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Original Research Article

DETERMINANTS OF COMMERCIALIZATION OF STAPLE CROPS AMONG SMALL-HOLDER FARMERS IN SOUTH EAST NIGERIA

ABSTRACT

Small holder commercialization is part of an agricultural transformation process in which individual farms shift from highly subsistence oriented production towards more specialized production, targeting markets for input procurement and output supply. The study therefore analyzed the determinants of commercialization of staple crops such as cassava, maize, rice and yam, in the area. Data were collected from 408 randomly selected registered farmers using structured questionnaire. These were analyzed using descriptive statistics,household commercialization index and multiple regression analysis. The results show that farmers mean age, education, household size, farm size, farming experience and income were 47 years, 9 years, 8 members, 1.64ha, 17 years and ₦259,267.40 per annum, respectively. The commercialization index indicates that the extent of commercialization is highest in cassava (57%) and rice (49%). Favorable indices for commercialization are; high sales of products (2.89), improvement in crop farming and processing (2.85) and relevant policy formulations (2.60). Although, the crops have potentials of being transformed into different products, they are limited to mainly gari for cassava and milled rice for paddy rice. Major challenges identified include inadequate processing and storage facilities and poor access to credit facilities with mean value of 4.82 and 3.83 respectively..

Keywords: Commercialization, Small-holder farmers; Staple crops; Household commercialization index.

1. INTRODUCTION

Commercialization is the movement from subsistence production to a market based system of production by using improved technologies to enhance input use and produce transformation, thereby raising the

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value and cash earning capacities of the enterprises. Hence rural production becomes increasing integrated into the output market [1]. Commercialization is therefore aimed, not only at increasing production and marketed surplus but also at producing high value commodities for domestic and export markets. The transition from subsistence to commercial staple crop production is more pertinent than complete shift to specialized high commodities [2]. The production of marketable surplus to staple food over own consumption is the most common from of commercializing peasant agriculture [3]. Although the introduction of yield enhancing technologies coupled with farmers' technical ability in staple crop production generates market surplus and increased income, there is still the need for the production of high value commodities so as to enhance specialization and more increase in income.

To assist small scale producers raise their productive capacity, efforts to increase their production must focus not only on increased productivity but also on increased commercial opportunities for farmers to benefit from the increased production [4]. This requires the transformation of produce into competitive forms so as to expand the markets. For instance cassava and rice have wide ranging potentials as confectionaries and flakes respectively but their utilization is largely limited to the production of edible foods probably because the post harvest facilities and value addition capabilities are not efficiently harnessed to produce adequate quantity and quality of products on a sustainable basis. This results in a less than optimum utilization of farm produce while sub regional market advantages are not fully exploited.

Crops with high commercialization potential in South-East Nigeria include cassava, yam, rice and maize [1]. To harness these potentials and promote diversification of the products for the markets, it becomes imperative to analyze the determinants of commercialization of staple crops among small-holder farmers in South East Nigeria by addressing the following objectives:

i. describe the socioeconomic factors of the farmers,
ii. analyze the determinants of commercialization of the crops,
iii. examine the commercialization potentials of the crops
iv. identity the products generated and and determine their extent of commercialization,
v. examine the challenges of commercialization in the area.

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2. MATERIALS AND METHOD

The study was carried out in South East Nigeria. Multi stage, purposive, proportionate and random sampling technique were used in the selection of 3 states (Abia, Ebonyi and Enugu);one agricultural zone in each state; three blocks from each zone and the registered farmers comprising 32 farmers in Abia state, 72 farmers in Ebonyi state and 304 farmers in Enugu state.

Primary data were collected through the use of structured questionnaire. Data collected were socioeconomic variables, types, quantity and prices of products generated and input prices. Data were analyzed using descriptive statistics for socioeconomic factors; Household commercialization Index was used to analyzed extent of commercialization and according to [5] it is given thus;

$$HCI = \frac{\text{Gross value of crops sales per household per year x 100}}{\text{Gross value of all crop production per household per year 1}}$$

The closer the value to 100 the higher the commercialization of the crops. The determinants of commercialization was analyzed using multiple regression analysis which is implicitly specified thus:

$HCI = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, e)$

Where

HCI = Household Commercialization Index

X_1 = Age (years)

X_2 = Farming Experience (years)

X_3 = Gender (1 = Male; 0 = Female)

X_4 = Education (number of years spent in formal school)

X_5 = Household Size (number of persons)

X_6 = Farm Size (ha)

X_7 = Credit (₦)

X_8 = Processing Cost (₦)

X_9 = Market Distance (km)

e = Error Term

Potential of commercialization was analyzed using, descriptive statistics and mean value from likert scale with values ≥2.5 acceptable while ≤2.49 is not acceptable.

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3. RESULT AND DISCUSSION

3.1. Socioeconomic factors of the farmers

Table 1 indicates that the mean age of farmers is 47 years. This shows that most of the farmers are in the productive and active period with requisite skills acquired after 17years of farming experience. The mean farm size of 1.64ha limits the productive capacity of the farmer to subsistence level. The educational attainment of 9 years implies that the literacy level predisposes the farmer to better skills for commercialization. The mean household size of 8 members produces the farmer with additional labour at peak periods.

Table 1. Summary of socioeconomic factors

Socioeconomic Factors	Mean	Standard Deviation	Range
Age	47	10.48	29-59
Farming experience	17	7.43	5-20
Farm size	1.64	0.67	0.5-2.5
Level of education	9	4.89	1-17
Household size	8	4.54	5-26

Source: Field Data (2016)

3.2. Determinants of commercialization

Table 2 shows that the lead equation is double log function based on the highest number of significant variable (6) and high R^2 of 0.664. The value of the R^2 implies that 66% of the variation in HCI is explained by the regression model.

