

# Gross Margin Analysis of Small Scale Cassava Processing Activities in Surulere Local Government Area of Oyo State

**M. O. Adio**

Department of Agricultural Economics, Ladoke Akintola University of Technology, P. M. B 4000, Ogbomoso, Nigeria

## ABSTRACT

*Cassava is one of the most important cash crops which are grown in tropical and sub-tropical areas of the world. Hence, the focus of this project is on determinants of income from small scale cassava processing activities in Surulere local government area Ogbomoso Oyo, State. Multistage random sampling was used to select respondents for the study. First stage was the purposeful selection of Surulere Local Government. Second stage was the random selection of ten Villages in the Local Government Area. The third and final stage is the random and proportionate selection of respondents, who are into cassava processing. In all 90 respondents processor were selected. The result shows that majority of the processors are in the 51-60 age group. This indicates that most of those who engage in cassava processing activities are in the active phase of their lives. Most of the respondents were illiterate (61.8%) and would not be able to make good use of extension information effectiveness. Also, majority of the respondents were married (98%) and assistance will come from their spouses but at the same time responsibilities will be increased and will reduce the processors effectiveness.*

**Keywords-** *Gross Margin, Small scale, and Cassava Processor.*

## 1. INTRODUCTION

Nigeria is the world largest cassava producing country in the world with about 45.75 metric tonnes annually FAO, (2007). Cassava is a cheap and reliable source of food for more than 700 million people in the developing world (FAO, (2003). It is estimated that 250 million people in sub-saharan Africa derive half of their daily calories from cassava FAO, (2005).

Cassava (*Manihot esculenta*) is a woody plant with a height between 1-3m, and most parts of the plant can be used for food and industrial purposes whether in small hold Agricultural system or developing Nations, Pakpahan and Gunawan, (1992). However, there are numbers of drawbacks which includes technical, financial, institutional and infrastructural support which has adversely affected the economic wellbeing of most small hold farming families and has resulted in the continuous marginalization of the rural space in which cassava farming take place. Introduced in the 1650s with imported roots from Mexico, cassava has acquired a significant place in the agricultural system of South-East Asia, Mougeot and Levens, (1990). In many developing countries, cassava is thinly traded and or traded informally. The lack of established market

Gross Margin Analysis of Small Scale Cassava Processing Activities in Surulere Local Government Area of Oyo State **M. O. Adio**

information has been among the main factors constraining trade in cassava FAO and IFAD, (2000). The most commonly identified bottle neck to develop cassava market opportunities was the lack of good planting material, lack of equipment's mechanization and power were also mentioned on several occasion as bottlenecks to developing the industry.

Some less frequently mentioned bottlenecks but perhaps as important as those above are infrastructure, consumers acceptance, education, and training of key actors in the industry and good weather for drying cassava IFAD and FAO, (2004). These constraint have negative impact on the employment generation and income earning potentials of the agricultural sector as well as the sectors capacity to serve as the pivot for the drive to reduce poverty in the land. More importantly the capacity of the sector to continue to meet the food needs of the nation in the form that people require is also seriously mentioned.

Every nation attempts to address the prevalent issue of food security in Nigeria, Agriculture provides food for the teeming population and contribute about 33% to the gross domestic product (GDP) of the nation (Bureau of African affairs 2010). The sector employs about one third of total labour force and provide a livelihood for the bulk of the rural populace (FMARD, 2006). Total area devoted to agricultural cultivation is about 30.7million hectare with farmers cultivating less than 2ha averagely, operating with simple tools, the performance of the small holding farms in Nigeria is observed to be unsatisfactory. The agricultural sector of Nigeria has failed to keep pace with the demand of households and industries for the farm produce as food or raw materials (Nwaiwu et al, 2010). Nigeria is yet to fully harness the socio-economic potentials of cassava that would translate to higher ranking of

cassava next to petroleum as major contributor to the gross domestic product (GDP). For this to be achieve, cassava farmer's production efficiency and profit margins needs to be established.

Efforts aimed at increasing cassava output to meet the demand for the output cannot be properly directed unless the costs and returns of cassava production are determined. If this is done, farmers will be guided on inputs to focus on, thereby increasing profit which will in turn result to higher standard of living and increase the incomes of the farmers.

Cassava can be processed into "garri", "fufu", Cassava flour, cassava flakes, "Pupuru" etc. Income can be generated from all cassava processed product. Also after cassava has been processed into various products as listed above, its waste can also be sold. For instance cassava peel can be sundry and then be sold to people who will utilize it as livestock feeds and this can also serve as a source of income.

