Effects of Cassava Processing on Co-Operative Members Income

A Case Study of Cassava Processing Co-Operatives in Obio/Akpor Local Government Area, Rivers State, Nigeria

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Abstract:- This study was carried out to examine the effects of cassava processing on co-operative member's income in Obio/Akpor Local Government Area of Rivers State. A total of 50 respondents from five selected cassava processing co-operative societies in Obio/Akpor Local Government Area were sampled. Data collected through a well structured questionnaire and personal interview. The specific objectives were to evaluate the effects of cassava processing on co-operative members income, identify the socio-economic characteristics of members. Identify the cassava processing methods and products, examine the costs and returns implications on members income and identify possible constraints against cassava processing in Obio/Akpor Local Government Area. data collected were analyzed using descriptive statistical tools, regression analysis was carried out to determine the relationship between cost of processing and revenue of members and the null hypothesis tested. The results showed that a 1% increase in cost of processing will result into (5.282) decrease in annual revenue, as about 86% of variation in annual cost of production were due to cost of processing. There is processing and annual revenue. However, processing into production like starch, pellets increased annual revenue of co-operative members more than garri and fufu. Constraints to cassava processing, includes, lack of finance, high cost of input, lack of access to credit, poor prices, poor power supply etc.

Keywords:- Effects, Cassava Processing, Co-Operative Members, Income.

I. INTRODUCTION

In Nigeria, like most developing countries of the world, about 70% of the populace live in the rural area and the main stay of livelihood of these rural people is agriculture, which contributes about 60% to the national economy and accounting for about 40% of the country's gross-domestic product (GDP) (Akpo Nuvie 2010, Ekine & Onu 2018). Cassava in Nigeria is exclusively, produced by over (350,000) three hundred and five thousand small scale co-operatives for consumption and for family income as stated by Haggblade and Nyembe (2007), Sitko et al (2013).

Nigeria depends on cassava as a major staple food. Over 800,000 tones of cassava was produced for home consumption, however, only about 8% of it is marketed for income. Fresh cassava root is a highly perishable produce with a moisture content of about 70%. It has a shelf-life of about 2-3 days after harvesting as reported by Emeokoma (1994); physiological changes occur rapidly after harvesting due to the high moisture content which leads to rot and decay. The tubers therefore need to be processed promptly after harvesting once the tubers are removed from the soil. Post-harvest losses reported is as high as 50%. However, poor post-harvest handling practices have been known to contribute to losses (Silayo et al 2007).

One of the ways of reducing cassava losses is through processing. Therefore, cassava is processed into various forms in order to increase the shelf life of the products, facilitate transportation and marketing, reduce cyanide content and improve palatability. Processing reduces food losses, and stabilizes seasonal fluctuations in the supply of the crop, storage techniques that ensure longer shelf life for cassava roots should be seen as an important task. The roasting process contributes to reduction in the total cyanide level in the cassava. The roasting of sieved fermented de-watered pulp into gari is done mostly by women in a pan using firewood. In assessing the losses in processing of cassava to gari, an average loss of 6.1% occur, during peeling stage in local centres but with improved technologies is about 4.7% (Akosua and Bani 2007). The grating process recorded average losses of 5.9% at both local and improved technology centres, while the losses at dewatering stage may range from 3.0% to 5.6% for local center and improved technology center respectively. The sifting process recorded about 4.3 – 5.4% losses respectively. The total average loss in cassava processing into gari for local centers and 19.3% while that for improved technology center is 21.5% therefore, new technologies should be designed to reduce or minimize wastages and losses for optimum gains in gari processing.

Cassava processing co-operatives are small and medium scale businesses in Nigeria recognized as catalysts in the socio-economic development of the country. They are veritable vehicles for the achievement of micro-economic objectives in terms of employment generation, low investment cost, the development of entrepreneurial capabilities, indigenous technology as well as stemming or controlling rural-urban milgration, local resources utilization and poverty alleviation.

Always there is anticipation that there will be new and newer, faster and better innovation in the market every day. Therefore, there is need also for indigenous agricultural processing enterprises to be prepared along side corporate organizations taken full advantage of the growing drive and

competitive opportunities so as to compete favourably and improve their income and local economy.

It is based on the above that this study is carried out, with the intent to examine the effects of cassava processing on members income in Obio/Akpor Local Government Area of Rivers State.

The specific objectives of the study were to:
➢ Evaluate the effects of cassava processing on cooperative members income.
➢ Identify the socio-economic characteristics of cassava processing co-operative societies in Obio/Akpor Local Government Area of Rivers State.
➢ Identify cassava processing methods used/adopted to improve income of cooperative members
➢ Examine the constraints of cassava processing cooperatives in Obio/Akpor Local Government Area.

