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Market Participation and Value Chain of Cassava Farmers in Abia State

Simeon C. Onya[1], Samuel E. Oriala[1], Ikenna V. Ejiba[2*] and Francis C. Okoronkwo[1]

[1]Department of Agricultural Economics, Michael Okpara University of Agriculture, Umudike, Nigeria.
[2]Department of Agricultural Economics, University of Ibadan, Nigeria.

Authors' contributions

This work was carried out in collaboration between all authors. Authors SCO and SEO designed the study, wrote the protocol and wrote the first draft of the manuscript. All authors managed the literature searches and analyses of the study. All authors read and approved the final manuscript.

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ABSTRACT

In recent times there has been emphasis on value chain development especially in Africa so as to allow farmers derive maximum benefit from farm produce. This study therefore examined market participation and value chain of cassava farmers in Abia state, Nigeria; using primary data obtained from 135 cassava farming households selected through application of multistage randomized sampling technique. Data were analysed by descriptive statistics, multinomial logit model and principal component analysis (PCA). The results showed that 42.92% of the farmers added value to their produce by processing into garri while 67% sold unprocessed produce at the local, farm gate and contract markets. However, net margin and profitability analysis showed that the net return on investment (ROI) of unprocessed/fresh cassava, and processed garri marketing were 1.68 and 2.36 respectively. Results of the multinomial logit model showed that marital status, level of education, distance to the market, farm size and transaction cost significantly influenced market participation in cassava market while age, marital status, household size, level of education, distance to the market, market information, farm size, transaction cost and output significantly influenced participation in garri market. The major constraints to farmers' participation in cassava value chain were high cost of processing cassava, high transaction cost, poor coordination among actors in the value chain, lack of storage facilities, poor road network, price fluctuation, high cost of

**Corresponding author: E-mail: simeononya@yahoo.com;*

cassava tubers and poor access to market information. The study recommends that factors such as cassava product pricing, and market information should attract policy attention to give boost to cassava value chain market participation; and also eliminate impediments such as infrastructural inadequacy; enhance the performance, and yield profits and income for farmers. The study recommended that factors such as cassava product price, market information and cooperative membership should attract policy attention to give boost to cassava and garri market participation.

Keywords: Market participation; value chain; profitability; constraints; Abia State.

1. INTRODUCTION

Cassava production in the tropics has potentials for food security and income generation for millions of people in developing countries. Nigeria accounts for 19% of world output and 34% of Africa's output [1].

As a result of this potential, improving smallholder productivity has received much attention over the years and has led to a better understanding, and design of technical, and economic interventions resulting in the use of more productivity enhancing strategies. However, in the area of smallholder market integration, the reasons for low participation or otherwise of smallholder farmers in markets are still not fully understood, resulting in a relatively weak policy and strategy choice for the smallholder [2].

Smallholder access to and participation in markets is considered to be a key factor for poverty reduction in rural areas [3-7]. In an era of increasing demand for food and agricultural products, improving rural households' market participation is of utmost importance and could lead to development of value chains.

Value chain in cassava industry entails converting fresh roots into HQCF, starch, sweeteners, dried chips, high quality meal (*garri and fufu),* and fuel ethanol which will increase income of farmers and enable them get maximum benefit from crop production. Therefore, evaluation of cassava value chain is critical for understanding markets, their relationships, the participation of different actors and the main constraints that limit the growth of the enterprise as well as competitiveness of smallholder farmers.

Consequently, results from value chain study will be used in the development sector to design market oriented interventions and strategies that are beneficial to smallholder farmers in developing countries and Nigeria in particular [8].

It is also important to state that in addition to the common problems faced in cassava value chain such as price fluctuation among others, stakeholders often differ in the extent to which they experience the constraints.

