

Profitability Analysis of Women in Cassava Enterprises in Ogbomoso Agricultural Zone of Oyo State, Nigeria

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Abstract: The study was carried out to analyse the profitability of women in cassava enterprises in Ogbomoso agricultural zone of Oyo- State, Nigeria. The specific objectives of the study were meant to describe the socio-economic characteristics of women, evaluate the costs and returns for cassava tubers and cassava products, estimate the profitability ratio and identify the problems encountered by women in cassava production and processing. A multistage sampling method was used to select samples from Oriire, Ogo-Oluwa and Surulere Local Government Areas in Ogbomoso Agricultural Zone and the sample size was one hundred and sixty respondents. Structured questionnaire were used to elicit information from the selected respondents and it was structured in line with the objectives of the study. Data were analysed using descriptive statistics, budgetary and profitability ratio techniques. Average total cost of producing cassava tubers and processing cassava tubers were ₦57,697.50k per hectare and ₦599,929.70k per month respectively. Average total cost for combining production and processing of cassava tubers was ₦1,500, ₦650.00k per annum. The net returns for women cassava producers and those women that combined cassava production and processing were ₦221,052.00k and ₦7,289,950.00k per annum respectively. The benefit cost ratio (BCR) for the women cassava producers, processors and those women that combined production and processing were 4.83, 1.08 and 5.86 respectively. These showed that the enterprises were profitable. The combination of cassava production and processing by women was found to be most profitable.

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1.0 INTRODUCTION

Cassava (*Manihot Esculenta* Crantz) also called Tapioca, Yuca, Manioc and Mandioca in various parts of the world has its origin in Brazil, where it is the major staple of the people. It was originally a native of Tupinamba or the Amazon Indians of eastern Brazil from where it was dispersed to other parts of the world by Portuguese explorers (RMRDC, 2004). The first mention of cassava cultivation in Africa dates back to 1558. At first, it was cultivated with the sole purpose of providing for the slave ship until 1600 when its consumption was introduced to the people living among the African coasts and nearby Islands. Africans further diffused the use of cassava and it is now widely distributed in tropical and sub-tropical region of the world being currently highly produced and consumed in Africa, the Americas, Europe and Asia. Cassava was introduced to Nigeria over 300 years ago, although its systematic cultivation was never generally accepted and practiced until the late 1980s. It became generally accepted and fully integrated into the farming systems of southern Nigeria a little over 150 years ago. However, its cultivation in Nigeria was not widely spread until the latter part of the 19th century. It is presently cultivated in almost all parts of the country (RM RDC, 2004).

Cassava is a very significant food crop in Nigeria and most of the tropics. It provides about 70% of the daily calories intake of over 50 million Nigerian. It is one of the highly recognized and cultivated crops all over the world. In terms of global production about 16.2 million hectares of land in 99 countries sand produced about 162.7 million tons of fresh tuber per year (FAO, 2001). Cassava for a long time has been grown by smallholders as a food security crop because of its resistance to adverse climatic conditions. Cassava is currently being promoted as industrial raw materials, in form of starch, flour and ethanol. These products can be used by local industries or for export. Currently, estimate put the local starch market to be 70,000mt/annum, high quality cassava flour 200,000mt/ha and ethanol 180 million litres/annum. Starch has capacity for spill-over investment including citric acid, glucose, fructose and maltose, e.t.c. (TAHRCA, 2005). Cassava roots are perishable and contain potentially toxic cyanogenic glycosides therefore they need to be processed.

Gari is a favorite cassava food in Nigeria which is produced mainly by female small –scale processors. Cassava has a high potential for product diversification, because it can be processed into various forms for human consumption and made into chips for farm animals, starch and starch

derivatives. Cassava is the major root tuber crop in the semi-acid region of West Africa (Udoh and Kormawa, 2009) cassava processing offers the best opportunity for linkages from the farm sector to the non-farm sector.

Cassava is a very versatile commodity with numerous uses and by products. Each component of the plant can be valuable to its cultivator. The leaves may be consumed as vegetable, cooked as a soup ingredient or dried and fed to livestock as a protein feed supplement. The stem is used for plant propagation. The roots are typically processed for human and industrial consumption.

