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DETERMINANTS OF MARKET PARTICIPATION AMONG SMALL HOLDER CASSAVA PROCESSORS IN IKWUANO LOCAL GOVERNMENT AREA OF ABIA STATE, NIGERIA

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Abstract
The study estimated the determinants of market participation among smallholder cassava processors in Ikwuano Local Government Area, Abia State, Nigeria. It employed multistage sampling technique for the selection of one hundred and twenty respondents from whom data were elicited using pretested and structured questionnaire. In data analysis, descriptive statistics and probit regression model were used. Analysis of products produced by cassava processors revealed that gari (316kg) was the most important product produced, followed by cassava fufu flour (271kg), cassava ethanol (253kg), fufu (236kg), African salad-dry (228kg), cassava starch (224kg), tapioca-wet (209kg) and least was high quality cassava flour (181kg). The important determinants of market participation were age, marital status, income and credit availability which were significant. The study calls for policies aimed at encouraging households especially the youths and able-bodied to increase participation in the market for enhanced household income, and livelihoods in the study area. There is also need for better efficiency in the management of farm credit and utilization for enhanced economics of scale and marketable surplus.

Keywords: Market Participation, Cassava, and Smallholder

Introduction

Cassava is a major staple crop in Nigeria, and its products are found in the daily needs of Nigerians. Presently, it is undergoing transformation from mere subsistence crop found in the field of peasant farmers to a commercial crop that will be grown in large quantities and plantations (Adekunle, Fatunbi and Sanni, 2015). It is one of the world's most important food crops with an annual output of over 54.47million tonnes with Nigeria currently the highest producer in the world (FAO, 2018). According to International Fund for Agricultural Development (IFAD, 2013), its roots and leaves provide essential calories and income. Africa is one of the continents of the world where some 600 million people are dependent on cassava for food.

Cassava per capita consumption is very high and provides about 80% of the total energy intake of many Nigerians. It is usually consumed in processed forms. The processing of cassava in Nigeria can be categorized into different capacity levels as cottage or household, micro, medium and large scale levels. The cottage level requires no labour but members of the household. The micro processing level requires one or two units of labour and the large scale requires three to 10 workers FAO (2004). Cassava food products include gari, lafun, fufu, flour, tapioca and chips. Dextrins, starch, syrups, alcohols and dextrose are also products from cassava. Some of these serve as raw materials in different industries (Ashaye,Obatolu, Amusa, Fasoyiro, and Ayoola, 2007). Ani, (2010) noted that cassava is produced largely by small-scale farmers using rudimentary farm implements and most of the cassava produced is used for human consumption with less than 5% used in industries. Small-scale agriculture is the main source of food in the developing world, producing up to 80% of the food consumed in many developing countries, notably in sub-Saharan Africa and Asia. With poor rural households making up two-thirds of the global population earning less than $1.25 per day, smallholder agriculture is also an important source of income of livelihoods of vast number of poor people. Smallholders and small family farms are therefore central to an inclusive development process and their contribution is crucial to food security (Arias, Hallam, Krivonos, and Morrison, 2013).

Boosting production without boosting its marketing can lead to glut of cassava in the market. This can depress prices and discourage farmers from investing in cassava

cultivation (IFAD, 2013). Marketing can pose a problem for poor farmers who may not have resources to transport their commodities to the market, especially those living in villages with poor feeder roads. Typically farmers transport their farm produce to the market on heads as head loads, on bicycles or in Lorries. With poor market access, marketing of cassava can be particularly problematic because of its bulky nature, especially if it is not processed (Cassava Report Final, 2013).

Ani, Agbugba and Baiyegunhi (2013) stated that cassava processing and marketing can be faced with much drudgery thereby limiting the ability of the processors to improve their processing techniques and activities; reduce their level of participation and marketing of products; and consequently, retard the expansion on investment on the processing business. The major constraint to cassava processing and marketing includes: lack of finance, lack of processing facilities, sourcing of labour, marketing, transportation and inadequate storage facilities. Onya, Oriala, Ejiba, and Okoronkwo, (2016) noted that the major constraints faced in market participation among cassava processors in the rural areas were high cost of processing, high transaction cost, poor coordination among actors in the value chain, lack of storage facilities, price fluctuation, poor road network, poor access to market information and high cost of cassava roots. The study therefore analysed the determinants of market participation among small holder cassava processors in Ikwuano Local Government Area of Abia State, Nigeria.

