

COOPERATIVE MEMBERSHIP AND MARKETING EFFICIENCY OF CRAYFISH DEALERS IN IKOT EKPENE SENATORIAL DISTRICTS OF AKWA IBOM STATE, NIGERIA

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ABSTRACT

The study examined cooperative membership and marketing efficiency of crayfish dealers in Ikot Ekpene senatorial district of Akwa Ibom state, Nigeria. The study was conducted in Ikot Ekpene senatorial district of Akwa Ibom state, Nigeria. Multistage sampling technique was used in the selection of 60 respondents for the study. Data were collected through the use of questionnaire and focus group discussion. Data were analyzed with descriptive statistical tools like means, frequencies and percentages as well as inferential tools like marketing budgetary approach and multiple regression. The result of this study revealed that crayfish marketers realized a net profit of ₦45,139.69 with marketing efficiency ratio of 112%. Age (-0.113) of the respondents exerted negative effect on their marketing efficiency; educational status (0.401) of cooperators exerted positive effect on marketing efficiency of the respondents, access to cooperative credit (0.184) exerted positive effect on marketing efficiency of the respondents. Furthermore, cooperative strength (-0.120) exerted negative effect on the marketing efficiency of the respondents. The study recommended that youths should be encouraged to participate more in crayfish marketing; education among cooperators should be vehemently encouraged; funding of crayfish marketing should be encouraged through cooperative credit availability and access and membership of cooperative should be kept in check in line with the credit obligation of the cooperative to the members.

Keywords: Cooperative, membership, marketing, efficiency, crayfish

INTRODUCTION

The fishery industry is one of the fastest growing food production sector in the world, with an annual growth rate of 5.3 % per year in the period 2001–2018, contributing to 46 % of the global fish production, rising up from 25.7% in 2000 (Food and Agricultural Organization, 2020). It has continued to be a source of hope in Nigeria because it has contributed substantially to growth in national output and job creation, and it is major source of supply of essential amino acid required by the body in large quantity for body building, repairs and maintenance of body structure (FAO, 2016). In Nigeria, the fishery industry

covers cultured and captured fish. The former is otherwise known as aquaculture, accounting for 25,000 (mt) which is currently about 6% of domestic fish production in Nigeria. The latter refers to the artisanal and industrial component of the fisheries sectors, accounting for 88.13% of total domestic fish production (Olajide, 2019).

Crayfish is one of the captured fishes in Nigeria and can be found in abundance in fresh water. It is very rich in lysine, sulphur and amino acids as well as thiamine, riboflavin, vitamin D and A, phosphorus, calcium and iron. Crayfish are eaten worldwide and its global production is centered in Asia, with China accounting for about 95% of the world's crayfish supply (USDA, 2018). It is estimated that about 12,000 metric tonnes of crayfish is produced annually in Nigeria and the products are marketed locally and domestically (Simoyan, 2016).

Crayfish marketing is a major income generating activity that offers substantial economic benefits to dealers and has the potential to address food security problems in Akwa Ibom state. It involves all activities undertaken by crayfish dealers in the state in conveying crayfish from producer to consumers. It cuts across assembling of crayfish, storages, transportation, processing, grading, packaging and financing of these activities (Umohinyang, 2014). Crayfish marketing in Akwa Ibom state is mostly carried out by individuals, groups and corporation. The products are sold at various local, urban and regional markets of Akwa Ibom state while some are exported.

Efficient crayfish marketing system have been documented to reduce post-harvest loses, ensure adequate returns to farmer's investment and stimulate expansion in food production thereby enhancing the level of food security in the country (Ariyo, 2019). According to Ele and Nkang (2014), efficiency of crayfish marketers in Akwa Ibom state could be enhanced if assembling, storages, transportation, processing, grading, packaging and financing of crayfish marketing activities is done at the lowest cost consistent with the provision of the services consumers' desire.

