53	58.9

Table 1 shows that majority of the fish farmers were between the ages of 31 – 50 years. This is because fish farming requires adequate attention and a lot of sense of responsibility. The young people in the rural communities are mostly, pursuing tertiary education

between the ages of 20 – 30 years and pay much attention to their studies and have little or no time for other serious activities, people above the age of 50 were few in fish farming because they lack adequate strength and vigor required in the management of fish farms. Majority (83.3%) of the respondents had one form of tertiary education or the other, while 11.1% and 4.4% had secondary and primary education respectively. Just 1.1% had no formal education. This means that fish farming is dominated by the educated class with tertiary education. This is so because fish farming requires a lot of technical and scientific knowledge. The information on the innovations of fish farming is somehow complex and this need some high level of education to practice and the more educated an individual is, the easier it will be for him or her to decode and process information.

Male (95.6%) dominates in fish farming. The male dominancy in this source of livelihood implies the laborious nature of fish farming operations right from pond construction to management which their female counterparts cannot easily undertake. On the marital status, 78.9% were married. This suggests that there may be high demand for food and additional income as the family size increases. Few percentages (15.6%) of the respondents were single and this indicates that they are youth and they still have strength to work on the pond without hiring labour. Those that are widowed were 3.3% and 2.2% were divorced. As for fish farming experience, 62.2% of the respondents had been involved in fish farming for less than 5years and 2.2% for above 15years. This connotes that fish farming diffused very slowly among the farmers in the study area but involvement of farmers in fish farming in the last 5years had greatly increased. Majority (58.9%) of the fish farmers did not belong to any social group while 27.8% subscribed to co-operative societies.

Those engaged in monthly contribution constituted 8.9% of the respondents, while 4.4% of them held membership of Fish Farmers Association. Those that did not belong to any social group are many because majority of the farmers in the study area lack knowledge on the benefits of those social groups. Those that are members of co-operative societies did so mainly to have access to credit, input and aids from government and extension services. Those engaged in monthly contribution did so to enhance their savings and those that belong to Fish Farmers Association did so to have easy access to extension services, market and credit facilities

Table 2: Farmers Distribution by the Information Received From Extension Agents

Information	Frequency	Percentage
Pond construction	34	37.8
Stocking	36	40
Pond management	38	42.2
Fish breeding	33	36.7
Credit	35	38.9
Fish harvesting	39	43.3
Feed formulation	29	32.2
Group formation	30	33.3
Marketing	40	44.4
Record keeping	25	27.8
Fish preservation	37	41.1

Table 2 above shows the distribution of the information disseminated by the extension agents to the farmers. Majority of those that had access to extension services had information on marketing (44.4%), fish harvesting (43.3%), pond management (42.2%), fish preservation (41.1%) and stocking (40%). This is because these are the most common fish farming operations that are done routinely by the farmers. So the farmers were eager to get information on these operations. About 38.9% had information on credit, 37.8% had information on pond construction, 36.7% had information on fish breeding, 33.3% had information on group formation and 32.2% had information on feed formulation. This is because most of these operations were carried out by outside consultants, so the farmers pay little attentions to them. Record keeping had the least with 27.8%, this implies that the farmers in the study areas lack appropriate information on record keeping and this is the reason why they lack adequate data on their farming operation. So, the extension workers should try and pay more attention to this. All this information will make the fish farmers to

Table 3: Distribution of Farmers by Perception of the Extension Agents

Attributes of Extension Agents	Frequency	Percentage
Punctuality	41	45.6
Energetic	37	41.1
Patience	39	43.3
Approachability	38	42.2
Cordiality	36	40
Cheerfulness	39	43.3
Accepts no offer in cash/kind	33	36.7
Ability to carry people along	37	41.1
Ability to demonstrate	40	44.4
Ability to proffer solution to problems	39	43.3

improve on their farming operation which will lead to high profitability.

Table 3 shows the farmers perception score of the Extension Agents. More than 40% of the farmers reported that the Extension Agents were punctual, had ability to demonstrate, cheerful, had ability to proffer solution to problems, approachable, energetic, had ability to carry people along and cordial. About 36.7% of the farmers revealed that extension agents do not accept offer of cash or kind. Those that did not respond are those that had no access to extension services.

Table 4: Distribution of Farmers in Each Local Government Area in the Study Area Based on Access to Extension Services

LGA	Access	No Access
Oye (A)	10	5
Ekiti South West (B)	5	10
Ijero (C)	4	11
Irepodun/Ifelodun (D)	3	12
Ikere (E)	10	5
Ado (F)	11	4

Table 4. shows the distribution of farmers based on access to extension services in the study area. Majority of the farmers in three local Governments (Ado, Oye and Ikere) had access to extension services because Agricultural Development Office is located in these local governments. About 4 respondents had access to extension services in Ijero while 5 and 3 respondents had access to extension services in Ekiti South West and Irepodun/Ifelodun respectively. The low number of respondents in these areas is because extension offices are located far from these areas. So extension officers do not usually visit these farmers because they are far from them, and the extension officers may lack adequate mobility to reach these farmers.

Table 5: Distribution of Individual Farmers Based On Access to Extension Services

Distribution	Frequency	Percentage
Access to Extension Services	43	47.7
No Access to Extension Services	47	52.2

Table 5 shows the distribution of the farmers generally based on access to extension services. This survey revealed that 52.2% of the respondents had no access to extension services and 47.7% of the respondents had access to extension services. The impact of the extension agents has not been really felt in the study area and this is because of the nonchalant attitudes of the governments toward financing the extension services which leads to

their poor performances. Low performance of the extension agents in some areas leads to low productivity and profitability in the study area.

