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Full Length Research Paper

Assessment of fish processors on the use of fish processing technologies in Kwara State, Nigeria

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This study was carried out to assess fish processors on the use of fish processing technologies in Kwara state. Primary data were collected with the aid of structured interview schedule using a multi-stage sampling procedure. 150 fish processors were selected for the study. Data collected were analyzed using descriptive statistics. The results revealed that majority of the fish processors were female which indicated that the enterprise was gender sensitive. Majority was married, middle age, have no formal education and has experience on fish processing in the study area. Majority of the fish processors got information about fish processing technologies from radio. The result also revealed that mud oven was the commonly used fish processing technology for processing in the study area.The major constraint hindering the use of fish processing technology was the high cost of modern fish processing technologies while the least problem was competition within fish processors. This study therefore recommended that relevant research institutes (NIFFR, NIOMR, and NSPRI) should design more improved fish processing technologies that are accessible, affordable and also relevant to the fish processors, and extension delivery service should be funded properly by Government so as to enable their services be enjoyed and reach a vast number of fish processors which will increase the use of more improved fish processing technologies by interested fish processors.

Key words: Fish, Processing, Technologies and Processors.

INTRODUCTION

Fish supplies about 50 per cent of animal protein globally in the diet of over 400 million poor people in Africa (CIGAR, 2012). The purpose of culturing fish is to have enough to eat and generate additional income for the fish farmer. Fish is one of the most important sources of animal protein available in the tropic and it is widely accepted as a good source of protein and other vital nutrients for the maintenance of a healthy living (K Omoruyi, KE Owolabi and AE Oghoje, 2016). Fish processing is the processes associated with fish and fish products between the time in which fish are caught or harvested and the time in which the final product is delivered to the customer (George *et al.,* 2014). Fish is however an extremely perishable commodity which begins to deteriorate as soon as it dies or is caught. Immediately fish dies, it remains in first class quality state only for a short while (Omoruyi *et al.,* 2016). Efficient preparation of fish is important when top quality, maximum yield and highest possible profits are to be achieved (Davies and Davies, 2009). Inadequate fish handling, processing techniques and storage facilities contribute significantly to the low supply of fish to poor rural dwellers that form three quarters of the population in developing countries (Ayuba & Omeji, 2006). Akinneye *et al.* (2007) and Davies (2005) reported that the development of appropriate fishing machinery and techniques that employed effective production, handling, harvesting, processing and storage, cannot be over-emphasized especially in the age when aquaculture

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development is fast gathering momentum in Nigeria.

According to (Davies and Davies 2009), it was also reported that most of the fish processing communities in Nigeria employed traditional techniques that have been in existence for many years. Inorder to reduce post-harvest losses and improve fish product quality, traditional processing technology must be improved by upgrading traditional fish processing technologies, especially by developing increased control over the production processes. Most available modem drying technologies are expensive and not appropriate for developing countries where prerequisites for these technologies, such as electricity are not available, ithas been observed that the most prominent fish preservation method in Nigeria is smoke drying. This could be as a result of the fact that most of the coastal communities have no accessto electricity to preserve and or process their products. (Bolaji 2005) reported that despite the rudimentary nature of traditional processing methods, the lack of control over the drying rate, sometimes results to under- or over-drying, and expose fish towind, dust, dirt, insect infestation, and contaminants such as flies. Access to accurate and adequate information on fish production technologies by farmers is essential for increased fish production and processing. The technologies used by most Nigerian fish farmers are relatively simple, often based on small modifications that improve the growth and survival rates of the target species. (IBE, MARGARET AMAKA, 2015). Fish processing techniques such as mechanical smoking kiln should be encouraged so as to improve the quality of fish and increase in fish production and supply, these methods still remain predominant in Nigeria (George et al; 2014).

Technology generation and dissemination are important components of rural transformation programs. Research institutes and universities have made efforts in developing improved technologies to fish processors, yet the level of adoption of the technologies remains low. However, proper utilizations of these technologies will improve fish production and reduce malnutrition in the country. Previous studies and existing literature in agriculture have paid less attention on assessment of fish processing technologies use. This study will serve as pilot study to future studies and add to existing literatures on fish processing, it will also guide investors on the importance fish processing technology need in the study area and Nigeria in general.

