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Effects of the Activities of Cooperative Societies on Cassava Product Prices in Orhionmwon Local Government Area, Edo State, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author GOA designed the study and managed the data collection process. Author PAE wrote the first draft of the manuscript and the literature searches. Author CEM performed the statistical analysis and interpreted the results of the findings. All authors read and approved the final manuscript.

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ABSTRACT

This study dealt with the analysis of the effects of cooperative activities on cassava product prices in Orhionmwon LGA of Edo State, Nigeria. The socioeconomic characteristics of respondents, factors that affect cassava prices, effect of price fluctuation on farmers' attitude to production, activities carried out by cooperative societies and their effects, both subjective (farmers' perception) and objective (financial valuation) were examined. Primary data was utilized using structured questionnaire which was administered to 120 respondents who were selected using simple random sampling technique from 30 cooperatives obtained from a list of collected from the Ministry of Commerce and Industry, Edo State. However, only 114 questionnaire retrieved were suitable for analysis. Value added approach was used to analyze the actual price changes caused by activities of cassava cooperative prices on market prices of cassava products. The data showed that

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seasonality, consumer demand, product quality, road network, cooperative activities, economic shocks, product nature, product form and consumer culture were the significant factors affecting cassava prices in the area. Farmers were seen to be affected by price changes, especially price increase which caused them to increase production. Activities of cooperatives were seen to include bulk sales, value addition, bulk purchase of inputs and buying off members. Value addition activities found to be significant include group processing, packaging, transport and storage. The effect of bulk sales on product prices was subjectively perceived to be significant while price change caused by bulk sales and group processing into garri, fufu, flour, starch and cassava chips were found to be significant with value added means of ₦ 112.4, ₦ 475.4, ₦ 1479.4, ₦ 1390.3, ₦ 263.2, ₦ 3277.1 respectively for 100 kg bags of cassava product. The study therefore recommended educating and advising farmers on the benefits of joining cooperatives to draw more patronage and participation to the cooperative societies. Also cooperatives should utilize better and improved technologies and perform more value addition activities to stabilize prices for farmers and improve their income.

Keywords: Cassava product price; cassava price fluctuation; cooperatives societies and value addition.

1. INTRODUCTION

Cassava (*Manihot esculenta*, *Crantz*) is also called Tapioca, Manioc, amongst other in various parts of the world and has its origin in Brazil where it is the major staple of the people. Cassava is a very significant food crop in Nigeria and most of the tropics [1]. In sub-Saharan Africa, cassava is mainly a subsistence crop grown for food by small scale farmers who sell the surplus. It grows well in poor soils and provides food security for long periods since it grows underground and can be harvested between six months and three years after planting, although nutritional composition may differ with age (International Institute of Tropical Agriculture [5].

[5] estimated that in 2007, Nigeria produced 46 million tons of cassava, while [3] estimated that Nigeria produced 57 million tons that in 2015, making it the largest producer in the world. Out of this, only a little is exported. Cassava requires much less labour than all other staple crops (21% in working days compared to maize, yam and rice) except post-harvest when timely processing into storable form becomes necessary. Also, it has a unique characteristic in that it can be continuously harvested and marketed throughout the year. Consequently, there is a fairly consistent supply of product, available for immediate processing at a predictable price throughout the year. “Nearly every person in Africa eats around 80 kg of cassava per year. It is estimated that 37% of dietary energy comes from cassava,” [5]. Daily consumption of cassava per capita in Nigeria was estimated at 226.93 gram per person per day [7]. This indicates a very high demand for cassava which is produced in very high amounts in Nigeria. ‘Cooperative businesses are community owned private enterprises that combine consumers with owners, and buyers with sellers in a democratic governance structure. Cooperatives solve the general economic problem of over or under production, business uncertainty and excessive costs. Cooperatives address market failure and fill gaps that other private businesses ignore such as: provision of access to affordable credit and banking services’ [10]. Farmer cooperative societies are organizations in which individual farmers voluntarily organize themselves and their resources to provide themselves and others with goods and services through democratic control and for mutually shared benefits [6]. The International Cooperative Alliance (ICA) defined a cooperative as an “autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise.” The introduction of modern cooperative business into Nigeria dates back to the year 1935 following the acceptance by the Colonial Administration, of the Strickland, C. F. report on the prospects of cooperatives in Nigeria. After seventy four years of operation, the cooperative movement in Nigeria can boast of a membership of more than five million persons distributed in more than thirty six thousand cooperative societies (Federal Ministry of Agriculture and Rural Development) as cited [13] Cooperative societies by virtue of their communal power are able to influence the market in a way no individual can, to ensure better incomes for their members. Also, cooperatives provide more efficient technology for processing and improve product disposal by