II. METHODOLOGY

A. Study Area:

This study on the effects of cassava processing on co-operatives members income was carried out in Obio/Akpor Local Government Area of Rivers State. The L.G.A was created from Port Harcourt Local Government Area in the year 1989. The three major clans that make-up the Local Government Area are; Evo clan, Apara clan, and Akpor clan. The population of the Local Government Area is about 462,350 persons according to the 2006 census. There are about fifty two (52) communities that make up Obio/Akpor, such communities includes, Rumuodumaya, Rmuepirikom, Choba, Rumuokwuta, Ogbogoro, Ozuoba, Eneka, Elimgbu, Rumuomasi, Rumuomoi, Rumuola, Alakahia, Rukpokwu, Rumuokrusi, Elelenwo etc. The Local Government Area is made up of about 17 wards, with the land mass of about 311.71m2, Obio/Akpor Local Government Area shares boundaries with Etche local government area on the North East, Eleme, Oyigbo at the North South and Okirika and Port

Harcourt Local Government Area on the south while Emohua and Ikwerre are on the west. The indigenous people of Obio/Akpor are Ikwerre, however, her urban and metropolitan status have risen of recent.

B. Population of the Study

The population of this study comprises of the indigenous small and medium cassava processing co-operative societies in Obio/Akpor Local Government Areas of Rivers State. out of these, five (5) indigenous cassava processing co-operatives societies were chosen purposively. From these five cassava processing co-operative societies, ten (10) co-operative members were selected from each of the co-operatives, through a simple random sampling technique. This gives us a total of 50 respondents as our sample population for the study.

➢ *Source of Data*

A well structured questionnaire was administered to the fifty selected respondents. Ten from each of the five cassava processing co-operative societies selected within the Local Government Area.

An interview section was also organized where the executives and principal officers of the various selected co-operative societies were personally interviewed and first hand information gotten from them, which were also subjected to analysis in course of this study.

C. Analytical Technique

For the purpose of analysis, all the primary data collected through the questionnaire and the personal interviews were subjected to descriptive analysis using percentages and means. Inferential analysis was done through a regression analysis which determined the relationship between co-operative members income/ annual revenue and the method or type of processing adopted. A null hypothesis (Ho), that there is no significant relationship between cost of processing and revenue (income) was tested.

III. RESULTS AND DISCUSSION

Variables	Rumuokwuta CPS		Eligbolo CPS		Awalame CPS		Rumuomasi CPS		Sarima CPS		Mean
Gender	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	
Male	2	20	3	30	5	50	2	20	4	40	
Female	8	80	7	70	5	50	8	80	6	60	
Total	10	100%	10	100	10	100	10	100	10	100	
Age											
21 – 30	0	0	1	10	2	20	0	0	0	0	
21 – 40	2	20	8	80	1	10	1	10	0	0	
41 – 50	5	50	1	10	4	40	7	70	8	80	
51 – 60	3	30	0	0	3	30	2	20	2	20	
Total	10	100	10	100	10	100	10	100	10	100	45.5
Marital status											
Married	8	80	6	60	7	70	9	90	10	100	
Single	0	0	2	20	1	10	1	10	0	0	
Divorced	1	10	0	0	0	0	0	0	0	0	
Widowed	1	10	2	20	2	20	0	0	0	0	

Total	10	100	10	100	10	100	10	100	10	100
Edu. Status										
Primary	2	20	1	10	1	10	1	10	1	10
Secondary	8	80	8	80	7	70	6	6	8	80
Tertiary	0	0	1	10	2	20	3	30	1	10
None	0	0	0	0	0	0	0	0	0	0
Total	10	100	10	100	10	100	10	100	10	100

Table 3.1 Socio-economic characteristics of cassava processing co-operative societies in Obio/Akpor LGA.
Source: researcher field survey 2021

A. Discussion

Table 3.1 showed the socio-economic characteristics of the respondents.

From the table 3.1 above, we can see that 34 respondents which is about sixty eight (68%) were female while only 32% are male, this revealed that more women are involved in cassava processing than male, this position has been stressed earlier by Nwike et al (2016).

➤ *Age:*
The data from table 3.1 shows that majority, about 60% of the respondents are of age range between 41 – 50 years, this is followed by 24% who are of age range 51 – 60 years, while only 10% and 6% are 31 – 40 years and 21 – 30 years respectively. This means that the co-operative members are at their peak, age of productivity and could make positive changes as to improve their economic status.

