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Fish farmers' usage of information on weather forecasts in Kwara state, Nigeria

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Abstract

The study examined the fish farmers' usage of Information on weather forecasts in Kwara State, Nigeria. 127 respondents were selected for the study. The data was analyzed using frequency count, percentage, mean and Binary Logistic Regression. The result showed that the mean age of the fish farmers was 32 years, about 68.5% of the fish farmers were male, about 36.2% has fishing as their primary occupation, about 98.45% of the respondents reared catfish and the mean annual income of the fish farmers was 1,191,181.10 Naira. Friends and Neighbours ($\bar{x}=3.40$) are the highest ranked sources of weather forecast. The result revealed that about 74 % of the fish farmers have high usage level of weather forecast. The determinant factors of usage of weather forecast were years of experience in fish farming (0.809), income from fish farming (0.000) and cycle cultured per annum (-1.851). This study recommended that there should be provision of accurate, timely and continuous provision of information on the weather forecast to the fish farmers.

Key Words: Usage, Information, Weather Forecasts, Fish Farmers.

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Introduction

Agriculture remains the key sector that plays a vital role in the growth of most economies of the countries in sub-Saharan Africa. The Agricultural sector provides food for human consumption and raw materials for the industries and also serves as a source of foreign exchange earnings for Nigeria. The Agricultural sector in Nigeria is characterized by the low level of irrigation, low technology and productivity, land tenure problems, high production cost, limited financing, poor distribution of inputs and high labour intensity [1,2].

Fishing is one of the oldest means of livelihood for mankind [3]. Fish farming provides income and employment opportunities for several people in Nigeria. Fish has numerous nutritious advantages over meat as it has low cholesterol level [4]. Fish is a cheap and readily available source of protein for many people in Nigeria as about 3.2 million metric tonnes of fish are consumed per annum [4,5,6, 7, 8]. According to [9] fish consumers have a lower risk of having bowel cancer and also it helps in regulating the blood pressure of the consumers. Extension agents are expected to disseminate information on the health and nutritional benefits of fish to the consumers.

According to [10] Africa is one of the most susceptible continents to climate change. Annually, many parts of Africa suffered severe drought and floods [11]. Climate change is a major factor that is adversely affecting crops, fishes and livestock production. In agriculture, climate change negatively affects animal production due to impact of increasing temperature, feed grain unavailability and higher incidence of diseases outbreak [12]. Also, [13] stated that climate change has adversely affected agricultural output and food security of many farmers.

Fish production is an important source of livelihood that could help reduce high unemployment rate in Nigeria, reduce food insecurity and malnutrition as fish is an important source of protein. Hence, there is a need for quick research-based evidence on the usage of the provided information on the weather forecasting among the fish farmers so as

to influence future government policy and intervention towards the fish farmers.

The importance of weather forecast in agricultural productivity cannot be over-emphasized as the climatic variables are changing and not predictable. Farmers rarely use information on weather forecast when made available [14]. Hence, there is a need for study on the usage of information on weather forecasts so as to determine the factors limiting the use of weather forecast among the fish farmers. The problem of climate change and inaccessibility to information on weather forecast are the main factors affecting culture fish farming in Kwara State, Nigeria. Although, several studies such as [15, 16] have been carried out on use of Climate information for agricultural production. There seems to be paucity of information on the usage of weather forecasts among fish farmers in Kwara State, Nigeria. Therefore, there is a need to examine the fish farmers' usage of information on weather forecasts in Kwara State, Nigeria.

The specific objectives were to:

- 1) To determine the socio-economic characteristics of the fish farmers in the study area.
- 2) To examine the fish farmers' sources of information on weather forecast in Kwara State, Nigeria.
- 3) To assess the usage level of information on weather forecast by fish farmers in Kwara State, Nigeria.
- 4) To analyse the determinants of the usage of information on weather forecast.

Methodology

The research was carried out in Kwara State Nigeria. Kwara state is predominantly an agrarian State. people are into crop production and aquaculture in Kwara State, Nigeria. The population of the study comprised of all fish farmers in study area. The proportionate sampling of 56 % of the total fish farmers (226) association members was used for the study. This gives a sample size of one hundred and thirty-seven (127) fish farmers as respondents. The data was collected through the use of questionnaires. The sources of

information on weather forecast was determined on a 4-point likert typed scale of always=4, sometimes =3, rarely =2 and never=1. Usage of weather forecast by fish farmers was measured with the use of 2-point Likert typed scale where High Usage =1 and Low Usage =0. The socioeconomic factors influencing the use of weather forecast was measured with binary logistic regression. The data was analysed with the use of frequency counts, percentage, means and Binary logistic regression.

Results and Discussion

Socio-economic Characteristics of the Respondents

The result presented in Table 1 showed that mean age of the fish farmers was 32 years. This implies that the respondents were relatively young. This concurred with the findings of [17] which stated that most of fish farmers were still within their active years because fish farming needs energy and require activeness. The findings in Table 1 also revealed that about 68.5% of the respondents were males. This indicates that fishing activities are mainly practices by the males in Kwara State, Nigeria.