2. METHODOLOGY

2.1 Study Area

The study was carried out in Abia State. Abia State is one of the 36 States in Nigeria. The State lies between longitude 040 45' and 060 07' North and Latitude 070 00' and 080 10' East. It is situated in the south-east geo-political zone of Nigeria and is bounded by Imo State on the West, Ebonyi and Enugu States on the North, Cross Rivers and Akwa-Ibom States on the East and Rivers State on the South. The State has a population density of 580 persons per square kilometre and a population of 2,833,999 persons [9].

The climate of the State is a tropical one and usually humid all year round. The major occupation of the people is farming and the major crops grown are Maize, yam, cassava, rice, vegetable, etc. Livestock kept include, goat, sheep, Pigs, etc. Plantain, palm oil, cocoa and rubber are some of the cash crops produced by the people.

2.2 Sampling Technique

Multi-stage randomized sampling technique was used to select 135 Cassava farmers for the study. During the first stage, three Agricultural zones namely Aba, Umuahia and Ohafia were selected. In the second stage, one local government area was selected randomly from each of the agricultural zones, namely Ikwuano, Ukwa-west and Bende local government areas. In the third stage, three autonomous communities were randomly selected from each of the selected local government areas making the total of nine autonomous communities namely: Ariamusaka, Okwe and Oloko, Asa,

Ozarukwu, Obokwe, Itumbauzo, Umuhu, and Ugwueke. The final stage involved the random selection of fifteen farmers from villages of the selected autonomous communities given a total number of one hundred and thirty-five (135) farmers for the study.

2.3 Method of Data Collection

The primary data was collected directly from the field survey. Secondary information was obtained from books, research reports and journals. The data collection was done by the use of well-structured questionnaires which was administered to the respondents.

2.4 Data Analysis

Multinomial logit regression, Principal Component Analysis (PCA), and Gross margin and Profitability Analysis were used for data analysis.

2.5 Analytical Technique

Gross margin (GM) which is the difference between the Gross revenue (GR) and total variable cost (XPxi) incurred following from [10] [11] is given by:

$$\text{Gross margin (GM)} = QyPy - X_iPx_i \quad (1)$$

$$\text{Net margin (NM)} = QyPy - (X_iPx_i + X_{ii}Px_{ii}) \quad (2)$$

Where: $X_iPx_i + X_{ii}Px_{ii}$= Total cost

Also return on investment was applied to determine the viability of the cassava business. This is given as:

$$ROI = NM/X_iPx_i + X_{ii}Px_{ii} \quad (3)$$

Where:

Qy= Cassava root produced (Kg/ha)
Py = Unit price of cassava produced (N/kg)
QyPy = Total Revenue generated from cassava production (N/ha)
X_i = Quantity of the i^{th} variable input used in cassava production (Kg/ha)
X_{ii} = Quantity of the i^{th} fixed input (depreciated value) (N/ha)
Px_i = Price per kg of the i^{th} variable input (N)
Px_{ii}= Price of the i^{th} fixed input (depreciated value) (N)
X_iPx_i= Total variable cost spent on the i^{th} variable input per hectare
$X_{ii}Px_{ii}$= The total fixed cost spent on the i^{th} fixed input (depreciated value)

To estimate the determinants of market participation in cassava value chain multinomial Logit regression model was employed. The model was chosen because the farmers are here in front of more than two choices. They may decide to participate in the cassava root market; they may also choose to process their cassava into garri thereby participating in garri market and finally, they may decide not to participate at all in the market thereby producing, processing and consuming what they produced. First, they are supposed to choose whether to participate in the market or not. When they choose to participate in the market, they must decide whether it is to sell cassava root or process it into garri. This choice is based on the maximization of producer's utility subject to technical and institutional factors.

The function is presented in the following form:

$$\text{Max } U = U(C_j, B_{fj}, B_{ij}, X_{v)} \quad (4)$$

C_j= Represents the consumption of goods produced by the household.
B_{fj} = Represents the net gains from participation in cassava root market
B_{ij} = Represents the net gains from participation in garri market
X_v = Represents all other factors that may affect the utility

In utility function, the amount of goods j which is consumed or sold shall not exceed the amount produced. According to [12], producers make their decision to participate or not in the market based on options that maximizes their utility.

