Analysis of the Determinants and Extent of Use of Marketing Functions Among Producer-Marketers of Cultured Fish in Benue State, Nigeria

Nuhu Boniface Ibrahim
Department of Agribusiness
Joseph Sarwuan Tarka University, Makurdi, Benue State, Nigeria
Email: bonnynuhu@gmail.com, nuhu@fuwukari.edu.ng.
Phone Number: +234-8104132255
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Abstract

The study was conducted to analyze the determinants and extent of use of marketing functions among producer-marketers of cultured fish in Benue State, Nigeria. Respondents were selected using the multi-stage sampling technique where 300 hundred fish producer-marketers were used for the study. In order to collect data, structured questionnaire were administered to respondents. 299 of the questionnaire that were issued returned valid and data collected were analyzed with the use of multiple regression and descriptive statistical tools of mean and standard deviation. Findings shows that the coefficients of the independent variables of age, experience, membership of cooperative, contact with extension agent, start-up capital, technology application and market research training are significant at various levels. The coefficient of age was significant at 1% level and negatively related to marketing function adoption. The negative sign of the coefficient conforms to the a priori expectation, indicating that as age increases by 1year, fish marketing function used decreases by 0.011%, an indication that as the producer-marketer advances in age, energy and stamina gives way thereby affecting general productivity. The years of experience garnered by cultured fish producer-marketers had a coefficient of 0.024 and significant at 10% implying an increase in experience in cultured fish production and marketing will increase the tendency for marketing function use by 0.024%. Using the mean score of each of the marketing functions and standard deviation, the extent of adoption are either classified as important or not important from the responses received from the surveyed producer-marketers; hence where the mean score of any of the functions is ≥ 2, it is considered important while mean score of < 2 is assumed not to be important. From the results obtained, branding, invoicing, handbills and payment for on and offloading have mean scores of < 2 and hence are not viewed as important in their business operations by the producer-marketers surveyed; while other variables such as transportation, processing, sorting, grading, packaging, advertising with mean score of > 2 are deemed important. The study shows that marketing functions determinants such as the age of respondents which determines the energy and agility of the producer-marketer as well as other variables of transportation, processing of harvested fish, grading and sorting are very important functions that boost production and sales of cultured fish. It is recommended that government and relevant stakeholders should come up with policies and other initiatives that will encourage young people embrace the business of fish cultivation while deploying modern techniques and strategies to ensure healthy competition and enhanced profitability.

Introduction

Fish is an important component of the human diet. Studies shows that it provides as much as 77% of total animal protein intake (Salam *et.al*, 2019), while it constitutes about 16% to world animal protein consumption (FAO, 2010). Fish may be a preferred source of protein, but their sale has much to do with the ability of the producer-marketer to meet the taste and satisfaction of consumers. This therefore requires that marketing campaign should be intensified to boost fish production, improve quality and make it available to buyers in the right place at the right time and at the right 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, *et.al* 2019).

The marketing process plays a critical role in fish production and ultimately its sales, this is because it is only when the fish gets to the consumers that production is said to be complete. Marketing has been defined as all processes involved from the production of a commodity until it gets to the final consumer (Ayanboye, Oluwafemi and Rafiu, 2015). Marketing functions comprises sets 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 contribution to fish marketing.

A functional marketing organization refers to the concentration of the responsibility for marketing activities (knowledge and skills) within a group of specialists in the organization. The benefits of functional structures are well documented and include enhanced efficiency and ability to develop specialized and distinctive capabilities (Thompson and Strickland, 1983). The risks include the challenge of coordination between specialized functions, inter-functional conflict, functional myopia, and overspecialization.

It is important that fish producer-marketers adopt and incorporate marketing functions such as product branding, sales promotion, core competencies 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).

In order to improve sales, the fish producer-marketer needs to involve in sales promotion activities such as direct marketing, advertising and publicity. Core competencies are strategic functions embarked upon by the fish producer-marketer by introducing latest technology application, efficient and effective human resource management, hiring of competent and capable personnel, strategic management and robust application of financial and other resources. Market positioning for fish enterprise may include online marketing, market segmentation, and effective communication and distribution channels as well as target marketing. Marketing is seen as a system with definite functions and these functions can be classified into three, namely: physical, facilitating and exchange functions; the three functions operate in synergy if they are inter-woven, i.e. one gradually leads to another in series and then steadily merges together (Ayanboye, Oluwafemi and Rafiu 2015). Physical functions involve activities such as: transportation, handling and processing, sorting and grading. Facilitating functions consist of advertising, packaging, location display of goods, branding, handbills and price differentiation. The exchange functions deals with physical payment of cash for goods, invoicing, payment for transportation and loading/offloading services. These marketing functions are potentially capable of facilitating the sales of fish produced if they are properly internalized and performed in fish producing and selling business.