Currently, the role of agricultural cooperatives has become increasingly important in supporting crayfish dealers' collective action against several challenges

that are inherent in crayfish marketing businesses ranging from seasonal price variation, high cost of transportation to multiple taxation among others in Akwa Ibom state. Cooperative societies have provided financial supports and otherwise to members at cost thereby enabling them to access benefits they would ordinarily not have been able to access individually. It has also encouraged members by selling their goods at controlled and stabilized prices, and also regulate the quantity of goods needed (Effiom, 2014). In Akwa Ibom, a number of cooperative societies have assisted subsistence farmers especially in marketing their produce, such cooperative societies include: Multi-purpose cooperative society, credit and thrift cooperative society, farm produce marketing cooperative society among others (Efiom, 2014). More so, agricultural cooperatives play vital roles in farm produce marketing in Nigeria, by providing the marketers with necessary marketing input, such as credit, labour, marketing equipment and facilities, necessary knowledge and skills among others (Nnadozie, Oyediran, Njouku and Okoli, 2015). Despite these established advantages, there is dearth of research on agricultural cooperative societies in the marketing of crayfish and in Ikot Ekpene senatorial district of Akwa Ibom state, Nigeria to be more precise.

According to Eke and Udoye (2017), (government) policies on the fish sector seem to be directed towards increasing production, harvesting and processing with little attention being given to fish marketing. This may consist in the fact that much studies have no recommendation in such light; this scenario can foster inefficiency in crayfish marketing system as the determinants of market efficiency among dealers are not known. Hence priority is placed on production, harvesting and processing alone.

According to Ekwere (2019), the government and non-governmental organizations have attempted to remedy the problem of low marketing efficiency among farm produce marketers through a campaign of encouragement and enlightenment for the smallholder farm owners to join or form cooperative societies, regrettably, the membership strength of most of the cooperative societies is relatively low. Low membership strength might affect the financial strength of agricultural cooperative societies, access to marketing resources as well as marketing efficiency of members. However, studies have not statistically proven the extent to which low membership strength affects marketing efficiency of crayfish dealers in the study area. The broad objective of the study was to examine cooperative membership and marketing efficiency of crayfish dealers in Ikot Ekpene senatorial district of Akwa Ibom state, Nigeria.

The specific objectives were to:

- i. examine the socioeconomic characteristics of the respondents:

- ii. estimate the cost, returns and marketing efficiency of crayfish dealers in the study area;
- iii. analyse the determinants of marketing efficiency of crayfish dealers in the study area.

METHODOLOGY

Study area

The study was conducted in Ikot Ekpene senatorial district of Akwa Ibom state, Nigeria. Akwa Ibom State was created in 1987 from the former Cross River State. Ikot Ekpene is known to be the political and capital of the Annang ethnic group of Nigeria. Geographically, Ikot Ekpene senatorial district is located between latitude 5.18194 and longitude 7.11481. Ikot Ekpene senatorial district consist of ten local government areas namely; Ikono, Ikot Ekpene, Abak, Ika, Oruk Anam, Ukanafun, Etim Ekpo, Obot Akara, Ini and Essien Udim local government areas. Ikot Ekpene is the political head quarter of the district; it has a land area of about 125km² or 48square miles and a population of about 225,000 people. Agricultural endowment of Ikot Ekpene senatorial district includes: palm products (palm oil, kernels and palm kernel oil) , raffia products (raffia fibers and wine), crops such as yams, cassava, corn, vegetable plants while others are carving, fish, crayfish among others (Akpan *et al.*, 2013). Ikot Ekpene senatorial district, notably, is a significant regional centre of commerce.

Sampling technique

The population of the study consisted of all crayfish dealers who are cooperators in the study area. Multi-stage sampling technique was used in the selection of 60 respondents for the study. In the first stage, six (6) Local Government Area namely: Ikot Ekpene, Abak, Essien Udim, Etim Ekpo, Oruk Anam and Ukanafun were purposively selected from the senatorial districts for the reason of intensity of crayfish marketing as well as availability of cooperative society. In the second stage, one cooperative society dealing on crayfish marketing was purposively selected from each of the local government areas. A list was compiled, consisting of crayfish marketers from each cooperative society selected. From the list, 10 (ten) crayfish dealers were randomly selected which gave a grand sample size of 60 respondents.

Data collection

Primary data were used in the study. Primary data were obtained through administration of questionnaire to the respondent. Focus group discussion was employed so as to accord the researcher more information for analysis of the objectives.

