

Analysis of Marketing Functions Adoption on Fish Sales of Cultured Fish Producer-Marketers in Benue State, Nigeria

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Abstract

The study was carried out to analyze the effect of marketing functions adoption on sales of cultured fish by producer-marketers in Benue State, Nigeria. 300 respondents were selected and used for the study using the multi-stage sampling technique. Structured questionnaire were administered to collect primary data. 299 of the questionnaires that were issued returned valid. Data generated were analyzed using descriptive statistics and independent sample t-test. Results obtained shows that transportation is the mostly used of the marketing functions by cultured fish producer-marketers in the study area where it ranked first with 97.99% followed by physical payment of cash for goods and services in that order. The study also shows that cultured fish producer-marketers pay less attention to branding, handbills, invoicing. The study shows that users of key marketing functions record more sales compared to non-users; there is a difference of 361.31Kg of fish sales in favor of users of transportation, 768.89Kg for respondents who adopt the use of processing, users of sorting and grading record a difference in sales of 882.16Kg and 952.42K respectively over respondents who do not adopt the use of these functions. The study shows that adoption and use of relevant marketing functions by cultured fish producer-marketers boost sales and significantly improve cultured fish production and marketing business. It is recommended that government should deliberately come up with transportation policies and programs that will alleviate and promote business in the aquaculture sector especially cultured fish production and sales. There should be robust engagement between cultured fish producer-marketers and extension agents in order to create necessary awareness and enlightenment on the many benefits derivable from the adoption of relevant aspects of the marketing functions.

Key words: Cultured fish, Producer-marketers, Marketing functions, Fish sales, Benue State, Nigeria

Introduction

The increased need for protein in human diet has its relevance in the need for improved health and the increase in human population globally. The need for protein is more critical in the tropical region wherein lies most of the developing countries (Ayanboye, Oluwafemi and Rafiu, 2015). Fish is a preferred protein source as it supplies essential nutrients which are lacking in other diets and its consumption is not forbidden within religious groups; unlike the eating of dog meat and pork which are forbidden in some religion such as Islam (Agbelege and Ipinjolu, 2003). Fish plays an important role in human diet in towns and villages in Benue State

by providing 77% of total animal protein intake (Salam *et.al*, 2005), while it constitutes about 16% to world animal protein consumption (FAO, 2010). Fish may be a preferred source of protein, but its sales has to do with the ability of the producer-marketer to meet the taste and satisfaction of consumers. This therefore requires that marketing efforts should be intensified to boost fish production, improve quality and make it available to buyers in the right place, time and price. Reports indicates that the fresh fish market in Benue State seem to be saturated with products; however, producers and marketers of cultured fish are inundated with unsold stock and have to device strategies to preserve harvested fish for future sales (Salam, 2005).

Marketing functions comprises a set of activities that are performed in order to reach target markets with products that the manufacturer produces; these functions are chains of various activities involved in marketing. Fish and fish related products are highly traded commodities; hence its production is a necessary part of the marketing function activity value chain. Marketing functions allow sellers the greatest opportunities to increase sale and achieve competitive advantages (Mutambuki and Orwa, 2014).

The value of marketing functions are paramount in the marketing of fish; this suggests that marketing functions can and should coexist with a market orientation and that the effectiveness of a market orientation depends on the presence of strong functions that are included in the sales and marketing of fish. The fish producer-marketer should be able to design a framework that defines the scope of relevant marketing functions and how these operate in a cross-functional, market-oriented fish marketing business. At the heart of this framework is the idea that marketing functions facilitates the link between the customer and various key processes within the fish marketing business (Day, 1994). It is therefore essential for the fish producer-marketer to examine both the value of marketing functions and their scope in a large-scale empirical effort to fish marketing.

It is important that fish producer-marketers adopt and incorporate marketing functions such as product branding, sales promotion, core competences and market positioning in order to operate profitably. For instance, product branding entails that a fish producer-marketer improves on the value of fish taken to the market by engaging in new production strategy, conduct market research and embrace product differentiation (Ayanboye, Oluwafemi and Rafiu, 2015).

Study Objectives

- i. Describe the marketing functions adopted by cultured fish producer-marketers
- ii. Determine the effect of marketing functions adoption on fish sales

Methodology

Study Area

This study was conducted in Benue State, Nigeria. The State is located in the North Central region of Nigeria; it lies between latitudes 6°25'N and 8°8'N and longitudes 7°47'E and 10°E' (Ade, 2014). The State has a total land mass of about 33, 955 square kilometers and a population of 5,741,815 (National Population Commission, 2017), the average population density of the State is 99 persons per square kilometer.