In general for an outcome variable with j categories, let the j^{th} participation choice that the i^{th} household chooses to maximize its utility take the value 1 if i^{th} household choose j^{th} market choice and 0 otherwise. The probability that a household with characteristics X chooses a choice of market to participate j, Pij is:

$$P_{ij} = \frac{\exp(X_i\beta_j)}{\sum_{j=0}^{j}\exp(X_i\beta_j)}$$

$$j = 0, \ldots, 2 \quad (5)$$

With the requirement that

$$\sum_{j=0}^{j} P_{ij} = 1, \text{ for any i}$$

Where:

P_{ij} = probability representing the i^{th} respondent's participating in category j market.
X_i = predictors of response probabilities, which include; age, sex, marital status, household size, years of education, experience, distance to the market, market information, cooperative membership, farm size, non-farm income, transaction cost and output.
β_j = covariate effects specific to j^{th} response category.

Market participation choices: cassava root market, garri market, and no participation in either market (i.e producing, processing and consuming what you produced) have been set as the dependent variable. The non-market participation is set as a reference; therefore it takes the value of zero (0), cassava root market participation takes the value of one (1), garri market participation takes the value of two (2).

With no participation in either market as the reference category, appropriate normalization that removes an indeterminacy in the model was assumed that $\beta = 0$ so that $\exp(X_i\beta_j) = 1$, implying that the generalised equation (5) above is equivalent to

$$P_r\left(y_i = \frac{j}{X_i}\right) = P_{ij} = \frac{\exp(X_i\beta_j)}{\sum_{j=0}^{j} 1+\exp(X_i\beta_j)} \quad (6)$$

For j = 0, ..2 …… j and,

$$P_r\left(y_i = \frac{1}{X_i}\right) = P_{ij} = \frac{1}{\sum_{j=0}^{j} 1+\exp(X_i\beta_j)} \quad (7)$$

Where: y = A polytomous outcome variable with categories coded from 0……J

To identify the major constraints to farmers' participation in cassava value chain, Factor Analysis (PCA) with varimax – rotation and factor loading of$\pm$0.30 was used. Therefore, variables with factor loading of less than $\pm$ 0.30 and variables that will load in more than one factor will be discarded [13].

The model is given as:

$$\begin{aligned} Z_1 &= a_{11}X_1 + a_{12}X_2 + \ldots a_{1n}X_n \\ Z_2 &= a_{21}X_1 + a_{22}X_2 + \ldots a_{2n}X_n \\ &\vdots \\ Z_3 &= a_{31}X_1 + a_{32}X_2 + \ldots a_{3n}X_n \\ Z_n &= a_{n1}X_1 + a_{n2}X_2 + \ldots a_{nn}X_n \end{aligned} \quad (8)$$

Where

$Z_1, Z_2 \ldots Z_n$ = Principal Components
$a_1 - a_n$ = Factor loadings or Correlation Coefficient
$X_1, X_2 \ldots X_n$ = Unobserved underlying factors constraining farmers' participation in cassava value chain across the state.

3. RESULTS AND DISCUSSION

3.1 Profile of Farmers in Cassava Market Participation and Value Chain

Table 1 showed that the average aged of the respondents was 44.19. Majority of the respondents (45.93%) were between the ages of 36-45 years. Based on the result, it can be concluded that respondents between the age ranges of 36-45 years were mostly involved in cassava value chain and market participation. This implies that market participation could be influenced by the age as young and active members of the household were the ones involved [14].

Results from Table 1 also showed that 57.04% of the respondents were female and 42.96% were male. Majority of cassava farmers in Abia state are women. This finding is supported by other studies that have noted that cassava production and marketing are mostly dominated by female than male [14,15]. 28.89% had household size of 1-3 to persons, 46.67% of the respondents had household size of 4-6 persons while 17.78% of the respondents had 7-9 persons and 6.67% of the respondents had 10-12 persons in their households.