In Nigeria women play a dominant role in agricultural production. This was confirmed by United Nations Development Programmes (UNDP). The involvement of women in agriculture has attracted attention in recent years several studies have credited the women in the eastern and western zones of Nigeria with wide range of involvement in agricultural activities (Fresco, 1993; Odebode, 2008; Olawoye, 1988). Women have moved from the traditional roles of being housewives and providing assistance on their husbands' farms only to also own farms of their own. They are active both in crop production and crop processing. It has been reported that majority of the world's food producers are women who provide 60-80 percent of agricultural production in Africa and Asia while they provide 40 percent of agricultural production in Latin America (Okunmadewa, 2002).

Aderibighe (2001) explained that before the discovery of crude oil, the nation flourished on agriculture. At that time, the public policy changed relegating agriculture and other natural resources to the background. Consequently, most men left the rural areas for urban areas in search of jobs in crude companies. Since women have resorted to combining male designated tasks with their traditional female tasks due to unfavourable economic conditions, there is need to ascertain the enterprise(s) that is more profitable so that they can be economically rewarded for their activities.

The study describes the socio-economic characteristics, evaluates the costs and returns and profitability ratio for women in cassava enterprises.

2.0 METHODOLOGY

The study area is Ogbomoso Agricultural Zone of Oyo State, Nigeria. It is situated at latitude 7°N and 9° 3' N and longitude 2°E and 4°E. The state has a total land size of 48,862km (Oladele *et al*, 2008). The state is bordered in the West by the Benin Republic in the North and East by Kwara and Osun State of Nigeria. The state covers an area ranging from swamp forests to western up lands. In between are rain forests and deciduous forest/savanna mosaic. The food crops grown are maize, yam, cassava, pear while cocoa, plantain, oil palm and kolanut forms the bulk of the cash crops.

They also engage in other occupation such as trading, crafts, weaving, processing of agricultural products and selling of food, e.t.c. The rainfall pattern is bimodal with peaks in June, early July and September while November to February is characterized by Harmattan, which is brought about by the effect of north easterly trade wind from sahara region. Agricultural sector form the basis of the overall development thrusts of the state with farming as the main occupation of the people in the area.

The population of the study consists of all female cassava producers, cassava processors and those women that combined cassava production and processing in the three rural LGAs of Ogbomoso agricultural zone. A multistage selection method was used as the sampling technique. Firstly, 60% of the five local government areas in Ogbomoso Agricultural zone of Oyo State were selected due to their rurality and they are (Ogo-Oluwa, Oriire and Surulere LGAs). Secondly, nine villages were randomly selected from the three local government areas list of villages. Thirdly, purposive sampling of forty women cassava producers, forty women cassava processors and forty women that combined cassava production and processing. The sampled villages were Odo-Oba, Ajaawa and Pontela Akinola in Ogo-Oluwa Local Government Area; Iluju, Ilodo and Tewure in Oriire Local Government Area; Iresadu and Iregba in Surulere Local Government Area. Respondents sample size was determined proportionately to the population of the women in the study area. Structured questionnaire were used to elicit information from one hundred and twenty respondents.

The analytical methods used in the study were descriptive statistics, budgetary analysis

2.1 Budgetary Analysis

Budgetary technique was used to assess the cost and return implications of the various activities of cassava market chain in the study area. Budgetary analysis is a methodology for financial analysis through which cost and returns are estimated and conclusions are drawn (Eckersley, 2004). Eckersley, (2004), further explained that there are many useful and distinct budgetary techniques which help in making decisions; among them are gross margin analysis and partial budgeting. Beti *et al* (1995) stated appropriate budgeting techniques allow better analysis of the likely financial consequences of the alternative plans. By applying both, it is possible to use one to confirm the appropriateness of the other. Gross margin of an enterprise can be explained as the difference between the total value of production and the variable costs of production in that particular enterprise. In marketing concept, gross margin can be described as the difference between the total revenue received in selling of product and the total variable cost or working cost incurred in the process of

marketing that product (Adegeye and Dittoh, 1990). For the gross margin to be well estimated, all the input costs must be known. For instance, inputs (variables) costs were valued at the current market prices paid by cassava farmers and marketers for goods and/ or services used in the process of

production ,processing and marketing of cassava. These are costs of farming, processing and marketing activities. Cost of production , processing and marketing of women cassava actors are part of variable costs.

