CASSAVA VALUE ADDITION: A CASE STUDY OF CASSAVA-BASED BREAD PRODUCERS IN ONDO STATE, NIGERIA

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Abstract

The main objective of this study was to carry out an economic analysis of bread production (using cassava flour) in Akure South Local Government, Ondo State, Nigeria. It ascertained the socio-economic characteristic of the bread producers, estimated costs, returns and profitability in the use of cassava flour for making bread in the study area. Primary data were collected with the aid of a well-structured questionnaire administered to fifty respondents. Data collected were analyzed using descriptive statistics, gross margin analysis and multiple regression analysis. Result showed that production of bread were dominated by male with (73.5%) flour processors and (26.5%) of female processors. Analysis of costs and returns revealed that bread production is profitable in the study area (mean profit of N1,546,657 per month). The estimated functions were in terms of the statistical significance of multiple determinants (R2) 0.998 as indicated by F-value, the significance of the co-efficient of and the magnitude of standard errors. An increase in age will lead to a further increase in the revenue of the producers. The coefficient of educational level is negative and this implies that a decrease in the educational level leads to an increase in the revenue of producers. The coefficient of years of experience was positive and it connotes a corresponding increase in revenue as years of experience rises, the coefficient of purchasing cost was positive and this connotes that the revenue of the producers increased with an increase in purchasing cost as they tend to hike their prices.

Key words: *processors, gross margin, Cassava, bread*

INTRODUCTION

Cassava is the main source of energy for most people living in the lowland tropics and sub-humid tropics of West Africa [1]. Thus, its production and utilization is given prime attention in food policy. Sequel to the pronouncement of presidential initiative on the cassava in 2002, cassava gained prominence in Nigeria. The goal of the policy was to use cassava production as the engine of growth in Nigeria. The Nigerian government encouraged the use cassava to produce a wide range of industrial products such as ethanol, glue, glucose, syrup, biscuits, chin-chin, cake, bread etc. Also, a law was enacted in Nigeria in January 2005, compelling bakers to use composite flour of 10.0% cassava and 90.0% wheat for bread production. Large flour mills that supply flour to bakeries and confectionaries must premix cassava flour with wheat flour. [3]
Cassava farmers have not yet attained the desired technical efficiency in cassava production due to weak access to inputs such as funds, fertilizers, labour and herbicides [2], yet the wide-scale adoption of high yielding varieties and the resulting increase in yield have shifted the problem of the cassava sector from supply (production) to demand issues, The Nigerian government is musing a transition from the present state to the level of industrial raw material and livestock feed for increase in employment. This necessitated various research and policy initiatives in cassava improvement, production and processing.
In the Nigerian industrial environment, approximately 16 percent of cassava root production was utilized as chips in animal feed, 5 percent was processed into a syrup concentrate for soft drinks and less than 1 percent was processed into high quality cassava flour used in biscuits and confectionery, dextrin, adhesives, starch, and hydrolysates for pharmaceuticals and seasonings [5]. Also, different cassava cuisines (such as gari, fufu,starch, lafun, abacha,etc) are produced for human consumption [4]. In view of the renewed

emphasis on cassava production (supply), processing and utilization in Nigeria, it becomes necessary to assess the production, demand and utilization patterns of cassava, and its prospects especially in fighting hunger and raising food security.

The increasing use of cassava to produce high quality cassava flour had increased income of farmers. [2]. Thus, additional income is earned from value addition. However, the weak link between cassava farmers and processing groups on one hand and the industries using cassava as raw materials on the other, is depriving farmers and processors from earning the expected income. The effect of socio-economic characteristics and other variables on the amount of value added to cassava products has not been considered over time.

MATERIALS AND METHODS

The study was carried out in Akure south Local Government, Ondo State. Ondo State was created in 1976 out of the former Western State. Akure South is a Local Government Area in Ondo State, Nigeria. Its headquarters are in the town of Akure. It has an area of 331 km² and a population of 353,211 at the 2006 census [6]. Purposive sampling technique was used to select one out of 18 Local Government Areas (LGAs) in Ondo State (Akure South local government). It was chosen because of the predominance of bread producers in the area. Random sampling was carried out to select the respondents from the Local Government Area. A well-structured questionnaire was administered to each respondent. Data was collected from 50 respondents who are bread producers.