Population of the Study

The population of the study was drawn from the membership of Fish Producers' Association of Nigeria, Benue State Branch. At the time of carrying out this study, records shows that the Association has a valid membership strength of One Thousand, Two Hundred (1200).

Sampling Technique and Data Collection

The study used the Taro Yamene (1967) formula to determine the sample size.

The Taro Yamene formula thus:

$$n = \frac{N}{1 + N(e)^2}$$

n = The required sample size

N = The population

e = Sample error

From the sample population of One Thousand, Two Hundred (1,200) fish producer-marketers, a confidence level of 95% and tolerable level of 5% was set. Using the Taro Yamene formula, the sample size was determined thus:

n = ?

N = 1200

e = 5%

Therefore,
$$n = \frac{1200}{1 + 1200(0.05)^2}$$

$$n = \frac{1200}{1 + 3}$$

$$n = \frac{1200}{4}$$

$$n = 300$$

Structured questionnaire and scheduled calls were used for data collection; scheduled call was made to clarify doubts and offer necessary explanation to aid appropriate responses.

Analytical Techniques

i. Descriptive Statistics

In order to provide a clear and concise summary of the data collected, descriptive statistics was used to gain insights, understand the patterns of the variables using percentages and frequency and this was used to achieve the first objective.

ii. Independent t-test

The independent t-test used to examine the relationship between marketing functions adopted by cultured fish marketers and sales of fish in the study area was stated as follows:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Where:

t	=	Calculated t-value
\bar{X}_1	=	Mean value of fish sales in kg of users of marketing functions
\bar{X}_2	=	Mean value of fish sales in kg of non-users of marketing functions
S_1^2	=	Variance of fish value sales in kg of users of marketing functions
S_2^2	=	Variance of fish value sales in kg of non-users of marketing functions
n_1	=	Sample size of users of marketing functions
n_2	=	Sample size of non-users of marketing functions

Results and Discussion

Marketing Functions adopted by on cultured fish producer-marketers

Table 1 represents data relating to the marketing functions which the surveyed cultured fish producers-marketers use in their business operations. The marketing functions are ranked based on the number of respondents who affirmed to the use of these functions. The table shows the use of marketing functions by the cultured fish producers-marketers who were surveyed; this usage is ranked from first (the most used) to the fifteenth (the least used). Analysis of the table indicates that transportation of goods is the most used of all the marketing functions by the respondents, because 97.99% of them attest to the use of transportation for the movement of products making it rank the first, this function is critical for cultured fish producer-marketers because they transport fingerlings from point of purchase and similarly move harvested fish to markets for sale making it an indispensable function in the efficient discharge of their operations. In a study, Eyo (1998) indicated that transportation is an essential component of business operation that ensures the movement of commodities from places of their production to where they are required, especially for perishable agricultural goods. The second function adopted by ranking is physical payment of cash for goods where 229 respondents corresponding to 79.59% adopt this function in their operations. Payment for transportation of goods ranks third where 73.91 of respondents indicate that they adopt the use of the function. The fourth in ranking is sorting of goods which represents 65.55%; handling and sorting of fish from point of harvest to final consumption is very essential for the sustenance of the quality of fish; therefore, fish handling and sorting involves all the procedures aimed at maintaining the quality of fish. Azeza (1977), price differentiation and grading ranks fifth and sixth with 64.55% 62.55% respectively. Processing the fish ranks seventh where 173 of the respondents surveyed indicate that they adopt the processing function which represents 57.86%. Packaging stands at 51.51% making it eighth in ranking and off-loading activities is ninth with 151 respondents represented by 50.50%. Advertising is tenth where 135 respondents say they use the advertising function in their business operations; this is followed by the use of handbills, the eleventh in the ranking of marketing functions adoption by the cultured fish producer-marketers surveyed. Use of display of goods by the producer-marketers at their sales location, payment for on-loading, and branding are represented by 41.47%, 40.47% and 26.42% respectively and ranked in that order. The least used of all the marketing functions in their business operations is invoicing where only 63 out of the 299 marketers surveyed say they use invoicing in order to perform their fishing production and marketing business.

Table 1: Marketing functions adopted by cultured fish producer-marketers

Marketing Functions	Frequency	Percentage*	Rank
Transportation	293	97.99	1st

Processing	173	57.86	7th
Sorting	196	65.55	4th
Grading	187	62.54	6th
Advertising	135	45.15	10th
Packaging	154	51.51	8th
Locational display of goods	124	41.47	12th
Branding	79	26.42	14th
Handbill	130	43.48	11th
Price differentiation	193	64.55	5th
Physical payment of cash for goods	229	76.59	2nd
Invoicing	63	21.07	15th
Payment for transportation of goods	221	73.91	3rd
Payment for on-loading	121	40.47	13th
Off-loading activities	151	50.50	9th

Source: Field Survey, 2023

Multiple responses existed, hence percentage >100%

Effect of Marketing Functions adoption on Cultured Fish Sales

In order to determine how the use of marketing functions can influence the sales of cultured fish in the study area, data were collected and using the independent sample t-test, data were analyzed to ascertain the level of significance of each of the marketing functions. Table 2 below presents the data and findings.