The objectives are to;

- Examine the socio-economic characteristic of cassava processors
- Analyze cost and returns of cassava processing enterprises
- Determine the factors affecting the profitability of cassava processing.

Hypothesis of the study:

Ho<sub>1</sub>: There is no significant relationship between socio-economic characteristics of the cassava processors and their gross margin.

## 2. LITERATURE REVIEW: THEORETICAL FRAMEWORK

Mangyong, (2004) stated that the importance of food processing in national development is underscored by the new national policy on agriculture, which assigns two major goals for agricultural commodity processing: Processing commodities and accelerating the

growth of the agricultural sector and Preservation of commodities to reduce waste and seasonal price fluctuations. The main policy strategies stipulated in the policy document include: promotion of Small and Medium Scale Enterprises (SMEs), increased participation of commercial banks and improvement in the quality, packaging and preservation of processed commodities.

According to FAO (2008), the development and growth of small-scale enterprises are based on the existence of some level of entrepreneurial climate or enterprise culture amongst the people. Such skills and motivations should be supported by a well-defined institutional structure that includes formal rights and protections to physical and other properties and is understood by the participants. Access to resources in the form of capital, labour and infrastructure in an agricultural economy will then lead to the development of small enterprises participating in the processing of farm products. As Reardon, et al. (2001) pointed out; household members will redirect their labour away from land-based activities because of the existence of Pull factors such as higher incomes in the non-farm sector relative to the farm sector and Push factors such as increase in agricultural risk (farming that cannot ensure year-round income and consumption).

Numford and AY, (1987) stated that Cassava is processed into smoked cassava balls in the same way as fermented and dried pulp is produced except that the fermented wet pulp is pounded and molded into round balls of about of 4-7cm in diameter, these balls are then smoked and dried on platform above the fire placed in a special structure hung above the hearth. The dark coating caused by smoke is cleaned off and the cleaned balls are milled into flours reconstitution into fufu.

Numford and AY, (1987) confirmed that the roots are peeled, sliced into small pieces and sun-dried on racks or roofs for 4-5 days or sometimes up to 3 weeks, depending on the weather and the size of pieces. Later, sun-dried pieces are milled into flour. This processing system is very simple but the processed products contain considerable amounts of cyanide. This method is widely used in many areas in Africa, particularly where water supply for fermentation is seriously limited.

Knipscheer, (2003) stated that, the future of cassava depends very much upon development of improved processing technologies and of improved products that can meet the changing needs of urban people, and on its suitability for alternative uses such as animal feeds. Also important is the overall ratings of different products to meet the expectations of producers, transporters and consumers, table 1 explain how the future is bright, more quantitative information on postharvest aspects of cassava culture in tropical Africa will help scientist orient their effort to satisfy the many needs of both rural and urban dwellers.

### 3. METHODOLOGY

The study area is Surulere Local Government, Surulere is one of the 33 local government in Oyo State and it's headquarter is in Iresaadu, it is located in western part of Nigeria. It shares boundaries with Ifelodun Local Government, Orolu Local Government in Osun State, Oriire Local Government, Ogbomosho North and South Local Government, with longitude 3<sup>0</sup> and 5<sup>0</sup>E and latitude 7<sup>0</sup> and 8<sup>0</sup>N and covers an area of approximately 26,500km<sup>2</sup>. The State enjoys a tropical humid climate with two climate seasons, the rainy season that prevails from April-October and the dry season that lasts from

November-march. The southern part of the state is dominated by the tropical rain forest while the guinea savannah belt dominates the remaining parts Agboola, (1979). Primary data was used in this study and was obtained through the use of structured questionnaire, and interview questions schedule to the respondents.

Multi-Stage random sampling technique was used to select respondents for the study. First stage is the purposeful selection Surulere Local Government because the major non- farm occupation by agricultural households in the area is food processing and also because they constitute the nucleus of cassava processing enterprises. The Second stage is the random selection of ten villages which was obtained from the information units of the Local Government Area. The list of villages/communities as compiled by the National Population Commission (NPC, 2006) was also used as complement to the ones that was obtained from the selected LGA. The final stage involved proportionate selection of ten respondents which are into cassava processing. In all 90 (ninety) respondents were sampled.

The tools and procedure that were employed elucidated the objectives of the study: this includes the following: descriptive statistics, gross Margin and regression analyses.