➤ *Marital Status:*
Information from table 3:1 showed that 40 respondents, representing about 80% were married men and women 10%

were widowed while 8% are single, and 2% divorced. This result obviously means that, these married men and women, members of co-operatives societies depended on the revenue and proceeds from their activities for sustenance of their families, especially the members of Sarima cassava processing co-operative society, where all the respondent were all married men and women. This agrees with Tayinde et al (2014) who reported that 85% of cassava farmers were married.

➤ *Educational Status:*
Table 3:1 revealed that most of the respondents about 74% of the members of these five cassava processing co-operatives had secondary education, just as 14% of them had tertiary education qualification, while only 12% had primary education. This goes a long way to show that these co-operative members were enlightened, could understand the benefits of coming together as cooperatives, as well as improving the quality of their produce by processing into cassava flour, gari, starch and other products. This result is in line with the findings of Henri-Ukoha et al (2011), that most rural farmers had one form of education or the other which enhances their production activities.

	Rumuokwuta CPS		Eligbolo CPS		Awalama CPS		Rumuomasi CPS		Sarima CPS	
Mechanical peeler	0	0	0	0	0	0	0	0	0	0
Hydraulic pressure	0	0	0	0	0	0	0	0	0	0
Hammer mills	2	20	0	0	0	0	2	20	1	10
Cassava dryer	2	20	0	0	4	40	0	0	3	30
Cassava chipper	0	0	0	0	6	60	8	80	4	40
Garri fryer	6	60	2	20	0	0	0	0	2	20
Grating machine			8	80	0	0	0	0		
Total	**10**	**100**	**10**	**100**	**10**	**100**	**10**	**100**	**10**	**100**

Local tech of processing										
Drying frying	8	80	6	60	2	20	0	0	6	60
Roasting	0	0	0	0	0	0	0	0	0	0
Fermentation / smoking	2	20			6	60	0	0	0	0
Starch	0	0	4	40	0	0	2	20	1	10
Pellets	0	0	0	0	6	60	8	80	3	30
Boiling	0	0	2	20	0	0	0	0	0	0
Milling	0	0			0	0	0	0	0	0
Total	10	100	10	100	10	100	10	100	10	100

Table 3.2: Techniques and processing equipments adopted Modern/Improved Techniques
Source: researcher field survey 2021

Table 3.2 above showed the processing equipment and techniques of processing adopted by the five cassava processing co-operatives in Obio/Akpor. Information from table 3.2 revealed that majority, about 44% of the respondents adopted dry frying of cassava method, 22% adopted cassava pelleting method, 4% soaking, 16% processed into starch, 4%

adopted boiling, on the other hand 36% used cassava chipper to process their cassava into chips, 20% used gari-fryer, 18% used cassava dryer, 16% used cassava grating machine, 10% used hammer mills in processing their cassava, however, none used hydraulic presser or mechanical peeler, also none adopted roasting, milling method of processing cassava.

Items	Rumuokwuta CPS	Eligbolo CPS	Awalama CPS	Rumuomasi CPS	Sarima CPS
Returns from sale of product	2,010,000	3,600,000	1,650,000	2,800,000	3,200,000
Cost of production	1,120,000	2,580,000	800,000	1,820,000	2,100,000
Net income	890,000	1,020,000	850,000	980,000	1,100,000

Table 3.3 Costs and returns of the five cassava processing cooperative in Obio/Akpor Local Government Area of Rivers State.
Source: field survey 2021

Examination of the costs and returns data from the five cassava processing co-operations as presented in the table 3.3 above showed that, net income was highest in sarima cassava processing society with net income of one million one hundred thousand (1,100,000)naira, this is closely followed by Eligbolo cassava processing co-operative society with a net income of (1,020,000) and Rumuomasi CPS with net income of (980,000) the last net income was recorded by Awalama cassava processing cooperative society with net income of (850,000) eight hundred and fifty thousand naira only. A combined consideration of table 3.2 and 3.3

may explain why, the net income of Sarima and Eligbolo cooperatives were the highest, the data showed that Sarima and Eligbolo co-operatives combined dry-frying of cassava with other products like cassava pellets and starch, which even though their cost of production was high, however, the revenue from the sale of starch and pellets was significant to increase net income where as Awalama cooperative society, whose cost of production were lowest (850,600) who combined dry-trying with fermentation and soaking, but could not attract high revenue from sale of produce.