Methodology

The study was carried out in Ikwuano Local Government Area of Abia State, Nigeria. Its headquarters is in Isiala Oboro. It has an area of 281 km² and an estimated population of 139,803 persons (NPC, 2006). It is made up of about 52 villages and 11 communities and is bounded by Ini LGA of Akwa Ibom State by the West, Umuahia North by the East and Olokoro in Umuahia South LGA by the South. The local government is home to major institutions such as the National Root Crops Research Institute (NRCRI) and Michael Okpara University of Agriculture Umudike (MOUAU). The major occupations of the people of Ikwuano are farming and civil service. Ikwuano is known for production of crops such as cocoa, cassava, yam, maize and palm wine. The people of Ikwuano also engage in animal production such as piggery and poultry. There are three major markets in Ikwuano, they include; Ndoro market (sell all sort of agricultural produce and other household items), Ariam market (sell mostly palm wine) and Amawom market that also sell agricultural products. Ikwuano L.G.A was chosen for this study because it is known for its rich agricultural production and marketing. The population of this study comprised of all small holder cassava processing households in Ikwuano L.G.A of Abia state

Data Collection

Multistage sampling technique was used in selecting respondents for the study. In stage one, six (6) communities were selected. In stage two, two (2) villages from each of the communities were purposively selected based on intensity of processing giving a total of twelve (12) villages. In stage three, ten (10) cassava processing households were randomly selected from each village giving a total of 120 cassava processing households for detailed study. Primary and secondary data were used for the study. A structured questionnaire was administered to the respondents using trained assistants to obtain data that was used to realise the objectives of the research.

Data Analysis

The data were analyzed by the use of descriptive statistics and probit regression model. The probit regression model for the estimation of factors influencing market participation among smallholder cassava processing households following Mbitsemuda and Karangwa (2017) and Gani Osmani and Hossain (2015) is specified thus:

$$P(Y = 1/x) = F(XB) = 1/\sqrt{2\pi}\int_{-\infty}^{XB} e - \frac{(XB)^2}{2} dx \quad \ldots\ldots\ldots\ldots (1)$$

Where X = (1,X_1i, X_{2i} …… X_ki)

$$B' = (\beta_0, \beta_1, \ldots\ldots\ldots\ldots \beta_k) + e_i$$

Y = Vector of dependent variable (Market Participation)
X = Vector of explanatory variables (predictors)
$_\beta$= probit coefficients
e_i = random error term

The explanatory variables included in the model are:
X_1 = Sex (dummy variable; male = 1; female –=0)
X_2 =Age (years)
X_3= Marital status (dummy variable; 1=married, 0=otherwise)
X_4= Household size (no)
X_5 = Years of processing experience (years)
X_6 = Education (years)
X_7 = Farm size (ha)
X_8 = Storage facilities (dummy variable; yes=1, no=0)
X_9 = Farm distance (km)
X_{10} = Annual income (Naira)
X_{11}= Co-operative Membership (dummy variable; yes=1; no=0)
X_{12}= Value of processed output (Naira)
X_{13}= Credit volume (Naira)

Results and Discussion

Analysis of Cassava Products Produced by Cassava Processors in the Study Area

The analysis of products produced by cassava processors in the study area showed that gari, high quality cassava flour, tapioca (wet), African salad (dry), fufu, cassava ethanol, cassava fufu flour and cassava starch were the major products identified (Table 1). The result shows that 50% of the respondents processed cassava as gari and cassava fufu flour each, and 47.5% into high quality cassava flour and cassava starch each, while 60%, and 59.2% processed into tapioca (wet), and african salad (dry) respectively. About 53.3% processed into fufu and ethanol each. The result further shows that the respondents produced more of gari (316kg) followed by cassava fufu flour

(271kg). It is not surprising that gari was the largest product produced by the processors because gari has become a household food especially among low income households in Nigeria. Ezedinma *et al.,* (2007) noted that gari is the most consumed and traded of all cassava products and over 70% of cassava produced in Nigeria is processed into this form.