This finding concurred with the findings of [18] who reported that majority of fish farmers in Kwara State, Nigeria were male. About 60.8% of the fish farmers were married. This implies that most of the fish farmers have families which they can use as source of labour in the farm. This corroborates the work of [19] which stated that most of the fish farmers were married and have children in which they use as source of labour. The mean household size of the fish farmers was 4 persons. The result in table 1 showed that fish farming was the primary occupation of about 36.2 % of the respondents. About 50.4% of the fish farmers had tertiary education. This indicates that fish farmers were educated in the study area. this might be adduced to the technical skills that are required in fish farming. About 98.45% of the respondents cultured catfish. This shows that catfish is the main cultured fish. The mean years of experience in fishing activities was 4 years. The finding in Table 1 revealed that 1,191,181.10 Naira was the average annual income of the respondents. This implies that fish production is a profitable venture.

Table 1: Socio-Economic Characteristics of the Respondents

Variables	Frequency (127)	Percentage (100%)	Mean	Standard Deviation
Age (years)			32.0 Years	11.11
20 – 29	69	54.3		
30 – 39	31	24.4		
40 – 49	12	9.4		
50 and above	15	11.8		
Gender				
Male	87	68.5		
Female	40	31.5		
Marital Status				
Single	48	37.8		
Married	77	60.6		
Divorce	1	0.8		
Widow	1	0.8		
Household size			4.0 Persons	2.3
1 – 5	112	88.2		
6 – 10	11	8.7		
Above 10	4	3.1		
Educational Level				
Non formal education	33	26.0		
Primary education	2	1.6		

Secondary education	28	22.0
Tertiary education	64	50.4
Primary Occupation		
Arable Crops Farming	37	29.1
Hunting	7	5.5
Fishing	46	36.2
Trading	36	28.3
Artisan	1	0.8
Types of fish cultured		
Catfish	125	98.4
Tilapia	2	1.6
Fish farming experience	4 Years	4.21
1 – 5	110	86.6
6 – 10	13	10.2
Above 10	4	3.1
Annual Income	1,191,181.10 Naira	1,113,191.32
≤ 500,000	15	11.8
500,001 – 1,000,000	54	42.5
1,000,000 – 1,500,000	37	29.1
≥ 1,500,000	21	16.5

Source: Field Survey 2022

Fish Farmers' Sources of Information on Weather Forecast

The result table 2 showed that friends and Neighbours ($\bar{x}=3.40$) are the highest ranked sources of weather forecast. Internet ($\bar{x}=2.78$) and radio and Television ($\bar{x}=2.30$). This result

indicated that friend and neighbours, internet and radio and Television are the main sources of information on weather forecast. This result is in agreement with the work of [16] which stated farmers get information about weather forecast through the use of internet and through the radio.

Table 2 : Fish farmers' Sources Information on Weather Forecast

Sources of Information On Weather Forecast	Always	Sometimes	Rarely	Never	Mean (SD)	Ranking
Extension workers	21(16.5)	21(16.5)	18(14.2)	67(52.8)	1.96(1.167)	5 th
Friends/neighbors	67(52.8)	50(39.4)	4(3.1)	6(4.7)	3.40(.769)	1 st
Internet	37(29.1)	45(35.4)	26(20.5)	19(15.0)	2.78(1.028)	2 nd
Newspapers	24(18.9)	21(16.5)	24(18.9)	58(45.7)	2.08(1.175)	4 th
Radio/Television	16(12.6)	49(38.6)	20(15.7)	42(33.1)	2.30(1.065)	3 rd

Sources: Field Survey 2022

The Usage Level of Information on Weather Forecast by Fish Farmers

The findings in Figure 1 revealed that about 74 % of the fish farmers have high level of usage of information on weather forecasts while about 26%

have low level of usage of information on weather forecast. This denotes that majority of the fish farmers utilize the information on weather forecasts in the study area. This further shows that the information received are reliable.