**Gross margin:** The gross margin will estimate the difference between total revenue and total variable cost in cassava processing operation or activities as stated in equation(1).

$$\pi = P_i Q_i - T_{ci} \tag{1}$$

Where

$\pi_i$  = Gross margin(#) per enterprise

$P_i$  = Price per unit of output

$Q_i$  = Output of individual enterprise (in kg)

$T_{ci}$  = Total costs of production (fixed cost) (fc) plus variable cost (Vc) (#)

Or

$$GR = TR - TC$$

$$\pi = GR - TC$$

Where

GR =Gross revenue

TC=Total cost

TR =PQ= Total revenue

$\pi$  = Profit

P = Price per output

Q =Quantity of output produced.

## 4. RESULTS AND DISCUSSION

### 4.1 SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS

In table 1, about thirty seven percent cassava processors (37%) were in the 51-60 age groups. The mean age was 53.7 years. This result indicated that few of the processors who engage in cassava processing activity in active stage of their lives. This shows that they can still contribute immensely to the business. Majority of the processors are married (96.1%) with an average family size of 5 individuals in the family. The result shows that the marital statuses of the respondents do affect their selling price and that most of the married processors require assistance from their spouses. The table also showed that about 61.8% of the processors with frequency of 63 have no formal educational level while about 17.6% of the processors with frequency of 18 have secondary school level of education and about 4.9% of processor with frequency of 5 has tertiary school level of education. The low literacy level could be a challenge to acceptability of innovation that could help in betterment of their living standard.

The number of years farmers spend in farming business could give an indication of the practical knowledge acquired over a number of years. Hence, experience has a considerable effect on production efficiency. Majority of the

processors which is between (16-25) years with proportion of 31% while about 15% of them have (5-15) years of experience in the work and about 27% of them have between (26-35) years of experience. The average farming experience is 29 years. The sources of raw material determine the selling price of the product which in turn will affect their net income positively or negatively. The table further revealed that majority of the respondents source their raw material from the market (77%). While 23% of

the source their raw materials from the farm. The processing methods the processors uses are only two methods of processing; traditional method and modern method. The result shows that about 99% of the respondents use traditional method while about 1% of them use modern method.

**Table 1: Frequency distribution of respondents by age**

Age range	Frequency	Percentage	Cumulative percentage
21-30	3	3.0	3.0
31-40	7	7.0	10.0
41-50	26	26.0	36.0
51-60	37	37.0	74.0
61-70	17	17.0	90.0
71-80	9	9.0	99.0
81-90	1	1.0	100.0
<b>Marital Status</b>			
Married	98	98.0	98.0
Single	2	2.0	100.0
<b>School attended</b>			
No formal education	63	61.8	63.0
Primary	14	13.7	77.0
Secondary	18	17.6	95.0
Tertiary	5	4.9	100.0
<b>Experience</b>			
0-15	15	15.0	15.0
16-25	31	31.0	46.0
26-35	27	27.0	73.0
36-45	18	18.0	91.0
46-55	7	7.0	98.0
56-65	2	2.0	100.0
<b>Source of Raw materials</b>			
Market	77	77.0	77.0
Farm	23	23.0	100.0
<b>Methods of Processing</b>			
Modern	1	1.0	1.0
Traditional	99.0	99.0	100.0
<b>Transportation to processing unit</b>			
Head load	77	77.0	77.0
Family assistance	1	1.0	78.0
Vehicles	2	2.0	80.0
Wheel borrow	20	20.0	100.0

Source: field survey 2013

Gross Margin Analysis of Small Scale Cassava Processing Activities in Surulere Local Government Area of Oyo State *M. O. Adio*

#### 4.2 COST AND RETURN (GROSS MARGIN) OF THE ENTERPRISE

The following is a presentation of the cost and return of cassava processing of respondent using the standard enterprise budget format.

$$GR = TR - TC$$

$$\pi = GR - TC$$

Where:

$$GR = \text{₦}18,539,200.00$$

$$\text{Total cost for transportation, TRS.} = \text{₦}86,400.00$$

$$\text{Total cost of labour, TC} = \text{₦}41,700$$

$$\text{Total cost for maintenance, TM} = \text{₦}150,100.00$$

$$\text{Total cost for raw material, TRM} = \text{₦}3,000,000.00$$

$$GR = \text{₦} (18,539,200.00 - 86,400 - 41,700 - 150,100.00 - 3,000,000.00)$$

$$= \text{₦} (18,539,200.00 - 3,278,200.00)$$

$$\pi = \text{₦}15,261,000.00$$

$$\text{Per farmer} = \text{₦}15,261,000.00/100$$

$$\text{₦}152,610.00$$

$$IRR = \frac{\text{Net returns}}{\text{Total cost}}$$

$$= \frac{\text{₦}15261000}{\text{₦}152610}$$

$$IRR = \text{₦}4.66$$

Internal rate of return (IRR) is the amount of money that would be generated on a naira invested in business. A high rate of return signifies a profitable enterprise. From the above cost and return analysis, it shows that the interviewed farmers made ₦ 15,261,000.00 profits for all cassava processed produced. The internal rate of return (IRR) of ₦ 4.66=revealed that on every n farmers naira invested by the respondent farmers, ₦4.66k was realized in

return. From this result, one can conclude that cassava processing in the area were slightly rewarded for their efforts (i.e. 66 kobo on every naira invested).