inducing bulk sales of high quality produce. Despite the very high demand for cassava product in Nigeria, and a relative supply, the prices of cassava products vary massively from place to place in relatively small areas such as local government areas, and from time to time. The prices can increase or drop quite suddenly for reasons that are not readily apparent. The question therefore is whether the cooperatives in Orhionmwon LGA affect the prices of cassava and its products. Based on the perceived problems, the study sought to find out the following: What are the socioeconomic characteristics of cassava farmers in the area? What are the factors that affect cassava product prices? How does price fluctuation influence farmers' attitudes to production? What are the activities of the cooperative societies that add value to cassava products? What are the perceived effects of the activities of cooperative societies on market prices of cassava products? Are cooperative societies involved in other activities that aid price control of cassava products? This study therefore sought to profile the socioeconomic characteristics of cassava farmers who are members of cooperatives, identify the factors that affect cassava product price, examine respondents' perception of the effect of price fluctuation on farmers' attitudes to production, identify activities of cooperative societies that add value to cassava products, and assess the perceived effect of cooperative societies' activities on market prices of cassava products. The following hypotheses were tested for the study:

Ho_1: There are no significant differences between the respondents' opinion on the factors that affect cassava product prices in the study area.

Ho_2: There are no significant differences between the respondents' perception on the effect of price fluctuation on farmers' attitude to production.

Ho_3: There is no significant difference between the respondents' perceived effect of cooperative activities on market prices.

2. RESEARCH METHODOLOGY

The study was carried out in Orhionmwon Local Government Area of Edo State, Nigeria. Edo State is made up of eighteen Local Government Areas, and Orhionmwon Local Government Area was chosen for the study because of the high cassava production in the area. Orhionmwon has an area of 2,382 km^2 and a projection population of 210,588183 in 2011 [9]. Its headquarters is in the town of Abudu. The study was limited to cassava farmers affiliated to a cooperative, the following cassava products: garri, starch, fufu, chips, flour; and the following activities: bulk sales, bulk purchase of inputs, buy off members, group processing, packaging and transportation. Primary data were collected using copies of structured questionnaire. Orhionmwon LGA consists of 59 communities. A list of registered cooperative societies was obtained from the Department of Cooperatives, Ministry of Commerce and Industry, Benin City. Out of these, 30 cooperatives which were involved in activities relating to cassava production, marketing or input supply were purposively selected. Four members were then selected using simple random sampling technique from the list of members in each cooperative making a total of 120 respondents, however only 114 of the respondents' questionnaire retrieved were suitable for analysis.

The type of cooperative society was measured with five main cooperatives being highlighted: farm credit and savings society (Esusu), farm supply and services cooperative (multipurpose cooperative), marketing cooperative, food/ consumer cooperative and utilities cooperative. Factors that determine cassava prices were: season: wet, or season: dry, consumer demand, quality of the product, type of road network, cooperative activities, individual price fixers, economic shocks (such as petrol price changes, government policies etc.), nature of the product, form of the product and culture of the consumers. Cooperative activities measured include: bulk sales, bulk purchase of inputs, buy off members, group processing, packaging, transport and storage. Group processing products measured include: garri, fufu, cassava flour, starch and cassava chips.