Study Objectives

I.   Describe the determinants of marketing functions used by cultured fish producer-marketers
II. Determine the extent of use of marketing functions among producer-marketers of cultured fish

Methodology

Study Area

This research was conducted in Benue State, Nigeria. The State is located in the North Central region of Nigeria and it lies between latitudes 6°25'N and 8°8'N and longitudes 7°47'E and 10°E' (Salam *et.al*, 2019). The State has a total land mass of about 33, 955 square kilometers and a population size of 5,741,815 (National Population Commission, 2017), the average population density of the State is 99 persons per square kilometer. The prevalence of loamy-clay soil in the State makes it suitable for earthen fish cultivation.

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 conducting this study, the Association's record shows that it has valid membership strength of One Thousand, Two Hundred (1200).

(*Source*: Fish Producers Association, Benue State Chapter data 2023).

Determination of Study Sample

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,

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

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

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

$$n = \underline{300}$$

Thus the sample size of the study was 300 cultured fish producer-marketers. Purposive sampling technique was then used to identify the most prolific fish producing local government areas in Benue State (sourced from Benue State Ministry of Agriculture). Similarly, two LGAs from each of the three geopolitical zones were randomly selected to represent each zone. Again using purposive sampling, fifty (50) fish production enterprises were identified in each of the six (6) LGAs and used for the study.

Method of Data Collection

The study adopted the use of questionnaire and schedule method of data collection to generate relevant information from respondents. In addition to a structured questionnaire, the researcher used the scheduled call to clarify doubts and offer necessary explanation to aid appropriate responses.

Analytical Techniques

Relevant analytical tools were adopted for the purpose of analyzing data collected for the study; while multiple regressions was used to achieve the first objective, the second objective was achieved using descriptive statistics.

I. **Multiple Regression**

In order to ascertain the relationship that exists between what determines the marketing function used by cultured fish producer-marketers and ultimately the sales performance; the researcher used the multiple regression due to its suitability in showing the degree of relationship between dependent and multiple independent variables**.**

II. **Descriptive Statistics**

For the second objective, the study used descriptive statistics where the dataset generated was measured to determine the standard deviation from a mean score of 2 as the base so as to determine the importance of the marketing function to the cultured fish producer-marketers surveyed.

Results and Discussion

Determinants of Marketing Functions used by Fish Producer-marketers

Result presented in Table 1 is the determinants of marketing functions adoption or use by cultured fish producers-marketers in the study area. Similarly, the multiple linear regression model was selected and used for the analysis of these determinants. The exponential log function which had the best was selected as the lead equation; this choice was based on the *a priori* expectation and the large number of statistical significance of the estimated regression coefficients. The result shows that 75.48% variation in marketing function adoption is explained by the independent variables included in the multiple linear regression model as shown by the R^2 which is the coefficient of determination. Hence, the implication is that 24.52% of the variations in marketing function adoption were caused by factors not included in the model. The F-value (7.61) was significant at 1% level. The result indicates that the coefficients of the independent variables of age, experience, membership of cooperative, contact with extension agent, start-up capital, technology application and market research training are significant at various levels.

The coefficient of age was significant at 1% level and negatively related to marketing function adoption. The negative sign of the coefficient conforms to the *a priori* expectation, indicating that as age increases by 1year, fish marketing function used decreases by 0.011%, an indication that as the producer-marketer advances in age, energy and stamina gives way thereby affecting general productivity. Adesina *et.al* (1996) posited that the capacity of entrepreneurs decline with advancement in age except such business people gradually and systematically introduce young and vibrant managers to step in as they give way by reason of aging.

Result generated shows that the experience acquired by fish producer-marketers, their membership of cooperative, contact with extension agents, access to start-up capital for their business all have a positive relationship with marketing functions that they use in their business operations. Experience of cultured fish producer-marketers had a coefficient of 0.024 and significant at 10% implying an increase experience in cultured fish production and marketing will increase the tendency for marketing function use by 0.024%.

The coefficient of cooperative membership by cultured fish producer-marketers (0.46) is significant at 1% same for contact with extension agent (0.25); while technology application

(6.28×10^{-6}) is significant at 5%. This implies that increase in the former variables by 1% tends to increase use of marketing functions by the fish marketers by 0.46% and 0.25% respectively, while a 5% increase in technology application leads to increase in marketing function use. This result is in alignment with Ayanboye *et.al* (2015) who revealed that a positive relationship exist between these variables and marketers embracing and adopting suitable marketing activities in order to ensure significant increase in their productivity and income.

Cultured fish producer-marketers' start-up capital also has a positive coefficient (2.63×10^{-8}) and significant at 1%. The implication was that 1% increase in start-up capital increases the possibility for the use of marketing functions. Eyo (1998) opined that though they ultimately come with value addition for the fish producer-marketer, marketing functions are cost effective strategy that boost the operations of cultured fish production and marketing.