The result showed that majority (42.22%) of the respondents had secondary education as their highest level of education. Higher level of education contributes significantly to decision making of the farmer to participate in the market [16-19]. According to the table, (44.44%) of the respondents had farming experience of between 7-11 years. Farming experience is expected to enhance market participation as those who had stayed long in farming tend to be more efficient, have better knowledge of the markets, better knowledge of efficient allocation of resources and market situation and thus expected to participate more in the market [20,18]. It can also be concluded that the majority (51.11%) had farm size between 0.5-2 hectares. This implied that farmers in the study area are mainly medium scale farmers operating on less than or equal to 2.64 hectares of farmland size. This could be as

a result of the tenure system which predominant in the study area. Also, majority (63.70%) of the respondents had access to market information therefore majority had better knowledge of the market and knew the benefit of market participation.

Table 1. Profile of farmers in cassava market participation and value chain

Variable	Frequency	Percentage
Age		
25-35	36	26.67
36-45	62	45.93
46-55	7	5.19
56-65	18	13.33
65 & Above	12	8.89
Sex		
Female	77	57.04
Male	58	42.96
Household size		
1-3	39	28.89
4-6	63	46.67
7-9	24	17.78
10-12	9	6.67
Level of education		
No formal Education	13	9.63
Primary	22	16.30
Secondary	57	42.22
Tertiary	43	31.85
Farming experience (Years)		
2-6	21	15.56
7-11	60	44.44
12-16	28	20.74
17-21	15	11.11
22-26	11	8.15
Farm size		
0.2-2	69	51.11
2.01-4	41	30.37
4.01-6	25	18.52
Access to market information		
Access	86	63.70
No access	49	36.30

**Source: Field Survey, 2015*

3.2 Cassava Market Options Available to Farm Households

The cassava output market option(s) available to farmers is presented in Table 2. The Table showed that 62.96% of the farmers' participated in the processed *garri* market while 37.04% cultivated cassava mainly to be sold in unprocessed form. Five market options available to the farmers include farm gate, local market, contract sales, processed to *garri,* and processed to *fufu*.

The marketing channels taken by cassava farmers reviewed that 42.96% processed their cassava to *garri*, 20% processed their cassava to *fufu*, another 20% sold their cassava at the local market, 12.59% sold their cassava at the farm gate and a meagre 4.44% sold their cassava through contract sale. The result showed that processing of cassava into *garri* and *fufu* is common and among cassava farmers in the study area and the participation in cassava sale at the farm gate, local market and through contract sales may be due to lack of processing facilities and high transaction cost. This is supported by [21] who noted that although the price offered to non-market participation is often non-competitive, farmers opt for this due to lack of processing facilities, storage facilities and high transaction cost.

Table 2. Cassava market options available to farmers

Market outlet	Frequency	Percentage
Farm gate	17	12.59
Local market	27	20.00
Contract market	6	4.44
Processed to *garri*	58	42.96
Processed to *fufu*	27	20.00
Total	135	100.00

**Field survey, 2015*

3.3 Net Margin and Profitability Analysis of Cassava and Garri Markets

The net margin and profitability analysis is presented in Table 3. Result from the Table showed that total revenue of ₦42616.95 was derived from 2.66 tonnes of cassava sold at ₦16000 per tonne. The total variable cost made up of cost of land preparation, cost of planting, cost of weeding, cost of fertilizer application, cost of harvesting, cost of stem, fertilizer cost, transportation, and market charges stood at ₦21070.35. The total fixed cost was ₦14287.45 therefore given a total cost of ₦25357.80.