Method of data analysis and model specification

The objective one (1) of the study which was to examine the socioeconomic characteristics of the

respondents was analyzed using descriptive statistics which includes: tables, frequencies and percentage. The objective two (2) of the study which was to estimate the cost, returns and marketing efficiency of crayfish dealers in the study area was realized using market budgetary analysis and market efficiency index. The market budgetary analysis is given as:

$$Net\ Profit\ (NP) = Total\ revenue\ from\ sales\ (TR) - Total\ marketing\ cost\ (TMC)$$

Where:

$$Total\ marketing\ cost\ (TR) = Total\ fixed\ cost\ (TFC) + Total\ variable\ cost\ (TVC)$$

Marketing efficiency was realized using marketing efficiency ratio. The formula is specified as follows:

$$M. E = \frac{Value\ added\ by\ marketing\ (Net\ profit)}{Total\ marketing\ cost} \times 100$$

Where:

$$M. E = Marketing\ efficiency$$

The objective three (3) of the study which was to analyse the determinants of marketing efficiency of

crayfish dealers in the study area was analyzed using ordinary least square regression model. The model is specified below implicitly as follows:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) \dots \dots \dots (2)$$

Where:

Y = Marketing efficiency (%)

X₁ = Age (Years)

X₂ = Marital status (Married=1, otherwise=0)

X₃ = Cooperators educational status (Number of years)

X₄ = Marketing experience (Years)

X₅ = Amount of credit from Cooperative (₦)

X₆ = Average price of the commodity (₦)

X₇ = Transport cost (₦)

X₈ = Market charges (₦)

X₉ = Cooperative strength (No of persons)

β₀ = Intercept

β₁- β₉ = Parameter estimate

e_i = Stochastic variables or error term

RESULTS AND DISCUSSION

4.1. EXAMINATION OF THE SOCIOECONOMIC CHARACTERISTICS OF THE RESPONDENTS

4.1.1 Age

Table 1: Distribution of respondents according to age

Age	Frequency	Percentage
< 25	1	1.7
25-29	8	13.3
30-34	10	16.7
35-39	5	8.3
40-44	13	21.7
45 and Above	23	38.3
Total	60	100
Mean	40.4	

Source: Field survey, 2021

Table 1 shows that majority (38.3%) of the respondents were in their active and productive age and are able to carry out the enterprise. The mean age of the respondents was 40 years, which also indicates an active and productive age among the crayfish

dealers in the study area. This finding is line with Uche and Nwankwo (2020) who reported that crayfish dealers in Anambra were in their active and productive age.

4.1.2 Sex

Table 2: Distribution of respondents according to sex

Sex	Frequency	Percentage
Female	40	66.7
Male	20	33.3
Total	60	100

Source: Field survey, 2021

Table 2 shows that majority (66.7%) of the respondents were females while 33.3% were Males. We can conclude that crayfish marketing is gender specific and women do marketing better compared to men because of the bargaining ability. This finding is in tandem with Okelola, Olabode, Ariyo, Korie, and

Olowoyo (2019) who reported the preponderance of female crayfish marketers in Akwa Ibom State, also, Uche and Nwankwo (2020) concluded that women were more active in crayfish marketing in Anambra state, Nigeria.

4.1.3 Marital Status

Table 3: Distribution of respondents according to marital Status

Marital Status	Frequency	Percentage
Single	13	21.7
Married	41	68.3
Widowed	5	8.3
Divorced	1	1.7
Total	60	100

Source: Field survey, 2021

Table 3 shows that majority (68.3%) of the respondents were married. We can deduce that married crayfish dealers have more complex homes than single individuals and therefore may explore more opportunities from cooperative society and

crayfish marketing to support their families. This result of this analysis is in tandem with Umoinyang (2014) and Uche and Nwankwo (2020) who reported that crayfish marketing is dominated by married people.

4.1.4 Educational Qualification

Table 4: Distribution of respondents according to educational qualification

Educational Qualification	Frequency	Percentage
No formal education	12	20.0
FSLC	19	31.7
WAEC/SSCE	10	16.7
OND/ND	6	10.0
HND/B.Sc	11	18.3
M.Sc/Ph.D	2	3.3
Total	60	100

Source: Field survey, 2021

The findings from Table 4 indicated that the majority (80%) of the respondents had access to formal education, implying that majority of them were literate. High literacy among crayfish dealers could translate to benefit in their various cooperative societies as well as crayfish marketing activities as

education is instrumental to increasing knowledge and knowhow required in guiding investment decision making. This finding is similar to the findings of Ariyo (2019) and Uche and Nwankwo (2020) who posited that most crayfish dealers were literate.