Different analytical techniques were used to analyze data that was collected. The socio-economic characteristics of bread processors was analyzed, after collecting data such as age of respondents, marital status of cassava flours processors, educational background, gender of respondents, production experience, and firm size, using descriptive statistics such as frequency distribution, and mean. Data collected on profitability, which range from cost of labour, feeding, quantities and prices

of inputs, selling price of the bread, value added activities and cost, were analyzed by the use of Gross Margin (GM).

It is expressed mathematically thus:

GM = TR – TVC

The Net Margin Analysis (the difference between the total revenue (TR) and total cost (TC), that is,

Net Margin = TR - TC

Therefore, equations (1) and (2) were being use to estimate the profitability of the processing industries in use of cassava flour for bread production:

$$GM_{ps} = TR_{ps} - TVC_{ps} \quad \ldots\ldots\ldots\ldots \text{(1)}$$
$$NM_{ps} = TR_{ps} - TFC_{ps} - TVC_{ps}\ldots\ldots \text{(2)}$$

where:

GM_{ps} = Gross Margin on bread production

NM_{ps} = Net Margin per bag of flour used in production

TR_{ps} = Total Revenue from bread production

TFC_{ps} = Total Fixed Cost incurred in production

TVC_{ps} = Total Variable Cost incurred in production

Analysis of factors influencing the use of cassava flour during production was achieved through the use of regression analysis. The Multiple Regression Model is stated below;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + e_i$$

Y = Total output (proxy by the income generated from sale of bread).

X_1 = Cost of Labour (#)

X_2 = Cost of transportation (#)

e_i = Random error term

Y is the dependent variable

$X_1 \ldots X_2$ are the independent variables

RESULTS AND DISCUSSIONS

Table 1 below shows the socio-economic characteristics of respondents. It could be seen from the findings that majority of the respondents were adults who are still in their active working age. This will have a positive influence on decision making and productivity. Also, male participated more in baking of bread than female counterparts in the study area. This is an indication that flour processing into bread was dominated by male

because bread baking is regarded as a man business due to the level of stress that is attached to the business in the study area. Also married people are the majority of flour processors in the study area. It shows that the people who are single are not really looking into agro-enterprise, because most of them are looking for white collar jobs or probably still depending on their parents for their means of livelihood.

Table 1. Socio Economic characteristics of respondents

	FREQUENCY	PERCENTAGE (%)
AGE RANGE		
21-30	9	18.4
31-40	17	34.7
41-50	15	30.6
51-60	77	14.3
61-70	1	2.0
GENDER		
Male	36	73.5
Female	13	26.5
MARITAL STATUS		
Single	7	14.3
Married	37	75.5
Divorced	3	6.1
Widowed	2	4.1
HOUSEHOLD SIZE		
0-5	2	4.1
6-10	27	55.1
11-15	17	34.7
16-20	2	4.1
Above 20	1	2.0
LEVEL OF EDUCATION		
No formal education	1	2.0
Primary education	2	4.1
Secondary education	12	24.5
Tertiary education	32	65.3
Others	2	4.1
		100
PRIMARY OCCUPATION		
Farming	5	10.2
Trading	16	32.6
Civil servant	12	24.5
Artisans	10	20.4
Others	6	12.3
YEARS OF EXPERIENCE		
1-5	19	38.8
6-10	17	34.7
11-15	13	26.5
SIZE OF THE FIRM		
Small scale	25	51.0
Medium scale	22	44.9
Large scale	2	4.1

Source: Field Survey, 2017.

The statistics mean of the household size shows that the mean for the household was about 1.45. The result shows that flour processors had fairly large families which will help them to spend less on the labour cost, because they will depend more on family labour for processing. Flour processing into bread in the study area is majorly in the hands of people with tertiary and secondary education. Majority of the respondents are into buying and selling of other commodities where they source for fund to support the production of bread.

Adequate processing experience is pivotal to the success of the agribusiness. Majority of the processors do not have appreciable years of processing experience that can help them to improve their processing operations which could improve their efficiency, especially the most inexperienced ones. It was also discovered that the presence of large scale firms is hugely limited as majority of the processors are small scale enterprises. This is as a result of unavailability of fund to run the business and other factors of production. Majority of the respondents used more than 60 bags of flour in a month while others make use of less than 60 bags of flour in a month which indicates the level of their production capacity. This will in turn determine the level of their income per month. This was as a result of great increase in the consumption of bread and other wheat-based products worldwide because of changing food habits, increasing population, urbanization, and the convenience of these ready-made foods.