Data generated were subjected to different forms of analysis such as descriptive statistics such as frequency counts, percentages and means to describe the various socioeconomic characteristics Information from a 5-point Likert scale was used to describe the respondents' opinion on the factors that affect cassava prices. The differences in opinion strengths were assessed using the Chi-square test of significance to determine if the differences are not due to chance. Information from a 5-point Likert scale was also used to describe the respondents' perception on the effect of price fluctuation on farmers' attitude to production. Chi-

square test was used to assess the differences in the strengths of opinion for statistical significance. Descriptive analysis was used to assess the observed activities of cooperative societies that add value to cassava products. Information from a 4-point Likert scale was used to describe the respondents' perceived effect of cooperative activities on market prices. Value added approach was used to assess the actual price change caused by cooperative activities, using the formula,

Value added = Value of Processed cassava – Value of Unprocessed cassava.

This was done for each of the cooperative activities, and the value added means were then tested for significance using the Student's t-test.

$$t = \frac{\hat{X}_1 - \hat{X}_2}{SX_1X_2}$$

$\hat{X}_1$ = Mean of value of products with cooperative influence

$\hat{X}_2$ = Mean of value of products untouched by cooperative activity

SX_1X_2 = Standard deviation of X_1 and X_2

3. RESULTS AND DISCUSSION

3.1 Socioeconomic Characteristics of the Respondents

The Socio-economic characteristics of respondents are presented in Table 1. The socio-economic variables considered for the study include; sex, age, marital status, family size, number of dependants, educational status, years of experience, farm size and yearly income.

The males constituted about 60 percent of the sampled farmers while the remaining 40 percent were females. The high percentage of female members was probably due to the fact that cooperative membership is free from gender, political and religious considerations. This collaborates [11] who reported that cassava production has a high proportion of female involvement due to its use as a household subsistence crop allowing women to participate actively in it to feed their families.

Age of the respondents showed that most of the cooperative members were distributed almost evenly above 20 years of age. Only about 6% were below 20 years. 36 – 50 had the highest percentage (37%), followed immediately by those above 51-65 years (29%) and then 20 – 35 years (28%). The average age of the respondents was 41 years. This is in line with membership requirements for agricultural cooperative societies, with age not below 16 years although agricultural activities are generally strenuous, and the frequency of members above fifty is slightly unexpected. This finding agrees with [4] who reported that cassava farmers fall into the age range 20 to 50 years as this is the age range for active participation in cassava production. Ages below and above this range are usually rare as cassava requires people capable of engaging in strenuous activities.

The marital status of the respondents showed that about 73 percent of them were married. The rest 27% were unmarried either single, divorced or widowed. [14] explained that the contribution of marital status to agricultural production can be explained in terms of the supply of agricultural family labour. Family labour would be more where the household head is married and vice versa. Majority (54%) of respondents had household size less than 5 persons. This is closely followed by household size of 6 – 10 persons (39%). The remaining 7% percent had household size above 10 persons. The average family size for the study was about 5 persons. The large proportion of people with less than five household members may be related to the high proportion of literacy encountered among respondents in the area. Also, 83% of respondents also had less than five dependants. The greater percentage than the household size indicates that a great percentage of respondents lived in households with more than one income earning member. Respondents with 6 – 10 dependants accounted for 15%

The educational background of the respondents showed that about 8% had no formal education. About 27% had primary education, 45% had secondary education and 20% possessed tertiary education. In summary, about 92% of the cooperative farmers were literate that is, possessing primary, secondary or tertiary education. The level of education among the respondents was quite high when compared with the literacy in English values recorded for the South-western and Northern regions which recorded only 69.1 percent and 43.4 percent

