

## **Factors Influencing choice of record keeping among small-scale fish farmers in Osun State Nigeria**

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**Target Audience:** *Fish farmers, Researchers, Policy makers*

### **Abstract**

*This study examined the variables impacting small-scale fish farmers in Osun State Nigeria, in their decision regarding record keeping. A simple random sampling technique was used to select one hundred and fifty (150) small-scale fish farmers. The information was retrieved using well-structured questionnaires. Data were analyzed using descriptive and inferential statistics. The study's findings showed that majority of the respondents were educated married men and above the age of 35 years. In addition, medium scale production was their major intensity of production while hired and family labor was their major source of labor. Most (78.0 %) of the respondents were full-time fish farmers with average farming experience of 7.29 years. Purchase record, sales record, stock evaluation record, credit book records, profit and loss records and equipment records were the most important records kept by respondents in the study area. Inferential statistics shows that marital status, educational qualification, intensity of production, sex, species of fish raised, management system and production cycle significantly related to variables affecting small-scale fish farmers in their decision regarding record keeping. Reasons for record keeping were preservation of information about farm business, profit evaluation, farm profitability determination, staff management, indication for the validity of farm business, expansion of farm size, planning of farm budget for successful farm operation and provision of correct data or information for credit purpose. Thus, record keeping among small-scale fish farmers should be encouraged and monitored for proper farm evaluation and planning.*

**Key words:** Fish production; management system; farm record; perception

### **Description of Problem**

Nigeria's economy is primarily dependent on the oil and gas industry, which has prompted calls for national policy diversification. Agriculture has contributed significantly to the nation's economic development, and the current agricultural strategy is heavily reliant on the commercialization of the industry (1). However, the majority of Nigeria's small-scale farmers live below the poverty line, which has a negative impact on national food security and raised levels of poverty. Farmers need to stop seeing farming as a

hobby and start treating it like a business in order to solve problem of food insecurity. Millions of small and medium-sized businesses will be produced as a result of this development, which will also greatly raise farmers' incomes and standard of living. Smallholder agriculture must be prioritized in order to reduce global poverty, as many of the world's impoverished come from this sector. To reduce global poverty there is need to concentrate on smallholder agriculture. Smallholders' participation in management activities determines their capacity to grow their agricultural

production-related income (2). Farmers must also adhere to stringent food safety regulations for demanding international markets, which necessitates sophisticated record-keeping procedures. Business record-keeping entails methodically and orderly recording of transactions (3). While some definitions of record-keeping only consider monetary transactions, others take into account other types of activities. Farm records should include information on stock, produce, finances, and other unrelated topics like weather information. Every small farming operation has to keep records since doing so can help managers and business owners make better decisions. Ultimately, farm profit is maximized through planning for the farm and estimating future profitability.

Establishing a farm and estimating future profitability can both benefit from a trustworthy record-keeping method, which will ultimately increase farm profit. Effective record-keeping gives data with and without comparison, which has been favorably connected to increased innovation uptake. Without farm records, it is impossible to conduct targeted comparison record-keeping and benchmarking, which are essential decision-making tools. Without them, agricultural operations are probably to be distorted, making it challenging for farmers in today's business environment to increase production. This study aims to examine the factors influencing the choice of record keeping among small-scale fish farmers in Osun State, Nigeria.

## **Material and Method**

### **Study area**

This study was carried out in Osun State, Nigeria, a state so named because of the important river that runs through it, the River Osun. On August 27, 1991, the state was created from the southeast of Oyo State,

with Osogbo serving as the state capital. The state, which the state government occasionally refers to as the State of Osun, is located in southwest Nigeria. It is surrounded on the east by Ekiti and Ondo states, the north by Kwara state, the south by Ogun state, and the west by Oyo state. It is located at latitude 7°30' North and longitude 4°30' East.

### **Sampling technique**

Data for this study were gathered using a well-structured questionnaire, and a total of 150 respondents from Ilesha East Local Government Area were chosen using simple random sampling technique. Data were gathered on respondents' socioeconomic characteristics: age, marital status, educational level, sex, family size, ownership of farmland, intensity of production, species of fish raised, production cycle, and management method. Additionally, data on the respondents' types of records kept, frequency of record keeping, factors influencing record keeping, and constraints encountered in keeping farm records were gathered.

### **Methods of data analysis**

To describe the socioeconomic characteristics of the respondents, the types of records kept, the frequency of record keeping, data were analyzed using descriptive statistics such as frequency, percentages, mean, and standard deviation. Based on the significant indices, a 3-point Likert-type scale was used to rate the reasons for maintaining farm records and obstacles encountered in maintaining farm records.