Therefore, the main objective of this study was to assess the use of fish processing technologies in the Kwara state, while the specific objectives were:

1. Describe the socio-economic characteristics of fish processors,
2. Identify sources of information of the fish processing technologies available to the fish farmers,
3. Examine the level of use of fish processing technologies
4. Identify constraints to the use of fish processing technologies by fish processors

MATERIAL AND METHODS

Study Area

The study was carried out in Kwara State. Kwara State was created on 27 May 1967, when the Federal Military Government of General Yakubu Gowon broke the four regions that then constituted the Federation of Nigeria into 12 states. At its creation, the state was made up of the former Ilorin and Kabba provinces of the then Northern Region and was initially named the West Central State but later changed to "Kwara", a local name for the River Niger. Kwara State has since 1976 reduced considerably in size as a result of further state creation exercises in Nigeria. On 13 February 1976, the Idah/Dekina part of the state was carved out and merged with a part of the then Benue/Plateau State to form Benue State. On 27 August 1991, five local government areas, namely Oyi, Yagba, Okene, Okehi and Kogi were also excised to form part of the new Kogi State, while a sixth, Borgu Local Government Area, was merged with Niger State. The major populated local governments are Ilorin and Offa. Kwara State consists of sixteen Local Government Areas. They are, Asa, Baruten, Edu, Ekiti, Ifelodun, Ilorin East, Ilorin South, Ilorin West, Irepodun, Isin, Kayama, Moro, Offa, OkeEro, Oyun, Pategi. . Data used in this study were obtained from primary sources. Information was collected with the aid of structured interview schedule.

Sampling procedure

A multi-stage sampling technique was adopted for this study. The first stage involved the purposive selection of all the four (4) LocalGovernment in 16 local government areas in Kwara state where fishing and fish processing activities are practiced. The second stage involved the purposive selection of two (2) communities each from the selected LGAs becauseof the prevalence of fish processing activities in the local government areas.The third stage is the random selection of 20 fish process from each community to arrive to 160 respondents, 10 responses was found to be invalid, thus the sample size for this study was 150.

Analytical Techniques

Data was analysed using descriptive statistics. Descriptive statistics such as frequency counts, mean score and percentages was employed to analyze the socio economic characteristics of the fish processors, source of information by fish processors, while likert-scale was used to analyse the level the fish processing



Map of Kwara State showing Fishing LGAs where the study was conducted and the Number of fishing LGSs

technologies and constraints faced by fish processors using the available fish technologies.

RESULTS AND DISCUSSIONS

Socio-economic characteristics of farmers in the Kwara State.

Majority (75.5%) of the Fish processors in Kwara State were female, while (24.4%) of the respondent were male. This implies that gender sensitivity of fish processing inclined towards women such that more women were involved in fish processing in the study area. Majority (23.8%) of the respondents are within the ages of 15-30 years and 41-50 years. (22.5%) are between the ages of 31-40. Also, (19.9%) of the fish processors were between the ages of 51-60 years, while (8.6%) are between the ages of 61-70 years and above 70 makes (1.3%). This showed that most of the fish processors are still within their active age.Majority (87.4%) of the respondents are married according to the research conducted while (4%, 1% and 14%) of the respondents are single, divorced, and widower/widowed respectively. This indicates that majority of the fish processors are family women and this enable their children to engage and help in fish processing. Majority (51.7%) have no formal education, (19.2%) completed primary education, (15.9%) completed adult education while (7.3%) and (6.0%) completed Tertiary and Secondary education respectively.

This shows that the fish processors are illiterate. According to ani (2007), education increases adoption and enhance farmers' ability to understand and evaluate new techniques.A greater proportion (39.7 %) of the fish processors had 4-6 persons living with them under the same roof as well as feeding from the same pot, while (30.1%) had a household size of 4-6 persons.The result also showed that (22.6%) of thefish processors had a household size of 7-9 persons. Furthermore, (7.5%) had a house hold of 10-12. From the result, it suggests that the farmers maintained moderate family sizes. The moderate household size could enable the farmers invest more in fish processing since they do not have many people in their household to carter for. Most (64.4%) of fish processors had between 1 – 3 family members involved in fish processing, while about (31.1%) had more than 4-6 family members in fish processing. (4.5%) had 7-9 family members in fish processing meaning that there are more family members involved in fish processing in the study area. According to the research conducted, the result showed that (45.3%) of the fish processor have been into fish processing for more than 20 years. (24%) indicated that they have between 1-5 years of experience.