Table 1. Socio-economic characteristics of respondents

Variables	Frequency (n=114)	Percentage (%)	Mean
Sex			
Male	69	60	
Female	45	40	
Age (years)			
<20	7	6	
20 - 35	32	28	
36 - 50	42	37	41 years
51 - 65	33	29	
Marital status			
Married	83	73	
Unmarried	31	27	
Family size			
<5	61	54	
5 – 10	45	39	5 persons
>10	8	7	
Number of dependants			
<5	95	83	
5 – 10	17	15	
> 10	2	2	
Educational background			
Illiterate	9	8	
Primary	31	27	
Secondary	51	45	
Tertiary	23	20	
Years of experience			
<10	46	40	
10 – 20	29	25	16.5years
>20	39	35	
Yearly income (N)			
<100,000	19	17	
100,000 – 250,000	36	32	
>250,000	59	51	
Farm size (hectares)			
< 4	48	42	
4-12	50	44	6.72
12-20	11	10	hectares
Above 20	4	4	
Type of cooperative			
Farm credit and savings Society	33	28.95	
Farm supply/ multipurpose Cooperative	61	53.51	
Marketing cooperative	20	17.54	
Food cooperative	Nil	Nil	
Utilities cooperative	Nil	Nil	

Source: Field survey, 2015

respectively [8]. [4] reported that the relatively higher level of education may encourage acceptance of innovations as a way of raising farm productivity and income.

The results also showed that about 40% of the respondents had been in cassava production for less than 10 years. About 25% have worked for between 10 – 20 years in cassava production, while up to 35% have experience of more than 20 years. The mean years of production experience for the area was 16.5 years. This indicated that most of the cassava farmers in the study area have good knowledge of cassava farming signifying that, the respondents had adequate knowledge and experience in the production of the crop and therefore their long stay in the business indicates they usually had

good returns that keeps them in the venture. Experience of farmers is the level of involvement in farming activities not his involvement in cooperative society. [2] observed that the longer the years of farming experience, the more efficient the farmer becomes because the number of years a farmer has spent in the farming business may clearly give an indication of the practical knowledge he has acquired on how to cope with the inherent farm production, processing and marketing problems leading to higher levels of efficiency.

Farm size of cooperative farmers in the local government area showed that 42% had less than 4 hectares of farmland. About 44% worked on between 4 – 12 hectares of farmland. 10% had 12 – 20 hectares while the remaining 4% had more than 20 hectares. The mean farmland for the cooperative members was found to be 6.72 hectares. The survey on farm income of respondents showed that about 17% had less than ₦100, 000.00 as annual farm income. About 32% had between ₦100, 000.00 and ₦250, 000.00 as annual farm income. Also, 51% had above ₦250, 000.00 as annual farm income. This also correlates with their large farm sizes. Farmers in the study area were obviously operating above subsistence level. Their levels of income might also be due to their highly literate educational status.

About 28.95% (33) of the 114 respondents were members of savings and credit societies or Esusu. 53.51% of the respondents (61) were members of multipurpose cooperative societies. 17.54% (20) were members of marketing cooperatives. There were no food cooperative or utilities cooperative members among the ones sampled.

3.2 Factors that Affect Cassava Product Prices

The respondents' perceptions of the factors that affect cassava product prices are presented in Table 2.

The data from the respondents shows that the following factors were ranked as significant in their effect on cassava product prices: road network (4.4), economic shocks (4.4), consumer demand (4.04), seasonality (3.97) (prices being higher in the dry season and lower in the wet season), product quality (3.9), product nature (3.8), product form (3.6) and cooperative activities (3.41) respectively. The effects of individual price fixers (2.61) and consumer culture (2.9) on cassava product prices were perceived as insignificant. These agree with the findings of [12] which noted that cassava prices are higher in dry season due to their difficulty to harvest than in the wet season.

The frequencies of opinions were also measured and are presented in Table 3. The differences in all the opinion strengths were found to be statistically significant at 5% level of significance using the Chi-square test of significance with very large calculated chi-square values as shown in the table. The null hypothesis of no significant differences between the respondents' opinion on the factors that affect cassava product prices in the study area is rejected.