4.1.5 Household Size

Table 5: Distribution of respondents according to household size

Household size	Frequency	Percentage
< 3	14	23.3
3-5	19	31.7
6-8	19	31.7
9 and above	8	13.3
Total	60	100
Mean	5.0	

Source: Field survey, 2021

Result from Table 5 shows that majority (31.7%) of the respondents had household size of 3-5 and 6-8 persons respectively. On the average, the household size of the respondents was 5.0. This result revealed

that the respondents had a relatively moderate and sizeable household which could serve as insurance against shortfalls in labour supply and a source of cheap labor in their crayfish businesses.

4.1.6 Membership Strength of Cooperative

Table 6: Distribution of respondents according to cooperative membership strength

Membership strength	Frequency	Percentage
<20	9	15.0
20-40	15	25.0
40 and above	36	60.0
Total	60	100

Source: Field survey, 2021

The result in Table 6 indicates the majority (60.0%) of the cooperative societies in the area had membership strength of 40 and above indicating a relatively large membership size. This result could have an implication on the financial base of cooperative societies in the study area as well as access to

assistance from government and other non-governmental organizations. This finding is in tandem with Olumese, and Onemolease (2018) who reported that most cooperative societies in South South, Nigeria have cooperative strength of 40 and above.

4.2 ESTIMATION OF THE COST, RETURNS AND MARKETING EFFICIENCY OF CRAYFISH DEALERS IN THE STUDY AREA

Table 7: The distribution of the respondents according to their cost, returns and marketing efficiency of crayfish dealers in the study area

Variables	Mean Value (₦)
Revenue	
Sales of crayfish	85,440.50
Total Revenue	85,440.50
Fixed Costs	
Rent	6,550.00
Depreciation	3,500.21
Total Fixed Cost	10,050.21
Variable Costs	
Purchase of crayfish	20,250.10
Storage	1,500.00
Labour	2,300.00
Transportation	5,500.50
Market charges	700.00
Total Variable Cost	30,250.60
Total Marketing Cost (TVC+TFC)	40,300.81
Net Profit (TR-TMC)	45,139.69
M.E(%) (Net profit/TMC×100)	112.0

Source: Field survey, 2021, Note: TVC= Total variable cost; TFC=Total fixed cost; TR=Total revenue; NP=Net profit; M.E=Marketing efficiency.

The result in Table 7 shows the profitability and marketing efficiency of crayfish dealers in Ikot Ekpene senatorial district, Akwa Ibom State. As shown in the table, the variable cost items are: purchase of crayfish, storage, labour, transportation and market charges while the fixed cost items are; rent and depreciation. Crayfish dealers realized total revenue of ₦85,440.50; the total fixed cost was ₦10,050.21, the total variable cost of marketing was

₦30,250.60. The enterprises had a mean net profit of ₦45,139.69. The marketing efficiency computation suggests that crayfish marketing enterprise was 112.0% efficient in the study area. However, M.E > 100% implies that the participant covered the costs of value addition plus marketing and made a margin above the 100% (Oladejo, 2017). Considering this result, one can conveniently conclude that the market performance is satisfactory.

4.3 ANALYSIS OF THE DETERMINANTS OF MARKETING EFFICIENCY OF CRAYFISH DEALERS IN THE STUDY AREA

Table 8: Regression estimate of the determinants of marketing efficiency of crayfish dealers in the study area

Variables	(+)Linear	Exponential	Semi log	Double log
Intercept	-0.211 (-0.305)	0.090 (0.888)	-7154.30 (-1.991)*	2.200 (0.308)
Age	-0.113 (-4.480)***	0.390 (3.730)***	84.130 (0.107)	0.350 (7.007)***
Marital status	-0.190 (-0.117)	-0.008 (-0.101)	51.311 (0.010)	0.149 (0.300)
Cooperative education	0.401 (6.322)***	-0.062 (-0.099)	987.518 (5.407)***	0.661 (0.700)
Cooperative experience	0.088 (0.007)	0.056 (5.551)***	22.690 (0.654)	-0.017 (-0.700)
Cooperative credit	0.184 (9.771)***	6.660 (2.483)**	40.485 (0.008)	-1.037 (-0.777)
Price of commodity	0.015 (0.021)	0.039 (1.300)	11.209 (0.088)	3.063 (0.020)
Transport cost	-0.027 (-0.065)	0.011 (0.920)	154.971 (1.200)	-5.202 (-0.801)
Market charges	0.031 (0.011)	-5.000 (-0.021)	34.100 (7.006)***	-5.012 (-5.300)***
Cooperative strength	-0.120 (-3.810)***	-0.483 (-0.559)	573.180 (0.002)	-0.500 (-0.008)
R²	0.545	0.401	0.535	0.478
R⁻²	0.544	0.400	0.533	0.460
F-ratio	101.114 ***	45.347 ***	14.480 **	9.648 ***