Table 1: Cassava products produced by the processors in the study area

S/N	Cassava Product	N	Percentage (%)	Quantity produced (Kg)	Quantity sold (Kg)
1	Gari	60	50	316	278
2	High quality cassava flour	57	47.5	181	72.5
3	Tapioca (Wet)	72	60	209	149
4	frican salad (Dry)	71	59.2	228	188
5	Fufu	64	53.3	236	174
6	Cassava Ethanol (Liters)	64	53.3	253	181
7	Cassava fufu flour	60	50	271	202
8	Cassava starch	57	47.5	224	154

Source: Survey Data, 2019

Determinants of Market Participation among Smallholder Cassava Processors in the Study Area

The probit regression estimates of the determinants of market participation are shown in Table. Results show that the coefficients of age, marital status, income and credit were statistically significant at various probability levels. The coefficient of age (10%) had a negative sign implying that increasing age reduced probability of market participation which is in line with *a priori* expectation. Increasing age is associated with wealth accumulation, experience, social networks and reduction in risky ventures thereby reducing small holder farmer's participation in the market. This corroborates with the findings of Barett *et al.,* (2007) who noted that younger farmers participated more in the market because they were more receptive to new ideas and are less risk averse than their aged counterparts. However, there should be a threshold in terms of age beyond which the agility to participate in the market may decline (Sebatta *et al*., 2014)**.**

Similarly, the coefficient of marital status (5%) also had an indirect relationship with market participation. This implies that processors who are married tend to not participate in the market than their counterparts who are not. This implies that more of the cassava products produced will be used in feeding the family, thus reducing the quantity taken to the market. The result agrees with that of Egbetokun *et al*., (2017) who obtained similar result in his study in Osun State, Nigeria.

The coefficient of annual farm income was significant at 5% level and directly related to market participation. This implies that increase in annual farm income will lead to increase in probability of participating in the market. When farmers earn more from the sale of cassava products, he or she would be encouraged to increase his or her level of participation in the market, this corroborates the findings of Gani, Oseni and Hossain (2015) and Gebremedhin and Jaleta (2010). The result also shows that increase in credit volume (5%) had an indirect relationship with market participation which was against *a priori* expectation. The result is however plausible when there is no efficiency in the use of resources (Nwachukwu and Ezeh, 2018). This is in contrast to the findings of Randela *et al* (2008) who found a positive relationship between access to credit and market participation. The result further showed that overall probit model is significantly different from zero at 1% probability level based on the chi square value of 372.772, thus implying that the explanatory variables are relevant in determining market participation among smallholder cassava processing households.

Table 2: Probit Regression Estimates of Determinants of Market Participation among Cassava Processors in the study area

Variables	Coefficients	Standard error	Z-test
Sex (X_1)	0.110	0.113	0.971
Age(X_2)	-0.010	0.006	-1.653*
Marital Status(X_3)	-0.167	0.059	-2.83**
Household size(X_4)	0.010	0.041	0.243
Years of processing experience (X_5)	0.005	0.015	0.333
Years of education(X_6)	-0.007	0.012	-0.562
Farm size(X_7)	0.013	0.036	0.356
Storage facilities (X_8)	-1.668	1.694	-0.984
Farm distance (X_9)	0.031	0.063	0.487
Annual income(X_{10})	$3.513x10^{-5}$	$1.289x10^{-6}$	2.723**
Cooperative membership(X_{11})	1.584	1.690	0.937
Value of processed output(X_{12})	-0.015	0.018	-0.825
Credit volume(X_{13})	-0.295	0.117	-2.517**
Intercept	-2.415	0.473	-5.109***
Chi-Square	372.772***		
Pro Chi^2	0.085		
Pseudo R^2	0.139		

Source: Survey Data, 2019

***= Sig. at 10%; **= Sig. at 5%; ***= Sig. at 1%**

Conclusion

Results from the study showed that gari had the largest share of output produced and sold in the study area. Important factors influencing market participation among the processors in the study area were: age, marital status, annual farm income and credit volume. Results therefore call for policies aimed at provision of incentives to attract processors especially young and able bodied to engage in cassava production and processing for market. There is also need for better efficiency in the management of farm credit and utilization for enhanced economics of scale and marketable surplus.

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