A further (14.7%) indicated that they have 6-10 years of experience while (10.7%) and (5.3%) have 11-15 years, 16-20 years of experience respectively. Majority (68.7%) of the respondents indicated that they are not a member of a cooperative society while only (31.3%) were members of any cooperative society. Majority (82%) of the respondents indicated that they have no access to extension agents while (18%) had access to the extension agents. Majority (78.7%) of the respondent indicated that they had no access to credit facilities while, (21.3%) had access to credit facilities. Credit is vital to

Table 1: Socio economic characteristics of fish processors

Socio-economics characteristics	Frequency	Percentage (%)
Sex		
Male	37	24.5
Female	113	75.5
Age (years)		
15-30	36	23.8
31-40	34	22.5
41-50	36	23.8
51-60	30	19.9
61-70	11	8.6
> 70	2	1.3
Marital Status		
Single	4	2.6
Married	132	87.4
Divorced	1	7
Widowed/Widower	14	9.3
Educational Level		
No formal education	78	51.7
Adult Education	24	15.9
Primary	29	19.2
Secondary	9	6.0
Household Size		
1-3	44	30.1
4-6	58	39.7
7-9	33	22.6
10-12	11	7.5
Processing Years		
1-5	36	24.0
6-10	22	14.7
11-15	16	10.7
16-20	8	5.3
> 20	68	45.3
Cooperative society		
Yes	47	31.3
No	103	68.7
Extension contact		
Yes	27	18
No	123	82
Credit Facilities		
Yes	32	21.3
No	118	78.7
Total	150	100

Source: Field Survey Data 2020

any successful enterprise and when there is no access to credit, the fish processors will process at subsistence level. The study is in line with Teklewold *et al*. (2006) where they found that availability of credit is one of the most important determinants of smallholder farmers' adoption and use.

Source of information to fish processors in the Kwara state

Majority (73.3%) of the respondent got information on fish processing technologies from radio, (38%) got information from farmers group, (30%) of the fish processors got informed from Television, (24.7%) got their information from ministry of Agriculture,while, (22%, 18%, and 14%) got their information from NGOs, VEA, and Research institute respectively.

Level of use of fish processing technology in Kwara State

From the research conducted, the level of use of fish processing was expressed in a 4-point Likert scale; highly used, moderately used, used and not used. The weighted mean of each was calculated and ranked that Mud oven is the mostly used fish processing technology with a mean of 3.3667 and standard deviation of 1.01939. This was followed by rack/raised platform with a mean of

Table 2: Distribution based on source of information available to the fish processors

Source of information	Frequency	Percentage (%)
Village Extension Agent (VEA)	27	18
Research Institute	21	14
Ministry of Agriculture	37	24.7
Non-Governmental Organizations (NGO)	33	22
Farmers Group	57	38
Radio	110	73.3
Television	45	30

*****Multiple responses were allowed, Source: Field Survey Data 2020.

Table 3: Distribution based on fish processing technologies used by the fish processors

Fish Processing Technologies	Highly Used	Mostly Used	Used	Not Used	Mean	Standard deviation	Rank
Mud Oven	97(97)	29(29)	6(6)	18(18)	3.3667	1.01939	1st
Coal Pot	0(0)	0(0)	0(0)	0(0)	0.0000	0.00000	
Steel drum	0(0)	0(0)	0(0)	0(0)	0.0000	0.00000	
Rack /Raised platform	58(58)	14(14)	14(14)	64(64)	2.4400	1.37319	2nd
Modified drum oven	0(0)	0(0)	0(0)	0(0)	0.0000	0.00000	
Choker kiln	0(0)	0(0)	0(0)	0(0)	0.0000	0.00000	
Altona kiln	0(0)	0(0)	0(0)	0(0)	0.0000	0.00000	
Smoking Kiln	36(36)	3(3)	3(3)	108(108)	1.7800	1.28945	3rd

Source: Field Survey Data 2020.

Table 4: Constraints of processing technologies faced by the fish processors

Constraints	Highly Severe	Severe	Less Severe	Not Severe	Mean	Standard deviation	Rank
Inadequate proper processing technologies	0	91	50	9	2.5467	0.60852	4th
High cost of modern technologies	150	0	0	0	4.0000	0.0000	1st
Lack of storage facilities	0	86	56	6	2.5467	0.57448	5th
Lack of credit Loans	96	27	0	27	3.2800	1.13587	2nd
Low price realization	0	12	32	106	1.3733	0.62976	6th
Tough Competition	0	0	24	126	1.1600	0.36783	7th
Poor agricultural extension coverage	4	55	45	46	2.1133	0.87881	5th
Inadequate credit facilities	11	97	30	12	2.7133	0.71735	3rd

Source: Field Survey Data 2020.

2.4400 and standard deviation of 1.37319. Also, the smoking kiln follows with a mean of 1.7800 and a standard deviation of 1.28945. Furthermore, none of the respondent used any other fish processing technologies apart from the ones explained earlier. It implies that majority of the fish processors prefer using mud oven to any other fish processing technology.