Result shows that market research training is negatively related to marketing function use and significant at 5% which means that involvement in market research training decreases marketing function use by 0.08%. Most cultured fish producer-marketers assume that training is a cost effective venture that can be avoided in as much as they gather experience overtime to successfully manage their business; hence they pay little or no attention to market research training. Suleiman (2007) reported a negative relationship between training and marketing innovation.

Table 1: Determinants of marketing functions used by cultured fish producer-marketers

Variables	Coefficient	Standard Error	T-ratio
Sex	0.0056^{NS}	0.058	0.10
Age	-0.011***	0.0057	-2.82
Marital Status	0.020^{NS}	0.086	0.23
Household size	-0.037^{NS}	0.025	-1.49
Education	-0.0013^{NS}	0.021	-0.06
Experience	0.024*	0.012	1.93
Membership of Coop	0.46***	0.14	3.25
Contact with Ext. Agent	0.25***	0.055	4.42
Annual marketing Income	$7.59 \times 10^{-9 \ NS}$	1.76×10^{-8}	0.43
Access to credit	0.057^{NS}	0.064	0.89
Off-farm business involvement	-0.050^{NS}	0.089	-0.56

Fish farm status	-0.047^{NS}	0.095	-0.50
Start-up capital	2.63×10^{-8}***	8.97×10^{-9}	2.93
Dependent Ratio	0.33*	0.18	1.82
Marketing cost	-1.34×10^{-7NS}	4.37×10^{-7}	-0.31
Technology Application	$6.28 \times 10^{-6\ NS}$	3.05×10^{-6}	2.06
Marketing Research Training	-0.080**	0.035	-2.30
Constant	-0.70**	0.34	-2.05
R-Square	0.7548		
Adjusted R-Square	0.6556		
F-Value	7.61***		

Source: Field Survey, 2023

*Significant @10% **Significant @5% ***Significant @1% NS = Not Significant

Lead Equation - Exponential Function

Extent of use of Marketing Functions by Cultured Fish Producers-marketers
Respondents were asked the extent to which they use each of the marketing functions in order to ascertain their impact using a mean score of 2 as the base to determine the importance of the marketing function to the cultured fish producer-marketer. Data generated are presented in Table 2 which is a representation of the extent to which the cultured fish producer-marketers adopt the use of marketing functions in their operations; the essence is to determine how the degree of adoption of any or all of the marketing functions has an effect on the sales of harvested fish. Using the mean score of each of the marketing functions and standard deviation, the extent of adoption are either classified as important or not important from the responses received from respondents; hence where the mean score of any of the functions is ≥ 2, it is considered important while mean score of < 2 is assumed not to be important.

From the table, it can be seen that five marketing functions namely; branding, use of handbills, invoicing, payment for on-loading, and off-loading activities all have a mean score of < 2 which suggest that the surveyed cultured fish producer-marketers do not see these functions as important. However, all other functions on the list have a mean score >2 suggesting that they view them as important marketing functions to adopt in order to boost their operations. These functions are categorized as important because they constitute highly essential aspects of the fish production and

marketing business without which it is difficult for the producer-marketer to operate. Falodun (2011) posited that the degree of marketing function adoption is more of the benefit derived from experience over time than a consistent strategy.

Table 2: Extent of use of marketing functions by cultured fish producer-marketers

Marketing Functions	Mean* Score	Standard Deviation	Remark
Transportation	2.73	1.27	Important
Processing	2.53	1.38	Important
Sorting	2.50	1.17	Important
Grading	2.53	1.23	Important
Advertising	2.35	1.19	Important
Packaging	2.42	1.39	Important
Locational Display of goods	2.16	1.41	Important
Branding	1.92	1.56	Not important
Handbill	1.92	1.48	Not important
Price differentiation	2.12	1.45	Important
Physical payment of cash for goods	2.68	1.11	Important
Invoicing	1.32	1.43	Not important
Payment for transportation of goods	2.01	1.21	Important
Payment for on-loading	1.34	1.49	Not important
Off-loading activities	1.39	1.41	Not important

Source: Field Survey, 2023

*Marketing functions with mean score ≥2.0 are considered important.

Conclusion and Recommendations

From the data collected and analyzed, it is clear that factors such as experience, age household size etc. are key determinants of marketing functions in profitable cultured fish enterprise in the study area; this conclusion will not be any different from what obtains in other locations around Nigeria. Transportation, processing, sorting, grading and packaging functions are critical to the success of cultured fish enterprise. However; other strategies such as branding, invoicing and use of handbills which the study shows are not seen as important functions will require better attention. Based on the findings of the study, it is recommended that relevant government agencies and other stakeholders in the aquaculture business should consider:

1. Formulation of policies that will deliberately attract young people into fish cultivation especially in the face the current high level of unemployment among this useful group in society.
2. Deployment of a more robust awareness campaign targeted at cultured fish producer-marketers to fully understand and embrace the marketing functions in order to operate profitably for the good of the larger society.
3. Government support in the form of holistic integration of the activities of fish producer-marketers that will minimally reduce loss related to unsold stock of fresh fish.

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