Table 6: Estimated Annual Yield in Each Local Government Area

LGA	Annual Yield (kg)
A	87000
B	61975
C	59075
D	49350
E	79940
F	108400
Total	445740

Table 6 shows the annual yield for each farm and estimated annual yield for each local government in the study area. The annual yield varies from farm to farm with the highest being 25000kg and the lowest being 100kg per year. Local government F, A and E had the highest annual yield of 108400kg, 87000kg and 79940kg while local government B, C and D had the lowest annual yield of 61975kg, 59075kg and 49350kg respectively. Some of the farmers visited complained of low yield but when questions were asked on their management practices, it was discovered that improper management practices was responsible for these low yield.

Profitability Analysis

The profit was estimated based on each local government. Average variable cost and Average revenue of the farmers were used to estimate the profit. Gross margin analysis for each local government was estimated by dividing the average total variable cost and total revenue by the number of respondents in each local government. The Gross margin was derived by finding the difference between the average variable cost and total revenue.

Table 7: Variable Cost Estimation

LGA	A	B	C	D	E	F
Items	(₦)	(₦)	(₦)	(₦)	(₦)	(₦)
Fingerlings/Juvenile Purchase	30000	14000	12250	7000	45000	70000
Payment for hired labour	70000	68000	66000	60000	100000	100000
Feed	200000	120000	100000	85000	200000	250000
Fertilizer	4000	2000	1400	1000	4600	5000
Lime	3000	3000	570	500	4200	4500
Medication	3500	2900	2500	1700	5000	5700
Transportation	5500	5200	4800	4000	6000	7100
Maintenance	3500	3000	2600	2500	5250	6500
Harvesting	1500	1000	1200	1000	2000	2450
Total	321000	219100	191320	162700	372050	451250

Table 8: Revenue Estimation

	A	B	C	D	E	F
Yield (kg)	7250	4767	4219	3796	6149	7743
Unit price (₦)	500	500	500	500	500	500
Revenue (₦)	3625000	2383500	2109500	1898000	3074500	3871500

Total revenue is gotten by multiplying the yield (kg) in each local government with the unit price i.e. Revenue = Yield (kg) X Price (₦).

Table 9: Annual Profit of Farmers in Each Local Government

LGA	Total Variable Cost (₦)	Total Revenue (₦)	Gross Margin /Annual (₦)
A	321000	3625000	3304000
B	219100	2383500	2164400
C	191320	2109500	1918180
D	162700	1898000	1735300
E	372050	3074500	2702450
F	451250	3871500	3420250

According to Adegeye and Dittoh (1982), Gross margin is a good measure of profitability. The Gross margin was derived by removing the Total Variable Cost from the Total Revenue for each local government in the study area i.e. $GM = TR - TVC$. Table 10 shows the profitability of farmers in each local government. This table revealed that local government F, A and E had high profit of ₦342025, ₦3304000 and ₦2702450 while local government B, C and D had lower profit of ₦2164400, ₦1918180 and ₦1735300 respectively. This indicate that local governments F, A and E has higher profit than local government B, C, and D because the number of farmers that has access to extension services in local government F, A and E is higher. The information received from these extension agents made the farmers to improve on their production method thereby increasing their profit.

Table 10: Analysis of Relationship between Farmer's Access to Extension Services and Profitability

LGA	Access	No Access	Gross Margin/Profit
A	10	5	3304000
B	5	10	2164400
C	4	11	1918180
D	3	12	1735300
E	10	5	2702450
F	11	4	3420250

Table 10 revealed that there is a relationship between access to extension services and profitability of farmers i.e. the more the farmers had access to extension services on fish farming operations, the higher the farmers profit will be. The table shows that local government F, A and E has high profit of ₦3420250, ₦3304000 and ₦2702450 because the number of respondents that had access to extension services in each of these local government were high i.e. 11, 10 and 10 respondents while in local government B, C and D with low profit of ₦2164400, ₦1918180 and ₦1735300, 5, 4 and 3 respondents respectively had access to extension services. This implies that those that had access to extension services had higher profit than those that had no access to extension services.

Constraints to Information Accessibility

Most of the constraints to fish farmer's access to information are: inadequate extension contact, distance from other farmers also most of the time, the farmers find it difficult to comprehend information they get through the extension agent because the communication is

ineffective. Noise is one of the hindrances when such information is disseminated among the target groups. The distance of some farmer to the others makes it difficult for them to have easy access to information. Also extension contact is poor because the ratio of extension agents to farmer is far from adequate. All these hinder the fish farmers from getting easy access to information.

Conclusion and Recommendations

Considering the results of this study, it can be concluded that the study has obviously brought to light some facts about the impact of extension agents in disseminating information to fish farmers in the study area. The socio-economic characteristics of fish farmers in the study area influenced their access to extension services. It was also observed that not up to half (47.8%) of the farmers had access to extension services while 52.2% had no access to extension services. Also some local government felt the impact of extension agents more than the others. This is because the extension agents lack adequate mobility to reach some of the farmers that are far from their locations. Conclusively, there is a relationship between farmers access to extension services and farmers profitability.

Those that have access to extension services have higher profit than those that does not. In view of the findings, it is therefore recommended that: Extension agents should put more effort in reaching fish farmers that have not had contact with them so as to pass useful information to them in order to increase their profitability also they should also encourage all fish farmers to subscribe to the various fish farmers group. This will make information and credit facilities easily accessible to them. Fish farmers should be mobilize to establish cooperative society in order to enjoy government provision of capital under poverty alleviation programmes. Adequate mobility should be provided for the extension agents for effective coverage and they should be updated on any new technology for quick dissemination. Farmers too should also be eager to receive the extension agents and should always search for their help.

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