Gross margin of the women cassava actors.

$$GM_i = TR_i - TVC_i \text{ ----- (i)}$$

$$GM_i = PQ_i - \sum C_i X_i \text{ ----- (ii)}$$

Where:

- GM_i = Gross Margin (₦)
- TR_i = Total Revenue (₦)
- TVC₁ = Total Variable Cost (₦)
- P = Price of Cassava tuber/ Price of cassava Product(₦)
- Q_i = Output of Cassava tuber/ Cassava Product (kg)
- C₁ = Price of Input/Material (₦)
- X₁ = Quantity of Input/Material

$$NR_i = TR_i - TC_i \text{ ----- (iii)}$$

Where:

- NR_i = Net Returns (₦)
- TR_i = Total Revenue (₦)
- TC_i = Total Cost. (₦)

In order to determine the profitability ratio of the various activities involved in cassava market chain in the study area. The profitability ratio is a financial statement which is used to determine the economics worth or how well the respondents perform in terms of profit. The performance or economic worth of the respondents were determined using the following;

- i. Benefit Cost ratio (BCR) = $\frac{\text{Total Revenue (TR)}}{\text{Total Cost (TC)}}$ iv
- ii. Rate of Return (ROR) = $\frac{\text{Net Returns (NR)}}{\text{Total Cost (TC)}}$ v
- iii. Gross Ratio (GR) = $\frac{\text{Total Cost (TC)}}{\text{Total Revenue (TR)}}$ vi
- iv. Expense structure Ratio (ESR)= $\frac{\text{Fixed Cost (FC)}}{\text{Total Cost (TC)}}$ vii

Table 1: Distribution of the respondents by age

Age	WcP		WcPr		WcPPr		WcM		All	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
20-30	6	15.0	16	40.0	9	22.5	2	5.0	33	20.63
31-40	7	17.5	14	35.0	12	30.0	16	40.0	49	30.63
41-50	7	17.5	6	15.0	12	30.0	11	27.5	36	22.50
51-60	14	35.0	4	10.0	4	10.0	9	22.5	31	19.38
Above 60	6	15.0	0	0.0	3	7.5	2	5.0	11	6.90
Total	40	100.0	40	100.0	40	100.0	40	100.0	160	100.00

Source: Field survey, 2010

WcP: Women cassava producers

WcPPr: Women cassava producers and processors

WcPr: Women cassava processors

WcM: Women cassava marketers

Table 2: Distribution of the respondents by marital status

Marital Status	WcP		WcPr		WcPPr		WcM		All	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Married	31	77.5	35	87.5	36	90.0	37	92.5	140	87.50
Separated	0	0.0	1	2.5	0	0.0	0	0.0	1	0.63
Divorced	0	0.0	1	2.5	0	0.0	0	0.0	1	0.63
Widowed	8	20.0	3	7.5	4	10.0	2	5.0	17	10.63
Single	1	2.5	0	0.0	0	0.0	1	2.5	1	0.63
Total	40	100.0	40	100.0	40	100.0	40	100.0	160	100.0

Source: Field survey, 2010

WcP: Women cassava producers

WcPPr: Women cassava producers and processors

WcPr: Women cassava processors

WcM: Women cassava marketers

Table 3: Distribution of Respondents by Source of Capital

Source of Capital	WcP		WcPr		WcPPr		WcM		All	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Personal Savings	0	0.0	7	17.5	10	25.0	0	0.0	17	10.63
Personal Savings and Contribution	24	60.0	28	70.0	16	40.0	34	85.0	102	63.75
Cooperative Loan	11	27.5	5	12.5	6	15.0	0	0.0	22	13.75
Bank Loan	5	12.5	0	0.0	0	0.0	0	0.0	5	3.13
Others	0	0.0	0	0.0	8	20.0	6	15.0	1	8.75
Total	40	100.0	40	100.0	40	100.0	40	100.0	160	100.0