In Table 2, data generated and analyzed; the independent t-test was used to determine the effect of marketing functions on cultured fish sales. Respondents are categorized into users and non-users of the marketing functions based on their responses. The fish sales in weight (Kg) of the two categories were compared and the mean sales difference determined. Where a positive mean sales difference is obtained, it is an indication that the adoption of marketing function was of added value to the user. However, the P-values at 10% and 5% are deemed significant and not significant if at >1%; this range shows the degree of significance of the marketing functions adopted by the users.

From the analysis of data in Table 2; the mean sales difference between users and non-users of transportation is 361kg of fish, though this is a value addition for users, the P-value indicates that it is not significant at 0.828. Kotler and Armstrong (2006), characterize place or distribution logistics as an arrangement of related associations included during the time spent making a product accessible for utilization or consumption by consumers. Transportation channel is an essential segment of the marketing function strategy as it serves the purpose of accessibility of product to different markets. This structure set up is to ensure that product produced in one location is available in various other locations where they are needed. According to See, Stride and Ifeka (2006), fresh fish were said to be marketed mostly in short distance areas owing to the perishable nature and problem of storage facility.

The mean sales difference in weight of fish between users and non-users of the processing function is 768.89kg and it is significant at 5% with a P-value of 0.063. Fish processing is a critical component of the cultured fish production and marketing business. Peñarubia, (2021), is of the view that fish is a highly perishable food that begins to spoil as soon as it is caught or harvested, perhaps even before it is taken out of the water. Therefore, particular care is required

during harvesting and all along the supply chain to preserve nutritional attributes, prevent contamination, minimize loss and waste, and to deliver high quality fish product. Needless to emphasize the benefits of processing harvested fish; marketers engage in the process of preservation to ensure that the freshness and quality of the product is protected. Data indicates that fish producer-marketers in the study area who adopt the use of the sorting function enjoy more sales with a mean sales difference of 882.16kg and a P-value of 0.016 at 10% significance. Every fish require space and energy for living and growth, hence the need for sorting them. Most time, bigger fishes do feed (cannibalism) on the smaller ones; so to prevent this, it is necessary to sort the fishes. Sorting involves the process of separating a mixed group of fish into different species, males and females, immature and mature, diseased and clean fish etc. Fish producer-marketers need to sort and grade to avoid harvesting fish too small for the market. According to Falodun (2011), fish grading is a process of categorizing fish based on certain qualities, it is important because it limits cannibalism and boost production. Data generated and analyzed in Table 2 shows that users of the grading function enjoy substantial benefit in terms of sales compared to their counterparts who do not grade their fish products in the study area. The mean sales difference in weight is 952.42kg with a P-value of 0.014 significant at 10%. There are many benefits of grading of fish for the producer-marketer, just like sorting it reduces losses due to cannibalism, it also improves supplementary feeding efficiency through adequate food ration, it help reduce the proportion of small fish at harvest of fattening ponds Peñarubia, (2021).

Table 2: Effect of marketing functions adoption on cultured fish sales

Marketing Function	Variable	Mean * Sales (Kg)	Mean Sales Difference (Kg)	T-Statistics	P-Value
Transportation	Users	2361.31	361.31	0.217	0.828 ^{NS}
	Non-users	2000.00			
Processing	Users	2701.39	768.89	1.870	0.063*
	Non-users	1932.50			
Sorting	Users	2686.16	882.16	2.424	0.016**
	Non-users	1804.00			
Grading	Users	2747.79	952.42	2.488	0.014**
	Non-users	1795.37			
Advertising	Users	2277.90	-133.21	-0.292	0.771 ^{NS}
	Non-users	2411.11			
Packaging	Users	2358.75	5.51	0.012	0.990 ^{NS}
	Non-users	2353.24			
Locational display of goods	Users	2527.28	275.18	0.589	0.556 ^{NS}
	Non-users	2252.10			
Branding	Users	2004.63	-475.28	-0.901	0.368 ^{NS}
	Non-users	2479.91			
Handbill	Users	2556.20	333.21	0.722	0.471 ^{NS}
	Non-users	2222.99			