Results also indicated that the number of labour required in bread production is very high, it simply means that bread production is one of the business(s) which that provided job opportunity to the people in the study area. Ninety one percent (91.8%) of the respondents population pay for labour monthly, a combined 8.2% use daily and weekly methods of payments. This indicate that majority of the processors pay their workers salary at the end of every month. It shows that majority of the labours are salary earners and are not paid on wages. Markerting patterns revealed that majority of the producers distributes their bread from one

retailer's shop to another. This will have a significant effect on the income of the producers as much money will be expended on transportation and maintenance of the vehicle that is been used in distribution or hawking around from one place to the other. Most producers bring the bread down to the door step of both the retailers and the whole sellers in small quantities to sell to the final consumers in unit. The production cycle therefore continues from the producers to the final consumers. This system of marketing will incurred more cost than the factory gate system of marketing.

Table 2, presents the Gross Margin involved in the utilization of cassava flour in production of bread in the study area. The variable cost which include the cost of flour, transportation, labour and other costs. The revenue represented the revenue accrued from the sales of bread. For cassava flour processors, the Total Variable Cost (TVC) incurred in the processing of cassava flour into bread per month was #56,909,600 while the Total Revenue (TR) was #134,242,498 and the Gross Margin (GM) was #77,332,898.

Table 2. Gross Margin Analysis for Assessment of Cassava Flour in Production of Bread

ITEM	AMOUNT	% of costs
Cost of purchasing flour	44,184,300	77.6
Cost of Transportation	6,501,700	11.4
Other Cost	6,223,600	11
Total Variable Cost (TVC) "A"	56,909,600	100
Total Revenue (TR) "B"	134,242,498	
Gross Margin= B-A	77,332,898	

Source: Field Survey, 2017.

Table 3, shows the result of the regression analysis techniques (stipulating the technical relationship between inputs and outputs) which was used to determine the relationship between some variables affecting the respondents in the study area. It is the relationship between the revenue of the marketers and factors affecting their level of income. The linear, semi-log and Cobb-Douglas functional forms of the production function were tried using Ordinary least square method. The estimated functions were in terms of the statistical significance of multiple determinants (R^2) as indicated by F-value, the significance of the co-efficient of and the magnitude of standard errors. Based on these statistical and economic criteria, the linear functional form was selected as the lead equation. The result shows that the estimated coefficient of multiple determinations (R^2) indicates that the postulated regressors explained 96.5% in the variation of the regression.

Table 3. Regression Analysis for Assessment of use of Cassava Flour in Production of Bread

VARIABLES	FUNCTIONAL FORMS		
	LINEAR	COBB-DOUGLAS	SEMI-LOG
Constant	0.543 (0.396)	0.289 (0.200)	0.098 (0.477)
Age of respondents	0.215 (0.146)	0.087 (0.054)	0.105 (0.126)
Educational levels	-0.094 (0.089)	-0.065 (0.077)	-0.165 (0.317)
Years of experience	0.082 (0.202)	0.035 (0.145)	-0.077 (0.756)
Cost of purchase	1.089 (0.058)**	0.954 (0.0465)**	9.898 (0.602)**
Cost of transportation	0.185 (0.950)	0.090 (0.073)	1.918 (0.622)**
R^2	0.998	0.949	0.89
Adjusted R^2	0.965	0.971	0.874
Standard error	0.921	0.096	0.85
F-value	269.738	186.572	145.632

Source: Own results.

The table above shows that the linear equation earlier explained in the research methodology was used.

From the table, it can be deduced that an increase in age will lead to a further increase in the revenue of the producers; this is due to increasing popularity and experience. The coefficient of educational level is negative and this implies that a decrease in the educational level leads to an increase in the revenue of producers; a general decline in the level of education could also lead to an influx of

people into the business.

The coefficient of years of experience is positive and it connotes a corresponding increase in venue as years of experience rises, the coefficient of purchasing cost is positive and this connotes that the revenue of the producers will increase with an increase in purchasing cost as they tend to hike their prices. Finally, the coefficient of transportation cost is positive and it also signals an increase in revenue due to hiking when transportation cost is increased.

CONCLUSIONS

This study is centered on creating a balance in comparison between the acceptability of wheat flour and cassava flour**.** The presence of large scale firms is hugely limited as they take up 4.1% of the firms in the market, medium scale organizations are more pronounced as they take up 44.9% of the firms while small scale firms rack up an astonishing 51% of the firms available.

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