## **Results and Discussion**

### **Socio-economic characteristics of the respondents**

The respondents' socioeconomic characteristics are shown in Table 1. It was

discovered that majority (80.0%) of respondents were above 35 years, indicating that majority of respondents were young (but not too young), with the mean age of  $39.37 \pm 7.01$  years. This demonstrates that majority of fish farmers were within their productive age range and is consistent with observations (4) and (5) that the majority of fish farmers were reasonably young. It was discovered that males made up the majority (88.0%) while females made up only 12.0%. This could be because men tend to be more active than women and as the head of the family is expected to provide for the household while women contribute in their own modest ways. Majority (81.3%) of fish farmers were married. The average household size of fish farmer in the study area was 5.17, with 48.7% of them having a household size of between 3-5 people, 40% having a household size of more than five (5) people, and 11.3% having a household size of less than 3 people. This demonstrates a relatively large household size in this present age. However, they can use their energy and resources to raise household income. In terms of how it affects the labor force in the home, it is generally accepted that larger homes are advantageous in farming households. This finding is in line with (6) who observed similar number of households. Christians made up more than half of the respondents (56.7%), while Muslims made up 46.3%. Christianity and Islam were found to be the two main religions practiced by the respondents. This suggests that religion has no impact on aquaculture practices. Over half (55.3%) of the respondents in the study area had tertiary education, and the average number of years of farming experience was

$7.29 \pm 3.23$  years. It was noted that the majority of fish farmers were literate, and it is anticipated that this will affect their capacity to maintain farm records. This backed up the claim made by (7) that fish farmers with more years of experience and higher levels of education were more productive, had a better understanding of the fishing enterprise and the market environment, and improved the accuracy of farm record keeping.

### **Farm Characteristics of the Respondents**

The results presented in Table 2 revealed the respondents' farms' characteristics in the study area. Majority of the respondents (78.0%) claimed that they had no other job besides fish farming while (10.7%), (1.3%), and (9.3%) were artisans, farmers, and government workers respectively. This suggests that the majority of the fish farmers in the study area worked as full-time fish farmers. Catfish were the most popular species of fish grown, and the majority (78.7%) made use of hired labor. The majority of fish farmers (62.7%) operated on a small scale. This was consistent with (4) who opined that majority of fishing production in southwest Nigeria occurs at a small or medium scale level. Because of their level of education and prior agricultural experience, majority (95.3%) of the respondents keep farm records. This was similar to the observation of (8). Also, fish farmers with more years of experience and education are more productive, have a better understanding of the farming operation and the state of the market, and maintain accurate farm records (7).

**Table 1:** Socio economic characteristics of respondents

Variables	Frequency	Percentage	Mean±S.D
<b>Sex</b>			
Male	132	88	
Female	18	12	
<b>Age</b>			
<25	6	4	
25-30	13	8.7	
31-35	11	7.3	
>35	120	80	39.37±7.01
<b>Marital Status</b>			
Single	24	16	
Married	122	81.3	
Divorced	2	1.3	
Widowed	2	1.3	
<b>Religion</b>			
Christianity	85	56.7	
Islam	65	43.3	
<b>Household size</b>			
<3	17	11.3	
3-5	73	48.7	
>5	60	40	5.17±1.67
<b>Education</b>			
No formal education	1	0.7	
Primary education	7	4.7	
Secondary education	59	39.3	
Tertiary education	83	55.3	
<b>Years of experience</b>			
<3	12	8	
3-6	47	31.3	
>6	91	60.7	7.29±3.23