Gross margin was ₦21546.60 while net margin was ₦17259.15 therefore providing evidence of profitability of cassava marketing in the area. The return on investment was 1.68 indicating that for every ₦1 invested, ₦1.68 is earned. This result agrees with the findings of [1,10,22-25] who found that for every ₦1 invested in cassava production and marketing more than ₦1 is returned as an added value to initial money invested.

Table 3. Net margin and profitability analysis for cassava marketers

Variables	Unit	Price	Quantity	Value
Total revenue	Tonnes	16,000	2.66	42,616.95
Variables costs				
Land preparation	Man-day	1,200	3.5	4200.00
Planting	Man-day	1,200	3	3600.00
Weeding	Man-day	1,200	3	3600.00
Fertilizer application	Man-day	1,200	2.5	3,000.00
Harvesting	Man-day	1,200	2.3	2758.95
Cost of stem	Bundles	250	4.5	1125.00
Cost of fertilizer	Bag	1858	0.8	1486.40
Transportation	-	200	4.5	900.00
Market charges		5	80	400.00
Total variables costs				21070.35
Total fixed costs				4287.45
Total cost (TFC+TVC)				25357.80
Gross margin (TR – TVC)				21546.60
Net margin (= TR – TC)				17259.15
Return on investment				1.68

**Field Survey, 2015*

3.4 The Net Margin and Profitability Analysis for *Garri* Marketers

The result from Table 4 showed that the total Revenue from the sale of garri was ₦141576. Total cost was 59924.7, comprising of total variable cost of 51837 and fixed cost of 8087.7. On the average a *garri* marketer made a gross margin of ₦89739 and the net margin of ₦81651.3. The return on investment in *garri* marketing is 2.36. This showed that for every ₦1 invested in *garri* marketing, a return of ₦2.36 is earned. This is an indication that participation in cassava processing into *garri* and marketing is very much profitable and viable than unprocessed cassava sales.

This finding is in consonant with studies which inferred that a basin of cassava purchased at ₦500 and processed into *garri* has the capacity to generate ₦5000, thereby creating cash value addition of ₦4500 through improved processing technology [1,24].

3.5 Determinants of Farmers Participation in Cassava Value Chain

The determinants of farmers participation in cassava value chain is presented in Table 5. The results of the Multinomial Logit shows that marital status, years of education, distance to the market and farm size significantly influenced participation of farmers in cassava market while age, marital status, household size, years of education, distance to the market, market information, farm size, transaction cost and output significantly influenced farmers' participation in *garri* market.

The coefficient of marital status was positive and significant for participation in cassava market and garri market respectively at 10% probability level. This implied that more married people participate in cassava market than others. Married household heads are more likely to participate in cassava production, processing and marketing because of the need to increase the family income. This is consistent with the work of [23] who suggested that activities involved in cassava production on one side requires support of household labour and on the other side, the enterprise generates attractive returns enough to help households cushion the effect of food and financial insecurity associated with married life.

Age was negative and significant at 5% for participation in *garri* market. This implied that the older the individual the lesser he participates in garri market. In other words, younger people are more engaged in cassava processing and marketing than cassava production. This finding is consistent with [26] who found that as age increases there is a decrease in participation in food market.

The coefficient of household size is positive and significant at 10% probability for participation in *garri* market. This indicates that the higher the household size the more the tendency to participate in *garri* market. This is contrary to the

findings of [16] who posited that an increase in household size will reduce the proportion of the farm produce offered for sale, but however consistent with [26] who found out that a unit increase in the household size will probably lead to 0.02% increase in market participation.

Level of education was positive and significant for cassava market participation and *garri* market participation at 5% respectively. The implication is that the higher the education of cassava farmers, the higher the participation in cassava and *garri* market. Level of education gives the household ability to process information and allows farmers to have better access to understanding and interpretation of information. This finding is in line with the work of [27] who contend that higher education level is important as it is likely to lead to the reduction of search, screening and information cost.