Gender is significant with a negative sign which indicates more involvement of female farmers as commercialization increases. This agrees with the study of [6] which indicates that more female farmers were involved in the market orientation of root and tuber crops in Imo State, Nigeria. Education is

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significant at 1% with a positive sign. This shows that high literacy level enhances the farmer's adaptive skills. Market distance is highly significant with a positive sign showing that increased level of commercialization improve the quality of the product such that they can be transported over longer distances without spoilage. However, [7] in his study, indicated a negative relationship probably due to high transaction cost. Household size is significant with a positive sign so as to augment labour especially during peak periods of farming. In another study, [8] indicated a negative relationship, probably due to increase in household consumption. Processing cost is highly significant with a negative sign probably because of the low level of commercialization of the crops in the area.

Table 2. Determinants of commercialization

Socioeconomic Factors	Linear Function	Semi log function	Exponential function	Double Log Function
Age (X_1)	-.039	4.653	.000	.125
Farm experience (X_2)	.098	1.712	.003	.033
Gender (X_3)	-5.258**	-7.434	-.157**	-.163*
Education (X_4)	.185	5.159	.005	.104
Household size (X_5)	.041	10.218*	.000	.249*
Farm size (X_6)	-1.047	3.537	-.050	.067
Credit (X_7)	-1.311E-5	-1.803	-2.731E-7	.004
Processing cost (X_8)	-6.570E-5	-5.377**	1.475E-6	-.106
Market distance (X_9)	.085	.994	.003	.023**
Constant	67.470**	110.88**	4.250**	4.527**
R^2	0.121	0.287	0.113	0.664
F-Ratio	4.167**	2.787**	3.836**	2.488**

**Significant at 5%*
***Significant at 1%*
Source: Field Data (2016)

3.3. Potentials for Commercialization

This is captured by showing the forms in which the output is marketed in Table 3 and the potentials for commercialization as perceived by the farmers in Table 4.

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Table 3 shows that the only 35% of the farmers produce, process and sell. This means that few farmers engage in value addition activities that would enhance the marketability of their output thereby limiting their potential for commercialization.

Table 3 Forms of Marketing

Items	Percentage
Produce and sell only	57
Produce, process and sell	35
Process and sell only	7

Source: Field Data (2016)

Table 4 shows the perception of farmers on factors available in the area that may or may not create an enabling environment for commercialization. The result indicate that although relevant polices are formulated with evidences of improvement in crop farming, processing and product sales, such improvement seem not to be sustained due to increase in production cost (2.51) followed by poor funding, lack of requisite skills and expensive mechanized facilities which are often unavailable and inadequate.

Table 4. Potentials for Commercialization

Factors	Mean	Decision rule
Relevant policy formulation	2.60	Accept
Improvement of crop farming and processing	2.85	Accept
Availability of fund	1.88	Reject
Increased sales of products	2.89	Accept
Increased production costs	2.51	Accept
Inadequate credit facilities	3.83	Accept
Adequate processing skills	1.59	Reject
Expensive mechanized facilities	4.82	Accept

Source: Field Data (2016)

3.4. Extent of Commercialization

Table 5 shows the level of market orientation of cassava, yam, rice and maize in the study area. The market orientation was highest in cassava (57%) and lowest in yam (31%). The work carried out by [8] on socioeconomic determinants of commercialization among small-holder farmers in Abia State indicated

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that cassava also has the highest ratio. This implies that value addition via processing is highest in cassava.

Table 4a. Extent of Commercialization

Crops	Gross value of all crop produced	Gross value of crop sold	HCI
Cassava	259,267.4	148603.77	57
Maize	259,267.4	98507.16	38
Rice	259,267.4	126561.23	49
Yam	259,267.4	81449.36	31

Source: Field Data (2016).

3.5. Crop output by level of processing carried out.

The crop output by level of processing was analysed. The result show 53% of cassava is processed into gari, 48% of paddy rice is milled while 47% of maize is shelled. Yam was mainly sold unprocessed.

Table 5. Crop Output by level of processing

Crop	Quantity produced	Major products	%quantity processed
Cassava	274 bags of 50kg	Gari	53
Paddy rice	94 bags of 100kg	Milled rice	48
Maize	40 bags of 100kg	Shelled maize	47

Source: Field Data (2016)

3.6. Challenges to Commercialization

The challenges were rated on a four point Likert scale with a mean score of ≥2.50 acceptable while mean score ≤ 2.49 was regarded as unacceptable. The major challenges are inadequate processing and storage facilities and poor access to credit facilities.

Table 6. Challenges to Commercialization

Challenges	Mean	Decision rule
Poor road network	2.83	Accept
Poor access to credit facilities	3.83	Accept
Inadequate processing and storage facilities	4.82	Accept

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Establishment of farm association	2.79	Accept
Inadequate processing skills	2.72	Accept

Mean score ≥ 2.50 is acceptable

Source: Field Data (2016)

CONCLUSION AND RECOMMENDATION

An enabling environment is a pre-requisite for the realization of the potentials of commercialization. However, poor credit facilities and inadequate processing and storage facilities result in the following; few farmers produce process and sell their output in the rural market. This limits the number of products generated and extent of commercialization. There is need to enhance market orientation of these crops for domestic consumption and export. It is therefore recommended that government should refurbish old facilities, assist farmers produce new ones, set up strategies to facilitate farmers' access to credit while farmers should participate actively in farm associations.

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