Table 2. Respondents' perception of the factors that affect cassava product prices

Factors	Mean	Standard deviation
Road network	4.40*	0.55
Economic shocks	4.40*	0.67
Consumer demand	4.04*	0.62
Seasonality: dry season	3.97*	1.25
Product quality	3.90*	0.87
Product nature	3.8*	1.21
Product form	3.6*	0.85
Cooperative activities	3.41*	0.86
Individual price fixers	2.61	0.86
Seasonality: wet season	2.22	0.94
Consumer culture	2.9	1.48

Source: Field survey, 2015

Strongly agree= 5, Agree = 4, Undecided = 3, Disagree= 2, strongly disagree = 1.

*All figures with * were significant (greater than a mean of 3)*

Table 3. Frequency of opinions about factors that affect cassava product prices

Variables	Percentages (%)					Chi-square value
Factors	Strongly agreed	Agreed	Disagreed	Strongly disagreed	Undecided	
Seasonality: dry	59.7	10.5	16.7	7.9	5.2	116.09
Seasonality: wet	7	7.9	54.4	22.8	7.9	94.16
Consumer demand	21.9	68.4	8.8	0	0.9	184.68
Product quality	29.8	51.8	12.3	4.4	1.7	99.25
Road network	45.6	51.8	2.6	0	0	157.67
Cooperative activity	18.4	45.6	29.0	6.1	0.9	73.89
Individual price fixers	9.6	22.8	51.8	14.9	0.9	86.35
Economic shocks	50.9	43.8	4.4	0	0.9	144.33
Product nature	22.8	49.1	14.1	1.8	12.2	73.19
Product form	18.4	56.1	16.7	7.9	0.9	104.42
Consumer culture	16.7	14.9	11.4	25.4	31.6	15.65

Source: Field Survey, 2015

As can be seen from the table, 59.7% of the respondents strongly agreed that cassava prices were higher in the dry season while only 7% of the respondents strongly agreed that cassava prices were higher during the wet season. Also, 21.9% of the respondents strongly agreed that consumer demand affected cassava prices. While 29.8% of the respondents strongly agreed that quality of cassava product affected cassava prices. With respect to road network 45.6% of the respondents strongly agreed that type of road network affected cassava prices, 18.4% of the respondents strongly agreed that cooperative activities affected cassava prices, 9.6% of the respondents strongly agreed that individual price fixers affected cassava prices, 50.9% of the respondents strongly agreed that economic shocks such as petrol prices, government and policies affected cassava prices, Finally only 22.8% of the respondents strongly agreed that nature of the cassava product affected the prices, 18.4% of the respondents strongly agreed that the form in which the cassava product was sold affected cassava prices and 16.7% of the respondents strongly agreed that the culture of the consumers affected cassava prices. The results from the respondents showed that several factors were seen to affect cassava product prices.

3.3 Effect of Cassava Price Fluctuation on Farmers' Attitude to Production

Table 4 shows the respondents' perception of the effects of price fluctuation on farmers' attitudes to production. Therefore, from the data, respondents increase their production in expectation of future price increase (with a significant mean of 4.18). Uncertain prices do not make farmers want to stop production (2.97); expectation of fall in market prices does not make farmers reduce their production (2.4). However, altogether, farmers are not indifferent to price changes (2.4).

Frequency of opinions about the effects of price fluctuation on farmers' attitudes to production was also measured and is presented in Table 5.

Table 4. Effect of cassava price fluctuation on farmers' attitude to production

Factors	Mean	Standard deviation
Uncertain prices make me want to stop production	2.97	1.25
Production is reduced based on expectation of future price fall	2.40	1.07
Production is increased based on expectation of future price rise	4.18*	0.71
Price changes are not regarded	2.91	1.1

Source: Field survey, 2015

Strongly agree= 5, Agree = 4, Undecided = 3, Disagree= 2, strongly disagree = 1.