Sources: Field survey, 2010

WcP: Women cassava producers

WcPPr: Women cassava producers and processors

WcPr: Women cassava processors

WcM: Women cassava marketers

3.0 RESULTS AND DISCUSSION

3.1.1 Age of respondents

Table 1, showed that 35 percent of women cassava producers were within the age range of 51 - 60 years, 17.5 percent were within the age range of 41 - 50 years, another 17.5 percent were within the age range of above 31-40 years while 15 percent were within the age range of 20 to 30 and above 60 years respectively. 40 percent of the women cassava processors were within the age range 20-30 years, 35 percent were within the age range of 31-40 years, 15 percent were within the age range of 41-50 years while 10 percent were above 50years. 30 percent of the women cassava producer and processor respondents were within the age range of 41- 50 years while 22.5 percent were within the age range of 20 – 30 years while 10 percent were within the age range of 51-60 years and the remaining 7.5 percent were above 60 years. Among the women cassava marketers 40percent were within the age range of 30-40years, 27.5 percent were within the age range of 41-50years, 22.5 percent were within the age range of 51-60, 5 percent were within the age range of 20-30years and the remaining 5 percent were above 60years. This implies that majority of women respondents in cassava market chain were in the active stage of their life and were able to undergo

most of the activities involved in cassava production, processing and marketing.

3.1.2. Marital Status of Respondents

In Table 2, 77.5 percent of the women cassava producers were married, 20 percent were widowed while 2.5 percent were single. Among the women cassava processors 87.5 percent were married, 7.5 percent were widowed while 2.5 percent were divorced and the remaining 2.5 percent were separated. Concerning women that combined production and processing, 90 percent were married while 10 percent were widowed. Most of the women cassava marketers (92.5 percent) were married, 5.0 percent were widowed while the remaining 2.5 percent were single. This implies that all the women in the cassava market chain were married and responsible, Costa and Kahn (2000).

3.1.3 Sources of Capital of Respondents

In Table 3, women in cassava market chain were classified according to their sources of capital used in production, processing and marketing activities. Among the women cassava producers about 60 percent got their capital from their personal savings and contribution (weekly and monthly), 27.5 percent got their capital from cooperative loan and only 12.5 percent were able to collect bank loan for production

activities. Among the women cassava processors, 70 percent got their capital from personal savings and contribution (weekly and monthly). 17 percent got their capital from personal savings only and 12.5 percent were able to get loan from the cooperative societies within their community. Concerning the women that combined production and processing activities, 40 percent got their capital from personal savings and contribution (daily and monthly), about 25 percent got their capital from personal savings and 20 percent got their capital from money lender and friends. Most of the women cassava marketers (85 percent) got their capital from personal savings and 15 percent got their capital from other sources. The implication of this is that most of the women were not incurring the risks associated with loans. On the other hand, their opportunities for expansion may have been limited to their own means. It was only the women cassava producers who may have had access to land for collateral security that collected bank loan.

3.2 Costs and Returns of Respondents

Table 4 revealed the estimation of the costs and returns of the women respondents in cassava market chain. Among women cassava producers, the average total cost (TC) of producing cassava is ₦57697.50K per hectare and the net returns (NR) from the sales of cassava tubers is ₦221052.50K per annum. Among the women cassava processors, the average total cost (TC) of processing cassava tubers into cassava product especially roasted granules (gari) is ₦599929.70K per month and the gross margin (GM) realized from the sales of cassava product is ₦92316.30K per month. The average total cost (TC) of producing and processing cassava is ₦1,500,650.00K per annum and the net returns for producing and processing cassava tubers by women cassava producer and processor respondents is ₦7,289,950.00K per annum. Concerning the women cassava marketers the average total cost (TC) expended on the purchase of cassava products and marketing activities is ₦493002.00k per month and the gross margin (GM) realized from the sales of cassava product is ₦137500.00K per month. At a glance, it can be inferred from the budgetary analysis that the net returns (NR) for the women cassava producers and the gross margins for the women cassava processors and women cassava marketers are profitable and bulky.