Variables	Rumuokwuta CPS		Eligbolo CPS		Awalama CPS		Rumuomasi CPS		Sarima CPS	
	Freq Uency	%	Freq uency	%	Freq uency	%	Freq uency	%	Freq uency	%
Inadequate finance	50	100	50	100	50	100	50	100	50	100
Inadequate storage facilities	50	100	48	96	45	90	50	100	50	100
High cost of inputs	50	100	50	100	50	100	50	100	50	100
Inadequate extension service	20	40	28	56	40	80	25	50	30	60
Use of crude implement	45	90	35	70	42	84	28	56	35	70
High perishability of cassava	40	80	48	96	50	100	30	60	26	52
Fluctuation in prices	43	86	40	80	38	76	35	70	30	60
Lack of access to credit	50	100	50	100	50	100	50	100	50	100
High cost of transportation	50	100	45	90	50	100	40	80	45	90
Problem of insecurity	35	70	40	80	48	96	30	60	25	50
High cost of labour	40	80	30	60	20	40	23	46	30	60

Table 3.4 constraints to cassava processing in Obio/Akpor local government area of rivers state.
Source: field survey, 2021

The various challenges or constraints militating against the operations of cassava processing cooperative societies in Obio/Akpor local government area of Rivers State, as presented on the table 3.4 above. The result showed that most prevailing constraint to cassava processing in the study area were, inadequate finance, high cost of inputs, lack of access to credit facilities. The second factors is inadequate storage facilities, this had been identified by other researchers as a very serious constraint to cassava processing Nwakor (2012) reported that inadequate finance, high cost of transport, high cost of input and lack of storage facilities were among the major constraints against cassava processing in Abia State, Nigeria. Other very serious constraint includes high perishability of cassava, fluctuation in the prices of produce, the continues use of crude production and processing implements as well as insecurity challenges within the various communities, this result is also in line with the finding of Zaknayiba and Tanko (2013), who earlier reported negative impacts of lack of access to credit, poor pricing of products, inadequate storage on farmers productivity, profitability and income. In the same vein, Davies et al, (2008), had identified high transportation cost, fresh cassava roots are bulky due to high moisture content, and therefore transportation of the tubers are expensive more so losses may also be incurred due to ineffective linkages between processors, farmers, transporters and marketers, lack of funds, unstable agricultural policies, high cost of inputs, poor power supply, services, inadequate storage facilities are major constraints to cassava processing, (FAO, 2004, Okocha et al 2006, Kendi 2001).

	Unstandardized coefficient	Standardized coefficient			
Model	B	Std. error	Beta	t	Sig.
(constant)	-2349902.913	1117081.707		-2.104	0.126
ACP	5.282	1.187	.932	4.449	0.021

R	R- squared	Adjusted R– square	Std. error Estimate	Change statistics					Durbin Watson
				R-squared change	F change	df.	df.	Sig.f change	
0.932	0.868	0.824	419432	0.868	19.79	1	3	0.021	2.263

Table 3.5 Summary of the regression analysis of the relationship between costs of processing and annual revenue (AR) of cassava processing co-operatives in Obio/Akpor L.G.A. Rivers State.

The table 3.5 above showed representation of the summary of regression analysis of the relationship between annual costs of processing and annual revenue of cassava processing co-operative in Obio/Akpor LGA. The results revealed that an R-squared 0.868, which implied that about 86% of variation in annual cost of production were due to cost of processing. Also the co-efficient of annual cost of processing was (5.282) and it is significant at 0.5 level of significance. This means that 1% increase in annual cost of processing will decrease annual revenue by (5.282).

The result also showed a positive significance F-change value (0.021). Therefore, since the co-efficient value (5.282), significant at 0.5% value of (0.868), we can conclude that, there is significant relationship between annual cost of processing cassava and annual revenue. The null (Ho) hypothesis which stated that there is no significant relationship between cost and annual revenue is hereby rejected and we accept the alternative.

IV. CONCLUSION AND RECOMMENDATIONS

A. Conclusion

The findings from this study revealed among other things that value addition through cassava processing is still vital and profitable to enable members improve their scope of income. It revealed that the level of cost incurred by co-operative members and returns from sale of processed product, as well as the corresponding marginal income from the different processed products, the high returns due to processing cassava into new products like starch and pellets are a form of encouragement for fresh opportunities for the improvement of members house hold income. There is positive correlation between cost of processing and revenue of co-operative members in the study area. Certain challenges/constraints against cassava processing in Obio/Akpor L.G.A. includes in- adequate finance, high cost of inputs, lack of access to credit facilities, challenges of transportation due to poor roads, inadequate storage facilities, insecurity, price fluctuation, poor power supply.

B. Recommendations

Efforts should be made to provide more technical support to cassava processing farmers and co-operatives, more marketing channels should be ensured, there should be strong measure to subsidized the cost of equipments and inputs, power supply should be improved, more access to funds by the government and bank loans can help reduce the problems of purcity of funds, conceited effort should be made to sensitize the populace on the benefit of value addition through processing of cassava into high value products which can earn more revenue increase income and improve both family income and nation's economy.

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