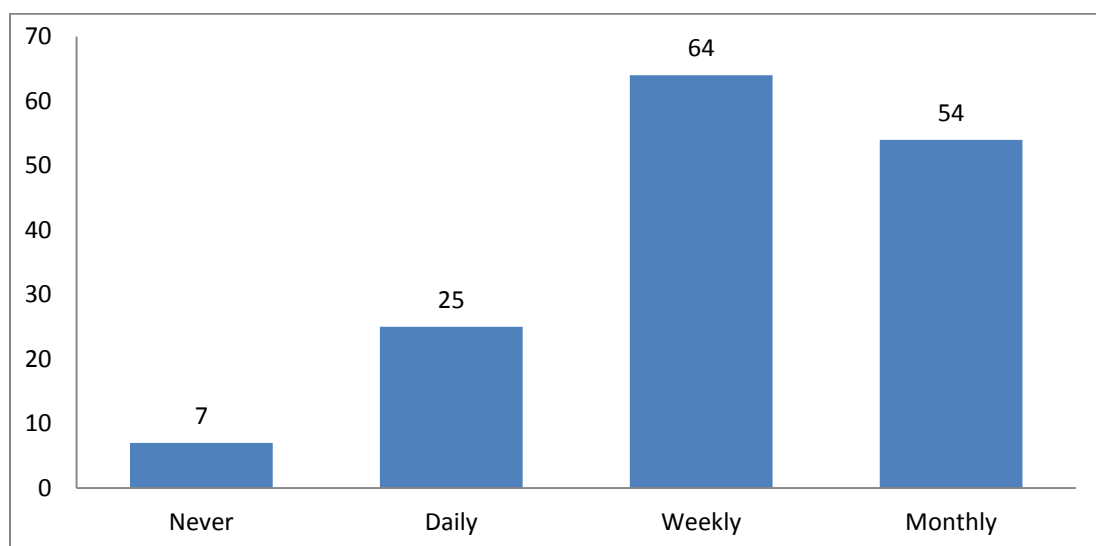
Source: Field Survey 2022

**Table 2:** Farm Characteristics of the Respondents

<b>Other jobs</b>		
No	117	78
Yes	33	22
<b>If yes what is it?</b>		
None	117	78.0
Trading	1	0.7
Artisan	16	10.7
Farming	2	1.3
Civil servant	14	9.3
<b>Species of fish raised</b>		
Tilapia	5	3.3
Catfish	145	96.7
<b>Intensity of Production</b>		
Small scale	42	28
Medium scale	94	62.7
Large scale	14	9.3

### Frequency of record kept

The results presented in Figure 1 illustrates how frequently small-scale fish farmers in the study area keep records. Nearly half (42.7%) of the respondents kept farm records on a weekly basis, while 36.0% did so on a monthly basis, and only a small percentage (16.7%) did so on a daily basis. The results showed that a significant proportion of fish farmers in the study area maintains farm records on a weekly basis in order to track and assess fingerlings output, fish health, feed consumption, and farm attendant productivity. This suggests that farm data can be used as a manual to assist the monitoring of the farm's operations. The results refute the claim made by (9) that the majority of fish farmers retain daily farm records. According to (10), who opined that main reason why fish farmers keep records on a daily basis could be attributed to regular monitoring of farm activities and access to credit facilities.



**Figure 1:** Frequency of record keeping

### Types of records kept by fish farmers

Table 3 revealed different kinds of records kept by the fish farmers in the study area. It shows that the most significant records kept by respondents was purchase records, sales records, stock evaluation record, credit book, equipment records and profit and loss records. This indicates that majority of fish farmers understood the significance of compiling their farms sales records. It might be inferred that those that don't maintain this record had small-scale operations or were run in remote areas. Table 3 further revealed that fish farmers in the

study area are more concerned with the business's cash flow. Results on salaries and wages make it very evident that the majority of respondents saw salaries and pay records as being essential to their firm. The data also reveals that, of all respondents, 53.3% kept a record of their production, while the remaining 46.7% did not. In order to determine the rate at which their fish are reproducing, the respondents must therefore keep records of their production. This suggests that only a few percent of respondents do not keep annual records of their business's valuation. This agreed with

the observation of (11) that Nigeria farmers receive than the money they spend. are more interested in the extra money they

**Table 3.** Types of records kept by respondents

Types of record	Yes	No
Purchase and purchases return Records	142(94.7%)	8(5.3%)
Sales and sales returns Records	139(92.7%)	11(7.3%)
Profit and Loss Account	108(72.0%)	42(28.0%)
Inventory Records	45(30%)	105(70%)
Cash book Account	88(58.7%)	62(41.3%)
Equipment Records	120(80%)	30(20%)
Labor Records	90(60%)	60(40%)
Salaries and Wages	90(60%)	60(40%)
Credit book	124(82.7%)	26(17.3%)
Receipt and payment Account	101(67.3%)	49(32.7%)
Production Records	80(53.3%)	70(46.7%)
Stock evaluation Records	137(91.3%)	13(8.7%)

**Factors influencing the choice of record keeping**

The results in Table 4 revealed the perception of fish farmers towards factors influencing choice of record keeping in the study area. The benchmark was the mean score, which was 3 points. Mean scores

below the benchmark score were considered to be less significant, whilst those with mean scores at or above the benchmark level were considered significant. Out of the sixteen perceptual statements examined in this study, nine were found significant.