*All figures with * were significant (greater than a mean of 3)*

Table 5 shows the respondents' perception of the effects of price fluctuation on farmers' attitudes to production. The results showed that 29.8% of the respondents strongly agreed that uncertain prices makes farmers want to stop production. Also, 11.4% strongly agreed that they reduced production based on expectation of future price fall. A total of 31.6% and 60.5% strongly agreed and agreed respectively that they increased production based on expectation of future market price rise. The majority agree that they increase production because of expectation of future increase in price. Finally, 23.7% strongly agreed that they had no regard for price changes. The chi-square test revealed that all the percentages were significantly different at 5% level of significance. The null hypothesis of no significant differences between the respondents' perception on the effect of price fluctuation on farmers' attitude to production in the study area was rejected.

Therefore, from the data above, uncertain prices do not make farmers want to stop production; expectation of fall in market prices does not make farmers reduce their production; although respondents increase their production in expectation of future price rise. However, altogether, farmers are not indifferent to price changes.

3.4 Cooperative Activities that Add Value to Cassava Product

Value-adding activities performed by the cooperatives and their frequencies are shown in Table 6 revealed that 48.2% of respondents noted that their cooperatives carried out only group processing, 3.5% noted only packaging, 7.9% noted only transportation activities, 4.4% noted only storage activities. 2.6% noted both group processing activities and packaging activities, 10.5% noted group processing, packaging and transportation activities, 5.3% noted group processing and transportation activities only and 0.9% noted group processing and storage activities. It can therefore be seen that group processing was the most common value adding activity performed by the cooperatives in the area, followed by transportation activities and then packaging. Storage activities were not very common.

3.5 Perceived Effects of Cooperative Activities on Market Prices of Cassava Products

The effects of activities of cooperatives on cassava prices were measured both quantitatively and qualitatively.

3.6 Respondents' Perception of Effects of Cooperative Activities on Cassava Prices

Respondents' perceptions of the effects were measured using Likert scores and are shown in Table 7.

The Likert scores show that bulk sales (3.02), group processing (2.5) and joint transportation (2.64) had significant effects on cassava product prices according to the perceptions of the

Table 5. Frequency of opinions about the effects of cassava price fluctuation on farmers' attitudes to production

Variables	Percentages (%)					Chi-square values
Effects	Strongly agreed	Agreed	Disagreed	Strongly disagreed	Undecided	
Uncertain prices makes farmers want to stop production	29.8	19.3	17.5	32.5	0.9	35.56
Production is reduced based on expectation of future price fall.	11.4	21.9	25.4	39.5	1.8	46.70
Production is increased based on expectation of future price rise.	31.6	60.5	6.1	0	1.8	153.98
Price changes are not regarded	23.7	20.2	34.2	21	0.9	33.19

Source: Field survey, 2015

Table 6. Value adding activities of cooperatives

Variables (activities)	Frequency (no)	Percentage (%)
Group processing only	55	48.2
Packaging only	4	3.5
Transportation only	9	7.9
Storage only	5	4.4
Group processing and packaging	3	2.6
Group processing, packaging and transportation	12	10.5
Group processing and transportation	6	5.3
Group processing and storage	1	0.9
None	19	16.7
Total	114	100

Source: Field Survey, 2015

Table 7. Perceived effects of cooperative activities on cassava prices

Effects	Mean	Standard deviation
Bulk sales	3.02	0.81
Bulk purchase of inputs	2.25	1.02
Buy off members	1.55	0.69
Group processing	2.5	0.99
Packaging	2.18	0.95
Transport	2.64	0.97

Source: Field survey, 2015
Greatly= 4, Barely = 3, Don't Know = 2, Not at all = 1.
*All figures with * were significant (greater than a mean of 2.5)*

respondents. The frequencies of respondents' opinions about the effects were also measured and are shown in Table 8.

