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Profitability and Marketing Efficiency Analysis of Women Cassava Processors in Oyo State, Nigeria

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This study analyzed profitability and marketing efficiency among women cassava processors in Oyo State, Nigeria. A multi-stage sampling method was employed to select one hundred and eighty (180) women cassava processors. Primary data were collected through a structured interview schedule and the data collected were subjected to descriptive, budgetary, and ordinary least squares regression analyses. Findings revealed that the mean age of respondents was 43 years while 25.6 percent of them had no access to formal education. Majority (82.2%) of the processors were married with a mean household size of 8 members. The BCR of 1.5 revealed that cassava processing is a profitable enterprise in the study area. Marketing efficiency value of above 100 percent indicates that respondents were able to cover the costs of value addition plus marketing and made a profitable margin. Levels of formal education and enterprise experience acquired had significant effects on marketing efficiency of respondents. Processors are encouraged to form cooperative groups or trade union through which they could jointly invest in modern processing facilities and organize educational workshops/seminars for members' benefit.

Keywords: Profitability, Marketing efficiency, Cassava processing.

INTRODUCTION

In Nigeria, cassava is generally believed to be cultivated by small – scale farmers with low resources (Ezebuiro, et. al. 2008). It plays a major role in the efforts to alleviate the food crisis in Africa. Cassava as a source of income to rural farmers and a means of combating famine in Nigeria and particularly Oyo State cannot be over emphasized. It has a fair resistance against pests and diseases thus making it a food security crop. Its products like pupuru flour, garri, lafun, fufu/akpu, to mention a few, are very easy to prepare and are totally viewed as food which take longer time before one gets hungry again especially for those that undertake rigorous work in Nigeria. The

country's poor rural women and men depend on agriculture for food and income (FAO, 2005).

The cassava crop (Manihot esculeta or Manihot utilissima) believed to have originated from Brazil and introduced into West Africa by the Portuguese is considered the most productive crop in the tropics (Edeh et. al, 2009). Cassava unlike other roots is a long duration crop that is particularly tolerant to drought conditions and can be stored in the ground for up to 36months (Sanni, 2005). This is why cassava has been called the 'famine security crop'. These good qualities allow the cassava farmers some flexibilities in their work schedules, hence

their relative ease of growing cassava with other crops (Alabi and Oviasogie, 2005). Cassava is a major cash crop for most of the farmers in Nigeria. Next to Zaire, Nigeria is the second largest producer of cassava in the world, and it is one of the food crops on which several part of the world look up to Nigeria for leadership in research and production. It is a major crop of the humid tropics and production in Nigeria accounted for about 35% of the total output of Africa (FAOSTAT, 2005).

Processing of cassava into different products and its availability all year round makes it an important staple food crop for Nigerian households especially in rural sector (Balogun et al., 2009). The processing of cassava into different products is a tedious activity which requires several stages of processing. Introducing modern equipment for processing is at a cost which the individual processor may not have the means to acquire. Any increase in the cost of processing will consequently affect the marketing of the processing goods. In the agricultural sector in Nigeria, cassava processing is a fairly large industry. This is because cassava from which these products are derived is commonly and widely cultivated throughout the country. Cassava products are categorized among the commonest and cheapest sources of dietary carbohydrate in Nigeria. They are steadily demanded and widely consumed both in the rural and urban areas across all income groups; low, medium and high. Garri, one of the most common cassava products, is produced following harvesting of cassava, peeling, grating, dewatering, fermentation (optional), sieving, frying and bagging.