Price differentiation	Users	2653.77	751.86	1.989	0.048**
	Non-users	1901.91			
Physical payment for goods	Users	2420.91	253.72	0.479	0.632 ^{NS}
	Non-users	2167.19			
Invoicing	Users	2010.72	-430.16	0.773	0.440 ^{NS}
	Non-users	2440.88			
Payment for transportation of goods	Users	2156.20	-687.09	-1.309	0.192 ^{NS}
	Non-users	2843.29			
Payment for on-loading	Users	1998.29	-622.86	-1.342	0.181 ^{NS}
	Non-users	2621.14			
Off-loading activities	Users	2536.62	455.35	0.959	0.338 ^{NS}
	Non-users	2081.27			

Source: Field Survey, 2023

*Significant @10% **Significant @5% NS = Not Significant

Conclusion and Recommendations

From the study, it is evident that the adoption and use of relevant marketing functions by cultured fish producers-marketers add significant value in terms of sales of the commodity. Functions such as transportation, processing, sorting and grading are common business practice of cultured fish producers-marketers in the study area; the adoption and use of these functions proved to be beneficial to the fish producer-marketers because there is improvement in product quality, visibility and profitability. Cultured fish production and marketing has proven to be a highly profitable business venture that has the potential to positively influence the economy of Benue State and Nigeria as a whole if fully supported and harnessed by stakeholders, especially governments. From the findings of the study, the following recommendations were made;

- i. Transportation is an essential activity for fish producer-marketers; the recent hike in prices of petroleum products occasioned by the removal of subsidy by the government has had adverse effect on citizens and businesses. Government, through relevant agencies can intervene in this critical sector to assist fish producer-marketers minimize cost of transportation of their goods in view of the rate of damage and loss they encounter.
- ii. With improved production, cultured fish producer-marketers can be supported to adopt better marketing practice such as handling, sorting, grading, packaging and use of promotional activities that ensure they compete favorably with their counterparts in developed markets.
- iii. Government should engage more with cultured fish producer-marketers through extension services to regularly educate and update them with information on modern and cost effective methods of operation as well as rearing of resistant or quality species of fish.

References

- Agbelege, O. O. and Ipinjolu, J. K. (2003). An assessment of the management techniques of the fisheries resources in the Nigerian portion of Lake Chad. *J. Arid Zone fishery*, 1(1):89-98.
- Ayanboye, A. O., Oluwafemi, Z. O. and Rafiu, R. A. (2015). Fresh fish (*Clarias gariepinus*) marketing system in major towns of Ibarapa zone, Oyo State, Nigeria. *International Journal of Applied Agricultural and Apicultural Research*, 11(1&2): 162-171.
- Azeza, N. I. (1977). *Fish handling, processing and marketing in Lake Chad Basin* (Ed.). Handling and marketing of Tropical fish products. London: Tropical produce Institute. pp. 348-352.
- Day, G. S. (1994). The Capabilities of Market-driven Organizations. *Journal of Marketing*, 58(4): 37-42.
- Eyo, A. A. (1998). An Appraisal of the Trading, Fish Handling and Processing in Kainji Lake Area NIFFR, New Bussa, Kwara State, Nigeria. 175-82.
- Falodun, O. M. (2011). Analysis of Marketing Channels and Efficiency of Marketing System for Smoked Fish Market in Ogun State, Nigeria. A Project Submitted to the Department of Aquaculture and Fisheries Management, College of Environmental Resources Management, University of Agriculture, Abeokuta, In Partial Fulfillment of the Requirements for the Degree of Aquaculture and Fisheries Management.
- FAO (1986). *Freezing in fisheries* FAO Technical Paper No. 167, 83 pp.
- Kotler, P. and Armstrong, G. (2006). *Marketing management* (12th Ed.). India: Prentice Hall.
- Mutambuki, M.K. and Orwa, B.H. (2014). Marketing Strategies of Commercial Fish Farming under Economic Stimulus Programme (ESP) in Kenya: An Empirical Study of Kitui County. *International Journal of Humanities and Social Science*, 48(1); 111-121.
- Omar Peñarubia (2021). Fish Waste Management: Turning Waste into Healthy Feed with Antimicrobial Properties. *Food and Agriculture Organization (FAO) of the United Nations Rome, Italy*.
- Salam O. O, Orire, A.M., Emmanuel A.J and Elijah, Y.N (2019) *Survey of Tilapia consumption in Benue State, Nigeria: A Case Study of Makurdi Metropolis*. *International Journal of Fisheries and Aquaculture Research* Vol.5, No.4, pp.10-24.
- See G., Stride T. & Ifeka C. (2006). *People and Empires of West Africa*. Hong Kong: Thomas Nelson.