Source: Field survey, 2021, Note: values in parentheses () are the respective t- ratio. ***, **, and * implies statistical significance at 0.01, 0.05 and 0.1 probability levels respectively.

The regression result of the determinants of marketing efficiency of crayfish dealers in the study area is shown in Table 8. The linear functional form was chosen as the lead equation. This was based on statistical and econometric reasons which includes the magnitude of the coefficient of multiple determination, the number of significant variables, as well as the significance of F-ratio. The coefficient of multiple determination (R^2) was 0.545 which implies that 54.50% of the variations in the marketing efficiency of crayfish dealers was explained by the independent variables included in the model (age, marital status, cooperative education, cooperative credit, marketing experience, price of the commodity, transport cost, market charges and cooperative strength) while 45.50% unexplained was due to error factor. The F-ratio of 101.114 was statistically significant at 1% significant level indicating that the variables included in the estimated regression model

were correct and has a line of best fit. However, the significant variables were age, cooperative education, marketing experience and marketing strength.

Age was statistically significant at 1% probability level and had an inverse relationship with the marketing efficiency of the respondents. This mean that the marketing efficiency of the respondents tends to decrease as the age of the respondents increases. This can be attributed to the fact that older age are often risk averse having less energy to handle series of marketing activities and also conservative to adoption of innovations to improve their marketing efficiency. This finding is in tandem with Ariyo (2019) who opined that age exerted negative effect on marketing efficiency of crayfish dealers in Akwa Ibom State. Cooperative education was statistically significant at 1% significant level and positively related to marketing efficiency. This result implies that marketing efficiency of the respondents increased

with an increase in higher educational status of the cooperator. This is plausible because higher educational status of the cooperator can be instrumental to taking best marketing decisions in crayfish marketing especially decisions regarding setting of realistic cost and smart projects that will yield higher marketing efficiency. Cooperative credit was statistically significant at 1% significant level and positively related to marketing efficiency. This result implies that marketing efficiency increased with an increase in access to cooperative credit. This in line with a priori expectation as access to cooperative credit increases the confidence of crayfish dealers as well as their financial base. It enhances investment in crayfish marketing by financing assets and facilities which could influence their marketing efficiency. This finding is in tandem with Ojiagu (2015) who reported that access to cooperative credit promotes marketing efficiency of cooperators in Anambra State, Nigeria. The coefficient of cooperative strength was statistically significant at 1% and inversely related to marketing efficiency. This result implies that the higher the cooperative strength, the lower the marketing efficiency of the crayfish dealers in the study area. This result can be viewed as a result of the implication of more members on the capacity of the cooperative to meet up with provision of cooperative credit which can promote marketing efficiency (Ojiagu 2015) through funding of assets and facilities that can hence efficiency.

Summary, recommendation and conclusion

The empirical result of this study revealed various points of interest for crayfish dealers, policy makers, government and other researchers. It could be concluded that crayfish marketing is a viable and profitable business in the study area. Also, crayfish dealers were highly efficient in their marketing activities. Age of respondents exerted negative effect on their marketing efficiency. Cooperative education and access to cooperative credit exerted positive effect on marketing efficiency of the respondents. Cooperative strength exerted negative effect on the marketing efficiency of the respondents. Sequel to the finding that age of the respondents exerted negative effect on the marketing efficiency of the respondents, youths should be encouraged to participate more in crayfish marketing as efficiency level will be higher. Education among cooperators should be vehemently encourages by both cooperative associations, government and other non-governmental organization. Funding of crayfish marketing should be encouraged through cooperative credit availability and access as finding reveal that it exerted positive effect on marketing efficiency of cooperators in the study area. Membership of cooperative should be kept in check in line with the credit obligation of the cooperative to the members. Given the findings of the study, we can deduce that cooperative membership plays a significant role in the

marketing efficiency of crayfish dealers in Ikot Ekpene Senatorial District

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