#### 5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

##### 5.1 SUMMARY

The results revealed that majority of the processors are in the 51-60 age groups. The average age was 53.7years. This result indicates that most of the cassava processors engaged in the cassava processing activities on the active phase of their lives. The study further revealed that there are no enough cassava processing factories in the study area and thus may imply limited scale of production. Also there is significant relationship between the cost and return of cassava processing activities in the study area which will bring a profitable enterprise.

##### 5.2 CONCLUSIONS

This study reveals that cassava processing in the study area is profitable. Some of the problems identified by the cassava processors include high cost of processing equipment, transportation difficulties, poor infrastructural facilities, shortage of labour, poor access to market, lack of fund and poor storage facilities.

##### 5.3 RECOMMENDATIONS

There is need for effective agricultural extension services so as to increase local productivity of cassava in Nigeria. The government should work on the introduction of the modern or mechanical method of processing cassava, thereby making the processing work less laborious. The government should sharpen the storage policies which would reduce stress and tension of cassava supply as the processing material at cassava off season.

## 6. REFERENCES

- [1]. Bureau of African Affairs, (2010). Background Note: Nigeria. Retrieved from: <http://www.state.gov/pa/ei/bgn/2836.htm>, (Accessed on : 01 November, 2010)
- [2]. FAO, (2003). FAOSTAT, FAO. Statistical Data Base Agriculture. Food and Agricultural Organisation <http://faostat.FAO.ORG>.
- [3]. FAO, (2005). FAO PRODUCTION YEAR BOOK 2005, FAOSTAT. Statistics Division of the Food and FAO Rome, Italy data <http://Faostat.Fao.Org/faosto>.
- [4]. FAO, (2008). "Employment Generation Through Small-Scale Daily Marketing and Processing" <http://www.fao.org/docu/rep/007/y4860e/y4860e02.html>, Federal Ministry of Agriculture and water resources
- [5]. FAO and IFAD (2000). The World Cassava Economy- Facts. Trends outlook.FAO, IFAD Rome pp. 1-64.
- [6]. FAO, (2000). Food and Agricultural Organisation. Agriculture Towards 2015/30.Technical
- [7]. Interim Report. April, 2000. Rome
- [8]. FMARD, (2006). Federal Ministry of Agriculture and Rural Development National Programme for food security (NPFS) Expansion phase project 2006-2010 (main Report). Nigeria.
- [9]. FMAWR, (2008) "National Food Security Programme" FMAWR, Abuja pp 48-53
- [10]. IFAD and FAO (2004). Proceedings of the validation forum on the Global Cassava Development Strategy, Volume, 6. Global Cassava Market Study, Business Opportunities for the use of cassava. IFAD, FAO Rome. Pp. 1-175.
- [11]. Knipscheer, H. C., (2003). Opportunities in the Industrial Cassava Market in Nigeria. IITA, Ibadan
- [12]. Mougeot, E., Levens, P. (1990). Marketing of Rice, Cassava and Coffee in Lampung, Indonesia. CGPRT centre, Bogor. P. 123.
- [13]. NPC, (2006). National Population Commission "Nigeria's National census" NPC, Abuja.
- [14]. Nwaiwu, J. M. Odii, D., Ohajianya, C., Eze, N., Oguoma, C., Ibekwe, A., Henry – ukoha, F., Kadiri, C., Amaechi and Oguh, J., (2010). Comparative Analysis of the Productivity of Sustainable Cassava Farming under External and Internal Input Use in Imo State, Nigeria. New York sci. J, 3 (10): 12-16.
- [15]. Numfor, F.A. and AY, P. (1987). Post Harvest Technologies of Root and Tuber Crops in Cameroon: A survey, memories ettravauxdel'IRA, Cameroon. 54 pp.
- [16]. Reardon. T., Berdegue, J., Escobar, G. (2001). Rural Non- farm Employment and Incomes in Latin America: Overview and Policy Implications World Dev. 29(3): 395-409.