Cassava processing provides job for a large number of people living in both the rural and urban areas. Cassava products have steady national demand pattern all-year-round in Nigeria. Seasonal variability in cassava products' prices is low and highly rational since they can be produced throughout the year. Over the years, cassava has undergone many modifications in terms of consumable products which have added variety to its food value. These include: (i) garri, the traditional product, (ii) fufu/akpu which has assumed a national spread in consumption (iii) tapioca, a delicacy among the Urhobos, Itsekiris, and Ijaws of the Niger Delta, (iv) cassava chips, (mbuba/bobozi) boiled cassava; very popular among the Ibos of the South East, (v) cassava flour (lafun) – a very popular food among the yorubas of the South West and (vi) starch (usi) highly cherished food among the people of Niger Delta (Omoregie, 2005).

Marketing is one of the vital aspects of agriculture since agriculture entails the production of goods and services, and production is said not be completed until the commodity produced reaches the final consumer. Hence, there is need for efficient marketing channel and system.Market performance is how well process of marketing is carried out and how successful its aims are accomplished. Specifically, market performance is concerned with technological progressiveness, growth orientation of agricultural firms, efficiency of resources use, as well as product improvement and maximum market service at the least possible costs (Adegeye and Dittoh, 1985). Marketing efficiency is a measure of market performance and is defined as the movement of crops and livestock from the producers to consumers at the lowest cost consistent with the provision of the services desired by consumers. The specific objectives are to examine the socio-economic characteristics of women cassava processors in the study area, examine the profitability of cassava processing enterprise in the study area, investigate marketing efficiency and identify challenges to the enterprise. The study tested a null hypothesis that there is no significant relationship between selected socio-economic characteristics of women cassava processors and marketing efficiency.

METHODOLOGY

The study was carried out in Oyo State, Nigeria. Oyo State is located in the South-Western part of Nigeria. It comprises of 33 local government areas with an estimated population of 6,617,720. Oyo state consists of four agricultural zones, namely Oyo, Saki, Ibadan/Ibarapa and Ogbomoso agricultural zones. Ogbomoso Agricultural Zone was purposively chosen for this study because it contains many cassava processing units. The estimated population of Ogbomoso was 657,412 (NPC, 2006). Ogbomoso lies on 8^0 10' North of the Equator and 4^0 10' East, of the Greenwich meridian. The town lies within the derived savannah region and has a fairly high uniform temperature, moderate to heavy seasonal rainfall, and high humidity. The mean annual temperature is 26.2^0C. The highest degree of temperature is experience in March with a mean of 28.7^0C while the lowest degree of temperature is experienced in August with a mean of 24.3^0C.The mean annual rainfall is 1,247mm.

Population of the study comprises all women cassava processors in Ogbomoso Agricultural zone of Oyo state, Nigeria. The zone consists of Ogbomoso North, Ogbomoso South, Ogo–Oluwa, Suurulere and Oriire Local Government Areas (LGAs). According to the Agricultural Development Project (ADP) categorization, each LGA represents a block and each block has eight (8) cells. Multi-stage sampling technique was employed to select the respondents. In the first stage, three (3) blocks were randomly selected out of the five (5) blocks in the study area. These include Ogbomoso North, Ogbomoso South and Ogo-oluwa. In the second stage, three (3) cells were chosen from each of the blocks. These include Aje-Ikose, Kinnira and Randa from Ogbomoso North, Kajola, Araada and Gaa-Lagbedu from Ogbomoso South, Ajaawa, Pontela-akinola and Ajelanwa from Ogo–Oluwa. In the

third stage, nine (9) cassava processing centers were proportionately selected. Three (3) processing centers were sampled in each of the cells. Finally, a total number of 180 women cassava processors formed the sample of the study. Primary data were collected from the selected cassava processors through a structured interview schedule.

Data collected were subjected to descriptive analysis such as frequency counts, tables and percentages, to analyze socio-economic characteristics of respondents, budgetary analysis to examine profitability of cassava processing enterprise, marketing efficiency computation and the ordinary least squares regression analysis to test the hypothesis of the study.