3.3 Profitability Ratio of Respondents

Table 5, gives full detailed information of all the profitability ratios of all the women respondents in cassava market chain and they are highlighted as follows:

i. Benefit Cost Ratio (BCR): The ratio showed how profitable and dependable the businesses are for the women cassava producers (4.83), for the women cassava

processors (1.08), for the women that combined production and processing (5.86) and for the women cassava product marketers (1.09). This indicates that women made profit, even with little capital and crude method of production and processing, as well as occasional shortage of cassava product in the market.

ii. Rate of Returns (ROR): The rate of return for cassava production is 383 percent and this shows that for every ₦1 invested in cassava production, ₦3.83k is gained by the women producers. Among women cassava processors the rate of return in cassava processing is 15 percent and this shows that for every ₦1 invested in cassava processing 15K is gained by the processors. Concerning women that combined production and processing of cassava tubers, the rate of return is 486 percent and this shows that for every ₦1 invested in cassava production and processing, ₦4.86k is gained by the women that combined production and processing, for the women cassava marketers, the rate of return in cassava product marketing is 27 percent and this shows that for every ₦1 invested in cassava product marketing 27k is gained by the women cassava marketers.

iii. Gross Ratio (GR): This is 0.207 for the women cassava producers and this implies that from every ₦1 return to the producers about 21k is being spent. The gross ratio for the women cassava processors is 0.92 and this implies that for every ₦1 return to the processors 92k is being spent. The gross ratio for the women that combined cassava production and processing is 0.17 and this implies that for every ₦1 return to the women that produced and processed their cassava tubers 17k is being spent. The gross ratio for women cassava marketers is 0.91 and this implies that for every ₦1 return to the women cassava marketers 91k is being spent.

iv. Expense Structure Ratio (ESR): The value of ESR for women cassava producers is 0.075 which implies that about 7.5 percent of the total cost of production is made up of fixed cost component. The value of ESR for women cassava processors is 0.019 which implies that about 2.0 percent of the total cost of processing is made up of fixed cost component. The value of ESR for women that combined production and processing is 0.21 which implies that about 21 percent of the total cost of production and processing are made up of fixed cost component. The value of ESR for women cassava marketers is 0.00 which implies that this category of

women do not incur any fixed cost component in their total cost of marketing.

Table 4: Estimated Costs and Returns of Respondents

Costs And Returns	WcP	WcPr	WcPPr	WcM
	Amount	Amount	Amount	Amount
	N : K	N : K	N : K	N : K
Cost of Inputs	868.0	-	7849.10	-
Cost of Labour	6037.0	78777.95	483959.1	15083.00
Cost of Machinery	487.50	-	2500.00	-
Cost of Land	842.50	-	1900.00	-
Cost of Tubers	-	499,750.00	552,488.3	-
Cost of Processing materials	-	13298.50	408134	-
Cost of Transportation	11462.50	8103.25	43819.50	11759.00
Price of cassava product	-	-	-	466160.00
Fixed Cost (FC)	4,330.00	11,800.00	16,130.00	0
Total Cost (TC)	57,697.50	599,929.70	1,500,650.00	493,002.00
Total Revenue (TR)	276,750.00	650,852.30	8,790,600.00	539,160.00
Net Returns (NR)	221052.00	-	7,289,950.00	-
Gross margin (GM)	-	92316.30	-	137,560.00

Source: Field survey, 2010

WcP: Women cassava producers

WcPr: Women cassava processors

WcPPr: Women cassava producers and processors WcM: Women cassava marketers

Table 5: Profitability Ratio of Respondents

Items	WcP	WcPr	WcPPr	WcM
Benefit Cost Ratio (BCR)	4.83	1.08	5.86	1.09
Rate of Return (ROR)	3.83	0.15	4.86	0.27
Gross Ratio (GR)	0.207	0.92	0.17	0.91
Expense Structure Ratio (ESR)	0.075	0.019	0.21	0.00

Source: Field survey, 2010

WcP: Women cassava producers

WcPr: Women cassava processors

WcPPr: Women cassava producers and processors

WcM: Women cassava marketers

5.0 CONCLUSION

In conclusion, all the enterprises in cassava market chain were found to be profitable to the women, but those women that combined production and processing of cassava made more profit. Therefore, women should be encouraged to combine production and processing of cassava, so that they can get more benefit from their activities.

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