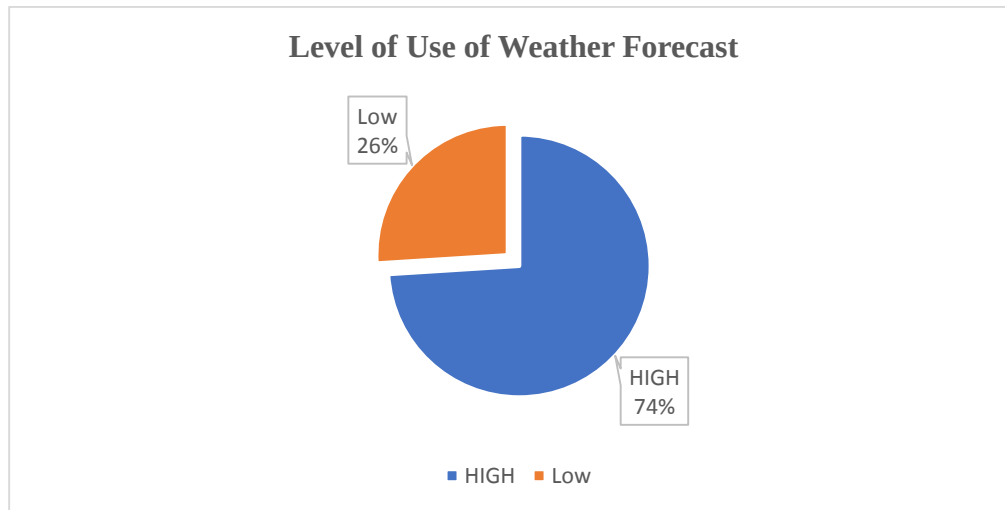


Figure 1: Level of Use of Weather Forecast

Determinants Factors influencing the Usage of Information on Weather Forecast

The result in Table 3 revealed that years of experience in fishing activities has a positive coefficient (0.809), annual income from fishing activities has a positive coefficient (0.000) and cycle cultured per annum has a negative coefficient (-1.851). This result indicates that years of experience, income from fish activities and cycle cultured per year were the determinants factors of the usage of weather forecast. The increase in years of

experience and income from fishing activities leads to an increase in the usage of weather forecasts information. However, there is an inverse relationship between the usage of information on weather forecast and the cycle cultured per annum. This is in line with the findings of [15] which stated that fish farmers who practice fish farming frequently and in large quantities make use of weather forecast better than the small-scale less frequent fish farmers.

Table 3: Binary Logistic Regression showing the Socio-economic Factors influencing the Usage of Information on Weather Forecast

Variables	B	S.E.	Wald	Sig.	Exp(B)
Age	0.073	0.083	0.762	0.383	1.076
gender	0.790	0.680	1.349	0.245	2.204
Marital status	0.491	0.748	0.431	0.512	1.634
Household size	0.800	0.455	3.090	0.079	2.225
Education	0.173	0.110	2.444	0.118	1.188
Years of Experience	0.809	0.436	3.448	0.043*	2.245
Income from Fish farming	0.000	0.000	5.047	0.025*	1.000
Cycle Cultured per Annum	-1.851	0.759	5.950	0.015*	0.157
Income per cycle cultured	0.000	0.000	0.029	0.865	1.000
Constant	-18.246	40193.003	.000	1.000	0.000

Model

Summary-2 Loglikelihood = 84.982

Cox & Snell R Square = 0.369

Nagelkerke R Square = 0.528

** Significant at 0.01 level; *Significant at 0.05 level

Conclusion

This study examined the fish farmers' usage of information on weather forecasts in Kwara State, Nigeria. In light of the results of the study, we can conclude the following:

1. Majority of the fish farmers were male, young and agile.
2. Catfish was the most reared fish in the study area was catfish.
3. Majority of the fishers have high level of usage of Information on weather forecast information.
4. Friend and neighbours, internet and radio and Television are the main sources of information on weather forecast.
5. The determinant factors of usage of weather forecast were years of experience in fish farming, income from fish farming and cycle cultured per annum.

Recommendations

1. There should be accurate, timely and continuous provision of information on the weather forecasts to the fish farmers by the government agencies.
2. Government and Non-governmental agencies concerned with fisheries should work hard to ensure that the fish farmers have access to weather forecast through diverse sources so as to enhance their productivity and reduce climate related losses as a result of flooding, drought etc.
3. Government should provide financial incentives inform of loans and grants to the fish farmers so as to enhance their productivity.

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استخدام التنبؤات الجوية بين مزارعي الأسماك في ولاية كوارا، نيجيريا

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الخلاصة

تناولت الدراسة استخدام التنبؤات الجوية بين مزارعي الأسماك في ولاية كوارا، نيجيريا. تم اختيار 127 مشاركًا بشكل عشوائي للدراسة. تم تحليل البيانات باستخدام عدد التكرارات والنسبة المئوية والمتوسط والانحدار اللوجستي الثنائي. أظهرت النتيجة أن متوسط عمر مربّي الأسماك كان 32 سنة، وأن حوالي 68.5% من مربّي الأسماك ذكور، وحوالي 36.2% يمارسون صيد الأسماك كمهنة أساسية، وأن حوالي 98.45% من أفراد العينة يقومون بتربية سمك السلور، وأن متوسط الدخل السنوي للمزارعين يبلغ 32 سنة. كان مزارعي الأسماك 1,191,181.10 نايرا. الأصدقاء والجيران ($\bar{x}=3.40$) هم المصادر الأعلى تصنيفًا للتنبؤات الجوية. أظهرت النتائج أن حوالي 74% من مزارعي الأسماك لديهم مستوى استخدام عالي للتنبؤات الجوية. وكانت العوامل المحددة لاستخدام التنبؤات الجوية هي سنوات الخبرة في تربية الأسماك (0.809)، والدخل من تربية الأسماك (0.000) ودورة الاستزراع سنويًا (-1.851). أوصت هذه الدراسة بضرورة توفير معلومات دقيقة وفي الوقت المناسب ومستمرة عن توقعات الطقس لمزارعي الأسماك.

الكلمات المفتاحية: الاستخدام، التنبؤات الجوية، مزارعي الأسماك، نيجيريا.