Budgetary Analysis was used to investigate profitability of cassava processing enterprise

Total Revenue (TR) = Price x Quantity of the product

Total Cost (TR) = Total variable cost (TVC) + Depreciated fixed cost (DFC)

Gross Margin (GM) = TR - TVC

Profit (Net return) = Gross Margin – Depreciated Fixed Cost

Benefit Cost Ratio (BCR) =$\sum$TR $\div\sum$TC

If BCR>1, then the business is profitable; BCR<1, then the individual has incurred a loss.

Marketing Efficiency: This is a measure of the market performance. Marketing efficiency (M.E.) is computed as:

M.E. =$\underline{\text{Value added by respondent}}$ × 100
                Cost of marketing

Efficiency in the agricultural industry is the most frequent used measure of market performance. Marketing efficiency can be defined as the maximization of the ratio of output to input in marketing. Efficient marketing optimizes the ratio between inputs and outputs. Marketing inputs here include the resources used in marketing of product whereas marketing output is the benefits or satisfaction created or the value added to the commodity as it passes through the marketing system. Efficiency can be expressed in physical or monetary terms, if monetary terms are used, the efficiency concept becomes a ratio of benefits to cost or if in physical, it becomes output to input used. In an attempt to examine the marketing efficiency of respondents in the study area, the following formula will be adopted. The measurement of 'value added' is not easy. The difference in the price at the farm level (price received by the farmer) and that at the retail level (price paid by the consumers) may be used to measure the 'value added'. Therefore for this study, value added by respondent is computed as Price (in #) received by the respondent (price paid by the consumers) less the cost of raw material (price received by the farmer) used in the supply chain.

Therefore: M.E. =

$\underline{\text{Total revenue (\#) – Cost of raw cassava tubers (\#)}}$ × 100
Total cost of processing + marketing (#)

Value added for a participant along the supply chain will be calculated as the difference between the revenue and the processing cost. When ME = 100%, it implies that the participant just recovered the cost incurred in carrying out the marketing services, ME > 100% implies that the participant covered the cost of marketing and made a margin above the 100% (higher value of E denotes higher level of efficiency), while ME < 100%indicates that the participant is operating at a loss.

The implicit formula of regression analysis is as follows:

Y = f ($X_1, X_2, X_3, X_4, X_5,$)

Where: Y = Marketing efficiency; X_1= Age (in years); X_2 = Household Size (Actual)

X_3 = Formal education (years); X_4 = Processing experience (years); X_5 = Monthly income (#)

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Respondents

Table 1 showed that 41.1% of the processors were aged between 41-50years, 2.2% were over 60years with mean age of 43years. The categories of families having household members between 6 and 10 members constituted about 46.7% of all the respondents and 26.4% had greater than 10 members in the household. The mean household size for the processors was 8 members. Result of analysis revealed that 82.2% of the processors were married while 1.1% was divorced. More than half (57.8%) of the processors had primary school education while 3.3% had tertiary education. The mean years of processing experience was 10 years. Result showed that 67% of cassava processors earned below ₦40, 000 per month and 30.6% of the cassava processors earned above ₦ 40,000 per month. The average income of the women cassava processors was

₦ 30,817 per month.

The Cost and Returns Associated with per ton of Cassava Tuber Processed

Table 2 showed that on the average, women cassava processors in the study area incurred a fixed cost of ₦928.89 per ton of cassava processed and sold, a variable cost of ₦140, 574.56 and total revenue of ₦217, 125.80 per ton of cassava processed and sold. This indicates that a processor earned ₦76, 551.24 as gross margin and a profit of ₦75, 622.35 per ton of cassava processed and sold. The BCR was 1.5, which showed that the business is profitable in the study area.