**Table 4.** Perception of respondents on factors influencing the choice of record keeping

Statements	Strongly disagree	Disagree	Strongly agree	Agree	Undecided	Mean
	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Freq (%)	
It enhances good management decisions	0 (0)	0 (0)	50 (33.3)	97 (64.7)	3 (2.0)	3.27**
It helps in planning the budget for farm operations	0 (0)	0 (0)	107 (71.3)	40 (26.7)	3 (2.0)	3.65**
It helps the Government in planning intervention	1 (0.7)	12 (8.0)	24 (16.0)	109 (72.7)	4 (2.7)	2.91*
It helps in determining profits	0 (0)	0 (0)	115 (76.7)	31 (20.7)	4 (2.7)	3.68**
It makes Extension work easier	8 (5.3)	4 (2.7)	16 (10.7)	60 (40.0)	62 (41.3)	1.76*
It's a waste of time and irrelevant	66 (44.0)	23 (15.3)	9 (6.0)	8 (5.3)	44 (29.3)	2.39*
It negates cultural beliefs and norms	95 (63.3)	20 (13.3)	8 (5.3)	19 (12.7)	8 (5.3)	3.16**
Farm operations are time-consuming to allow	13 (8.7)	18 (12.0)	7 (4.7)	12 (8.0)	100 (66.7)	0.88*
It helps me fix the product price	2 (1.3)	5 (3.3)	76 (50.7)	62 (41.3)	5 (3.3)	3.32**
It helps identify strong and weak points in farm management	0 (0)	2 (1.3)	90 (60.0)	52 (34.7)	6 (4.0)	3.45**
It provides bankers with information on farm for credit purposes	1 (0.7)	1 (0.7)	91 (60.7)	54 (36.0)	3 (2.0)	3.52**
It preserves information about farm business	3 (2.0)	3 (2.0)	124 (82.7)	17 (11.3)	3 (2.0)	3.70**
It helps in generating research information	43 (28.7)	1 (0.7)	62 (41.3)	38 (25.3)	6 (4.0)	2.99*
It helps in determining profitable enterprises	4 (2.7)	1 (0.7)	121 (80.7)	19 (12.7)	5 (3.3)	3.66**
For Staff Management	4 (2.7)	3 (2.0)	20 (13.3)	98 (65.3)	25 (16.7)	2.56*
It helps to determine rate of turnover	4 (2.7)	0 (0)	26 (17.3)	106 (70.7)	14 (9.3)	2.86*

**Source:** field survey (2022). Decision: less than 3 not significant\* greater than or equal to 3 significant \*\*

**Constraints encountered in keeping Farm Record**

The findings in Table 5 showed the challenges encountered by fish farmers in the

study area to keep farm records. Ranking the challenges faced to keep farm record ranged from the most significant to the least significant.

**Table 4.** Constraints encountered in keeping farm records

Constraints	Strongly disagree	Disagree	Strongly agree	Agree	Undecided	Mean	Rank
	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Freq (%)		
The subsistence nature of farming does not give an incentive for keeping farm records	1(0.7)	8(5.3)	32(21.3)	96(64.0)	13(8.7)	2.84	5 <sup>th</sup>
Lack of sensitization on the importance of farm record keeping on the performance of farm business by extension agents	1(0.7)	2(1.3)	24(16.0)	111(74.0)	12(8.0)	2.88	4 <sup>th</sup>
It requires time	3(2.0)	7(4.7)	59(39.3)	78(52.0)	3(2.0)	3.22	2 <sup>nd</sup>
Unavailability of trained specialists in farm management	5(3.3)	11(7.3)	70(46.7)	63(42.0)	1(7)	3.26	1 <sup>st</sup>
This is seen as a mundane task for the farmers	32(21.3)	58(38.7)	23(15.3)	31(20.7)	6(4.0)	2.04	9 <sup>th</sup>
Because most farmers are engaged in several enterprises	9(6.0)	43(28.7)	25(16.7)	16(10.7)	57(38.0)	1.39	12 <sup>th</sup>
Due to the high level of illiteracy and difficulty in entering data	40(26.7)	9(6.0)	27(18.0)	68(45.3)	6(4.0)	2.67	7 <sup>th</sup>
Fear of paying high taxes if they maintain proper farm records	9(6.0)	64(42.7)	25(16.7)	9(6.0)	43(28.7)	1.39	11 <sup>th</sup>
Fragmented and scattered farm plots/fields	44(29.3)	12(8.0)	59(39.3)	28(18.7)	7(4.7)	2.80	6 <sup>th</sup>
Produce difficult to quantify	48(32.0)	12(8.0)	30(20.0)	54(36.0)	6(4.0)	2.60	8 <sup>th</sup>
Forgetfulness/Procrastination	10(6.7)	8(5.3)	39(26.0)	86(57.3)	7(4.7)	2.94	3 <sup>rd</sup>
Farming as a hobby, not as a business for profit	61(40.7)	49(32.7)	16(10.7)	14(9.3)	10(6.7)	1.84	10 <sup>th</sup>