The result showed that 48.2% believed that bulk sales greatly affected cassava prices. These were found to be significantly different using the chi-square test of significance the various response at both 90% and 95% levels of significance. Also, 27.2% believed that bulk purchase of inputs for members greatly affected cassava prices. These opinion strengths were found to be statistically significant at 90% level of significance but not at 95% for the responses. However, only 1.8% believed that buying produce off members greatly affected cassava prices. These values were also found to be significantly different using the chi-square test of significance at both 90% and 95% levels of significance for the various responses. Meanwhile, 21.9% believed that group processing greatly affected cassava prices. These value were found to be significantly different using the chi-square test of significance at both 90% and 95% levels of significance in comparison to the other values. While 27.3% and 32.5% believed that packaging and transportation respectively greatly affected cassava prices. These value were found to be significantly different using the chi-square test of significance at 90% level of significance but not at 95% when compared to the other values.

3.7 Actual Price Change Caused by Cooperative Activities on Cassava Market Prices

The price change caused by cooperative activities on cassava prices were assessed using the value added approach for the various activities. The value added for the various activities was obtained as the difference between the values added product (processed/ sold in bulk through the cooperative) and the raw produce (without value addition i.e. individually sold produce or raw cassava).

The value added means for 100 kg units were as follows:

1. Bulk sales: N112.4
2. Group Processing:
    a. Garri:N475.4
    b. Fufu: N1479.4
    c. Flour: N1390.3
    d. Starch: N263.2
    e. Cassava chips: N3277.1

Table 8. Frequencies of respondents' opinions about the effects of cooperative activities on cassava prices

Variables	Effects (Percentages)			
Activities	**Greatly**	**Barely**	**Not at all**	**Don't know**
Bulk sales	48.2	36	12.3	3.5
Bulk purchase of inputs	27.2	17.5	34.2	21.1
Buy off members	1.8	9.6	57.9	30.7
Group processing	21.9	39.5	32.5	6.1
Packaging	27.2	17.5	34.2	21.1
Transport	27.8	27.1	33.3	11.8

Source: Field survey, 2015

Table 9. Test of significance of the value added means

Variables	Mean (N)	T-value	P-value
Bulk sales	112.4	3.23	0.00162
Garri	475.4	19.4	0.00000
Fufu	1479.4	17.8	0.00000
Flour	1390.3	25.89	0.00000
Starch	263.2	4.17	0.00005
Cassava chips	3277.1	24.13	0.00000

Source: Field survey, 2015

The means were tested for significance using the t- test as shown in Table 9. The t-values for the value added means were as follows:

As can be seen in the table above, all values were statistically different at both 1% level of significance. The null hypothesis of no significant difference between the respondents' perceived effect of cooperative activities on market prices in relation to value addition was rejected. Therefore, the cooperative activities and products listed above have a significant effect on cassava market prices.

4. CONCLUSION

The study concludes that cooperative activities have a considerable effect on cassava product prices. It may also be concluded that although price fluctuation did not seem to affect farmers' decision to produce adversely, an increase in expected price was good incentive for farmers to produce more. This increase has been shown to be achievable by cooperative value adding activities and bulk selling for members has shown a stabilizing effect on cassava prices as they remained relatively constant due to the large bargaining power of the cooperative union. Based on the findings, the following recommendations are made: Cooperatives are a viable means of controlling or stabilizing cassava market prices therefore, farmers are advised to join these societies. Farmers should be educated on the advantages of cooperative membership so as to give higher bargaining power to the cooperatives and increase their incomes. Cooperatives should use improved technologies for processing so as to increase the value added on the cassava products with reduced cost for the farmers. Cooperatives should perform more value adding activities and improve other cost reducing activities such as bulk purchase of inputs, joint transportation, and packaging. Policy makers should look into the possibility of using cooperatives to stabilize prices of agricultural products.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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