Marketing Efficiency =

$\underline{\text{Total revenue (\#) – Cost of raw cassava tubers (\#)}}$ × 100
Total cost of processing + marketing (#)

Table 1: Socio-Economic Characteristics Distribution of Respondents, n = 180

Variable	Frequency	Percentage
Age		
20-30	12	6.6
31-40	62	34.5
41-50	74	41.1
51-60	28	15.4
> 60	4	2.2
Household size		
1-5	48	26.6
6-10	84	46.7
> 10	48	26.6
Marital status		
Married	158	82.2
Widowed	8	4.4
Divorced	2	1.1
Separated	22	12.2
Years of Schooling		
0 (No formal schooling)	46	25.6
1-5 (Primary school)	104	57.8
6-10 (Secondary school)	24	13.3
>10 (Tertiary school)	6	3.3
Years of Experience		
<10	122	67.8
11-20	50	27.8
21-30	6	3.3
> 30	2	1.1
Income/month		
1000 - 20000	58	32.2
20001 - 40000	66	36.7
40001 - 60000	42	23.3
60001 - 80000	12	6.6
80001 - 100000	2	1.1

Source: Field Survey, 2014

Table 2: Budgetary Analysis of Respondents per ton of Cassava Tuber Processed

Variables	Mean Value (₦)
(a) Raw cassava	112,842.22
Processing Cost	
(b) Transportation of raw cassava	2,196.78
(c) Labour (Peeling + Grating + Frying)	17,951.56
(d) Firewood/fuel	4,982.22
(e) Depreciated Fixed Cost (frying pans/fryer, pressing machine)	478.52
Sub-Total	25,609.08
Marketing Cost	
(f) Transportation of cassava product to sales point	1,511.11
(g) Communication/logistics	1,090.67
(h) Shop/transaction space rent/marketing equipment (depreciated)	450.37
Sub-Total	3,052.15
Total variable cost incurred (a+ b + c + d + f + g)	140,574.56
Total fixed cost incurred (e + h)	928.89
Total Cost (Total variable cost + Total fixed cost)	141,503.45
Total Revenue	217,125.80
Gross Margin	76,551.24
Net Revenue	75,622.35
BCR	1.5

Source: Field Survey, 2014

Table 3: Result of Regression Analysis Showing the Relationship between Selected Respondents' Socio-economic Characteristics and Marketing Efficiency, n=180

Variable	t-value	Decision
Constant	0.832	-
Age	-0.172	Not significant
Household size	-1.511	Not significant
Years spent in school	2.334**	Significant
Years of experience in business	13.440***	Significant
Monthly income	1.295	Not significant

Adjusted R^2 = 0.703
F value = 38.40***
** Significant at 5 % level
***Significant at 1 % level
Source: Data Analysis, 2014.

$$= \frac{217,125.80 - 112,842.22}{28,661.23} \times 100$$

$$= \frac{104283.58}{28,661.23} \times 100$$

= 363.85%

ME > 100% implies that the participant covered the costs of value addition plus marketing and made a margin above the 100%.

Result of Regression Analysis

The Adjusted R^2 for the relationship was 0.703 meaning that the explanatory variables had 70.3% decisive influence on the dependent variable. The F value was 38.40 and significant at 1%. The result of linear regression analysis indicated that years spent in school (t = 2.334**) and processing experience (t =13.440**) significantly influence marketing efficiency in the study area. The year

of formal schooling variable is positive and significant at 5%, indicating that an increase in formal literacy level tends to increase marketing efficiency of respondents. Year of experience is also positive and significant at 1%, implying that acquisition of more experience have the tendency to increase marketing efficiency of respondents.

Challenges Identified by the Processors

Data analysis showed the challenges militating against cassava processing enterprise in the study area. According to the result, 63% of the respondents indicated that the major challenge being encountered is financial related. In addition, 35% endorsed unstable cassava tubers price while 2% complained of inadequate storage facilities as a challenge.

CONCLUSION AND RECOMMENDATION

This study concluded that cassava processing is a profitable enterprise in the study area. The study recommends that cassava processors should form trade union/cooperative groups through which they could work together with agricultural extension agents to organize educational workshops and seminars, with the aim of improving the educational status of members. The union/group should also invest in modern cassava processing facilities in order to improve profitability and efficiency.

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