Distance to the market was negative for cassava market and *garri* at 10% respectively. This is as expected, since close proximity to market will offer more opportunity to engage in cassava and *garri* market. This is consistent with work of [28,29] who noted that the nearer the farmer is located to the market, the more tendency of engaging in a market, as it's easier to venture into business when one is close to the market.

The coefficient of market information was positive and significant for participation in *garri* market only at 10%. Improved information sources involved in value chain will result in active participation in *garri* market.

The coefficient of farm size was positive and significant for cassava market and *garri* market at 10% respectively. Implying that the larger the size of the land the household uses the higher the production levels are likely to be and also the higher the level of market participation. In other words, as the farm size increases the participation of farmers in cassava and *garri* market increases as well. This is consistent with the work of [23,27].

Transaction cost was negative and significant for cassava and *garri* market at 10% and 5% respectively. This is in line with a priori expectation, transaction costs are hypothesized to impede market participation because they impose extra cost burdens to the efficient conduct of the market. This is however contrary to the findings of [21] but consistent with the work of [27].

Table 4. Net margin and profitability analysis for *Garri* marketer

Variables	Unit	Price(₦)	Quantity	Value(₦)
Total revenue	Kg	160	884.85	141,576.00
Variables costs				
Land preparation	MD	1,200	4	4800.00
Planting	MD	1,200	4	4800.00
Weeding	MD	1,200	3	3600.00
Fertilizer application	MD	1,200	3	3600.00
Harvesting	MD	1,200	12	14400.00
Cost of stem	Bundles	250	6	1500.00
Cost of fertilizer	Bags	1858	1	1858.00
Loading	Kg	2.02	475	960
Offloading	Kg	1.98	475	940
Transportation	Kg	3.75	475	1779
Peeling	Kg	2.00	475	950
Grating	Kg	2.21	475	1050
Toasting	Kg	2.42	475	1150
Cassava tubers	Kg	20	475	9500
Feeding				380
Market charges		1.2	475	570
Total variable costs				51837
Total fixed costs				8087.7
Total cost (TFC+TVC)				59924.7
Gross margin (TR – TVC)				89739
Net margin (= TR – TC)				81651.3
Return on investment				2.36

**Field Survey, 2015*

The coefficient of cassava output was positive and significant for *garri* market at 5%. The positive and significant relationship implied that the higher the output, the more probability of participating in *garri* market. This finding is in line with the work of [27,17,16] who observed a direct relationship between output and market participation.

3.6 Constraints to Farmers' Participation in Cassava Value Chain

Table 6 showed the major constraints that influenced participation of farmers' in cassava value chain categorized into two components. The components are social and financial component. Based on the factor loading, the factor 1 components were extracted: poor coordination among actors in value chain (0.3721), High cost of cassava tubers (-0.3333), lack of storage facilities (-0.3978), poor road network (-0.3281) and poor access to market information (0.4231). Poor coordination among actors in the value chain is strongly influenced by market participation decision of cassava farmers which is likely lead to poor production, processing and marketing of cassava products. High cost of cassava tubers is likely to influence price of cassava products as well as profit of the farmer. Poor road network affects the transportation system in the locality which in turn impedes the supply of agricultural inputs and distribution of cassava product to potential buyers; it adds marginal cost to the total cost incurred by the farmers and also, it leads to inefficiency and poor performance in cassava and *garri* market. Lack of storage facilities is a major problem identified by the farmers. A common problem with Nigeria agriculture is the problem of storage facilities. This finding is collaborated by [24] who observed that poor storage facilities increases the risk associated with agricultural production. According to [30], improved market information will result to rapid spread of cassava processing into garri and possibly increase market demand and participation. Analysis of the result in Table 5 showed that the major financial constraint/factor militating against market participation and cassava value chain of farmers based on kaiser's loading were high cost of processing (0.4409), high transaction cost (0.3721) and price fluctuation (0.3098). [31] noted that high cost of processing facilities is the major problem of agricultural production in Nigeria which has continued to hamper the growth of agriculture and increase the processing cost of the farmer.