**Source:** Field Survey, 2022

The most significant barriers observed from this study was lack of qualified professionals in farm management. This is followed by the need for time, forgetfulness/procrastination, lack of awareness on the part of extension agents regarding the significance of farm record keeping on the performance of farm

business, the subsistence nature of farming does not provide an incentive for keeping farm records, fragmented and scattered farm plots/fields, the high rate of illiteracy and difficulty entering data, produce difficult to quantify, this is seen as a mundane task for the farmers, farming as a hobby, not as a

business for profit, fear of paying high taxes if they maintain proper farm records and because most farmers are engaged in several enterprises. This suggests that there were a variety of challenges for fish producers in the study area. This agreed with the findings of (8) that the main challenges faced by most farmers in Nigeria were a lack of formal training in record keeping, nature of fish farming, the absence of financing facilities, and high tax assessments for record keeping.

**Factors influencing the choice of record keeping among fish farmers**

The result in Table 6 revealed that there was a significant relationship between factors influencing the choice of record keeping and marital status ( $\chi^2=252.466$ ;  $p<0.05$ ), educational status ( $\chi^2=139.449$ ;  $p<0.05$ ), intensity of production ( $\chi^2=100.969$ ;  $p<0.05$ ), sex ( $\chi^2=44.728$ ;  $p<0.05$ ), species of fish raised ( $\chi^2=85.345$ ;

$p<0.05$ ), management system ( $\chi^2=129.821$ ;  $p<0.05$ ) and production cycle ( $\chi^2=177.797$ ;  $p<0.05$ ). According to this, respondents' marital status, educational level, intensity of production, sex, species of fish raised, management system, and production cycle are socioeconomic factors that influence their choice of record keeping. The null hypothesis must be refuted in this instance since respondents' choice of record keeping is directly influenced by these variables. Religion ( $\chi^2=30.076$ ;  $p>0.05$ ) did not, however, have a significant relationship with the variables influencing the decision to keep records. Also, result obtained from Pearson product moment correlation (Table 7) showed that age ( $r = 0.003$ ;  $p \geq 0.05$ ), years of experience ( $r = 0.133$ ;  $p \geq 0.05$ ), and household size ( $r = 0.069^*$ ;  $p \geq 0.05$ ) does not have significant relationship with the factors influencing choice of Record keeping.

**Table 6.** Chi-square analysis of relationship between socio-economic characteristics of the respondents and the factors influencing the choice of record keeping

Variables	$\chi^2$ Value	Df	p-value	Remark
Sex	44.728	28	0.024	Significant
Religion	30.076	28	0.360	Not significant
Marital Status	252.466	84	0.000	Significant
Education	139.449	84	0.000	Significant
Species of fish raised	85.345	28	0.000	Significant
Management system	129.821	56	0.000	Significant
Intensity of production	100.969	56	0.000	Significant
Production Cycle	177.797	84	0.000	Significant

**Source:** Field survey, 2022.  $\chi^2$  =Chi square calculated, Df =Degree of freedom, p-value= Probability value

**Table 7.** Correlation analysis of relationship between socio economic characteristics and factors influencing the choice of record keeping

Variables	Correlation	Probability	Decision
Age	0.003	0.971	Not significant
Household size	0.069	0.402	Not significant
Years of experience	0.133	0.105	Not significant

**Source:** Field survey, 2022.

### Conclusion and Applications

1. The study's findings indicated that more men than women are active in fish farming, and a majority of them have tertiary education as their greatest level of schooling.
2. The study also revealed that socioeconomic characteristics like marital status, education level, intensity of production, sex, species of fish raised, management system, and production cycle are the most crucial elements that can affect fish farmers' decisions regarding farm records in Osun State.
3. The study came to the conclusion that weekly records of purchases and returns were the most typical sort of farm records kept by fish farmers in the study area.
4. Fish Farmers faced a variety of obstacles, including lack of awareness of the importance of record keeping, procrastination, a lack of qualified specialists in farm management, security, and tax, as well as the fact that "it helps determining profit and it preserves information about farm business" are the most crucial factors in determining whether or not to keep farm records.
5. The study therefore concludes that extension agents, stake holders and other concerned authorities should assist in educating fish farmers on the value of record-keeping and train them formally on how to keep keeping.

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