Constraints of processing technologies faced by the fish processors in Kwara state.

The major constraint hindering the use of fish processing technology as indicated by the respondents was the high cost of modern fish processing technologies in which all respondent believe to be highly severe with a mean of 4.0000, inadequate access to credit loans was also a major concern for the fish processors with a mean of 3.2800 and a standard deviation of 1.13587. Also, inadequate credit facilities follow with a mean 2.7133 and standard deviation 0.71735. Again, poor proper processing technologies and limited storage facilities were also a concern for the fish processors with a mean of 2.5467 for both and a standard deviation of 0.60852 and 0.57448 respectively. Furthermore, poor agricultural extension coverage follows with a mean of, 2.1133 and standard deviation of 0.87881. Also, Low price actualization and Tough competition comes as last and less severe constraints with a mean of 1.3733, 1.1600

and standard deviation of 0.62976 and 0.36783 respectively.

CONCLUSIONS AND RECOMMENDATIONS

The results from the study revealed that majority of fish processors had no formal education. The mean age ofthe fish processors was 35.7 years indicating that fish processors in the study area are in their youthful and active age, and many of the respondents had no access to credit as such they sourced from other businesses to support their fish processing activities. Majority of fish processors got information about fish processing through Radio. Mud oven is the mostly used fish processing technology in the study area. The foremost constraint inhibiting the use of fish processing technology were high cost of modern fish processing technologies and inadequate access to credit facilities.

This study therefore recommended that relevant research institutes (NIFFR, NIOMR, and NSPRI) should design more improved fish processing technologies that are accessible, affordable and also relevant to the fish processors.Credit loans should be made available and accessible to the fish processors by the Government. This can be achieved through enforcement (Central Bank of Nigeria) of agricultural credit delivery by commercial banks and micro finance institution to fish processors. These also can be achieved through aggressive mass media sensitization on credit accessibility for interested individuals or groups.

Furthermore, extension delivery service should be funded properly by Government so as to enable their services be enjoyed and reach a vast number of fish processors which will increase the use of more improved fish processing technologies by interested fish processors.

REFERENCES

Ani, A.O. (2007).Agricultural extension. A pathway for sustainable agricultural development, Ibadan: Apani/Loud Books, 179pp

Annual Conference of the Fisheries Society of Nigeria (FISON), Port Harcourt, 14th-18th November, 2005. 557-760 pp

Akinneye, J.O., Amoo, I.A. and Arannilewa, S.T. (2007).Effect of Drying Methods on the Nutritional Composition of Three Species of (Bongasp, Sardinellasp and Heterotis niloticus). J. Fisheries Int. 2(1):99-103.

AyubaV. O. & Omeji N.O. (2006). Effect of insect infestation on the shelf life of smoked dried fish. Proceedings of the 21st Annual Conference of the Fisheries

Society of Nigeria (FISON), Calabar, 13th-17th November, pp 357-359.

Bolaji, B. O. (2005). Performance evaluation of a simple solar dryer for food preservation. Book of Proceedings of 6th AnnualEngineering Technology, FUT, Minna. 8-13.

CABI/CIRAD, (2012).Reducing Post Harvest losses-A Challenge for Scientific Community. CABI/CIRAD Team Ed by Judith Francis CTA. http://knowledge.cta.int/en/Dossiers/Demanding-Innovation/Reducing-PostharvestLosses-A-Challenge-for-the-Scientific-Community (Accessed 23/4/12)

Davies R.M. & Davies O.A. (2009). Traditional and Improved Fish Processing Technologies in Bayelsa State, Nigeria. European Journal of Scientific Research, 26(40): 539-548.

Davies, R.M. (2005).Development of Appropriate Technology of Fish Processing in Nigeria. A Paper Presented at a One-day Workshop on Intensive Fish Farming on Thursday, 24th February.

George, F.O. (2014). Fish processing technologies in Eti-Osa Local Government Area of lagos state.

Ibe, M.A. (2015). analysis of the use of fish farming technologies by fadama iii fisheries' farmers in imo state, nigeria. imo state.

Omoruyi, K.O. (2016). Comparative analyses of fish processing, marketing and distribution in Warri-South and sapele local. International journal of fisheries and aquatic studies, 425.

Teklewold, H., Dadi, L., Yami, A. and Dana, N (2006). Determinants of adoption of poultry technology: a double-hurdle approach Livestock Research for Rural Development, 18(3).

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