Table 5. Multinomial logit estimate in the determinants to farmers market participation in cassava value chain

Variables	Cassava market			*Garri* market		
	Coeff.	Std. err	P-value	Coeff.	Std. err	P-value
Age	-0.0442	0.0707	0.532	-1.5249	0.1444	0.005**
Sex	-0.3259	0.7314	0.656	-0.8334	1.4866	0.575
MS	1.2651	0.6883	0.066*	3.3799	1.5140	0.026*
HHZ	-0.0474	0.2169	0.827	2.1636	0.3846	0.011*
YRSEDU	0.4850	0.1714	0.005**	1.1144	0.3220	0.001**
EXP	0.0539	0.1433	0.707	0.0969	0.3222	0.764
DSTMRK	-1.4618	0.6518	0.025*	-2.4857	1.0761	0.021*
INFOMRK	0.4438	0.8468	0.600	4.2193	1.7885	0.018*
COOPMEM	0.7339	0.7075	0.300	0.8285	1.3701	0.545
Farm size	0.7536	0.3200	0.019*	1.2488	0.5102	0.048*
NFI	-0.0001	0.0001	0.307	0.0001	0.0153	0.111
T. cost	-2.5617	0.6518	0.027*	-3.8617	0.7778	0.003**
Output	1.0539	0.5433	0.406	2.2310	0.4278	0.006**
Constant	-3.2601	2.5521	0.001**	-13.4755	6.0348	0.026*
Number of observation	135					
Log pseudo likelihood	-42.0991					
LR $Chi^2(22)$	205.31					
PROB> Chi^2	0.0000					
Pseudo R^2	0.7092					

*Note: ** and * represent 5% and 10% levels of significance respectively*

Table 6. Major constraints to farmers' participation in cassava value chain

Constraints	Factor 1	Factor 2
Lack of extension services	**-0.4719**	**0.3330**
Lack of standardization & measurement	0.1946	-0.0913
Poor coordination among actors in value chain	0.3721***	0.2161
High cost of processing	0.2284	0.4409***
High cost of cassava tubers	-0.3333***	0.2879
Lack of storage facilities	-0.3978***	-0.2670
Lack of formal education	0.2330	0.2879
High transaction cost	0.2161	0.3721***
Price fluctuation	-0.0790	0.3098***
Inadequate finance	0.3967	0.4069
Labour scarcity & supply problem	0.6585	-0.4618
Inadequate processing materials	0.0593	-0.0693
Poor road network	-0.3281***	-0.0438
Poor access to market information	0.4231***	0.0853

**Note: factor loading of ±0.30 is used at 10% overlapping variance*
Variables with factor loading of less than 0.30 were not used
**** Variables that load in more than one factor were discarded*

4. CONCLUSION

The study examined the market participation and value chain of cassava farmers in Abia state Nigeria. The result, showed that five (5) cassava market output options were available to farming households, while 62.96% preferred to dispose their cassava output in processed form (*garri*, *fufu*), 20% preferred to dispose their cassava output at the local market, 12.59% of respondents preferred to dispose their cassava output at the farm gate, 4.44% preferred to dispose their output on contractual arrangements.

The results of the net margin and profitability analysis of cassava value chain showed profitability is higher along the value chain where in this case the cassava is processed into *garri* or *fufu* than when it is sold unprocessed.

The results of the multinomial logit model showed that marital status, years spent in school, distance to market and transaction cost significantly affected participation in cassava market while age of the respondents, marital status, household size, years spent in school, distance to the market, market information, farm size, transaction cost and quantity of cassava produced significantly affected participation in *garri* market.

It was also found that the major constraints to farmers' participation in cassava value chain in the study area 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 tubers.

The study recommended that factors such as cassava product price, market information, cooperative membership and infrastructural facilities should attract policy attention to give boost to cassava and *garri* market participation.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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