IMPACT: International Journal of Research in Applied, Natural and Social Sciences (IMPACT: IJRANSS)
ISSN (P): 2347-4580; ISSN (E): 2321-8851
Vol. 7, Issue 4, Apr 2019, 25-32

PROFITABILITY AND GENDER DIFFERENTIALS OF CASSAVA VALUE-CHAIN AMONG SMALLHOLDERS IN SELECTED LOCAL GOVERNMENTS AREAS OF OYO STATE, NIGERIA

Okunola Solomon Olufemi

Professor, Department of Agricultural Economics, Ladoke Akintola University of Technology, Ogbomosho, Nigeria, West Africa

Received: 01 Aug 2017 **Accepted:** 24 Apr 2019 **Published:** 30 Apr 2019

ABSTRACT

Nigeria as the leading and largest producer of cassava in the world has a comparative advantage which if put into practice, the provision of high-quality cassava flour (HQCF) would have made cassava a potential source of foreign exchange earnings, thus lessening Nigerian overdependence on crude petroleum. The study attempted to examine the profitability and gender differentials of cassava value-chain among smallholders. In the study area, however, males had the bulk of the total income mainly because the total cost and the total variable cost for females were higher but their Total Fixed Cost was lower thus giving the females an edge in terms of higher Gross Margin and Farm Net Income. The cassava sector of the economy in the Sub- Saharan Africa provides women the opportunity to ensure food security for their families and also the provision of cash. On factors affecting the magnitude of Farm Net Income, sources of land acquisition were significant at 10% level and the coefficient was negative indicating a negative impact on Farm Net Income which might be indicative of discrimination females face when acquiring more land in the familial system of land tenure.

***KEYWORDS**: High-Quality Cassava Flour (HQCF), Comparative Advantage, Farm Net Income and Foreign Exchange Earnings*

INTRODUCTION

Cassava is a starchy root crop that grows under the ground with edible tubers which can be between 15 to 100 centimeters long. Total world cassava utilization is projected to reach 275 million tons by 2020 (IFPRI in Westby, 2008) with some researchers estimating the number closer to 291 million tons (Scott et al, 2000 in Westby, 2008). Nigeria is reported to be the largest producer in the world and its production was put at 33.8 million tons per annum by the (FAO) in 2008. Africa also claims 62 percent of the total world production making the continent the largest producer of cassava; with Nigeria leading the world with nineteen percent of global market share (Hillocks, 2002). The crop is growing in importance as per capita consumption is progressively rising. Nweke etai,2002, put the per capita consumption as 88 kg /perperson /year between 1961 and 1965 which increased to 120 kg /perperson /year between 1994 and 1998.

The Nigerian success in cassava production cannot be mentioned without the contribution of the research activities of the International Institute of Tropical Agriculture (IITA) based in Ibadan, the Oyo State capital, Nigeria. The IITA articulates its Research for Development (R4D) model through the following research formats: (a). Development

needs: Here, the societal, producer and consumer needs that require research relevance are identified and addressed. (b) Research: The research problems that can be addressed by IITA together with its national partners are specified and handled with great research expertise. (c) Research impacts: These are the results of scalable research in terms of its outcomes and its likely effects on the adopters. Research with a successful outcome that improves the conditions of the adopters and which the IITA partners find highly sellable will quickly be embraced. (d) Exit: Immediately the outcome is embraced by national/regional partners, IITA will quit at the implementation stage changing its role to that of monitoring the research outcomes in the development of the economies of the countries in its catchment areas. Other important areas are the ex-post evaluations and further work on the new challenges created.

Constraints of Cassava Enterprise

Fresh cassava tubers problems are mainly post-harvesting as they cannot store for long (perishability) and also the presence cyanogens. Cyanogenic compounds pose a considerable health risk to consumers when cassava products are not well processed. Acute intoxication may cause death and other serious symptoms. Acute cyanide intoxication rarely occurs as these compounds are broken down during effective processing. There are techniques for measuring cyanogens in cassava in the laboratory, but these are limited on the field. The picrate test, which measures cyanide levels in cassava and urinary thiocyanate and can be done outside of a laboratory, has been deployed in kits to some communities in developing countries (Nhassico et al, 2008). Intoxication is not common as most measures used in processing at the traditional stage eliminate this threat to a safe level. Generally, a product with less than 50 mg/kg level of cyanide is considered safe when ingested (Bolhuis, 1954).

Marketing of Cassava Products

Ease of access to market centers, availability of cassava marketing middle person, credit and unproved post-harvest handling facilities which would link the farmers to sources of demand for farm products and supply of farm inputs is called farmers' access to market (Nweke, 1996b). Nigeria and otherunder -developed economies in Africa stand to gain a lot in the international arena if cassava can be presented in the right quality demanded in the international market in terms of comparative advantage modelbut the reverse is the case presently. One of the major challenges for cassava producers and processors is access to markets and creating interest in new market opportunities. These include, for example high-quality cassava flour (HQCF); improved and more convenient versions of traditional processed products; starch, sugar syrups; use in livestock feed rations; used for bio-ethanol production; and energy drinks (e.g., cassava-based version of maheus).(Meridian Institute, 2009)

In the local traditional spectrum, uses of cassava fall into nine categories as identified by Ugwu and Ay (1992):

- Cooked fresh roots (that include pounded fresh cassava, locally known as fufu in Ghana)
- Cassava flours: fermented and unfermented
- Granulated roasted cassava (gari)
- Granulated cooked cassava (attieke, kwosai)
- Fermented pastes (agbelima, fufu in Nigeria)

- Sedimented starches
- Drinks (with cassava components)
- Leaves (cooked as vegetables
- Medicines

These and other numerous uses make cassava a potential source of foreign exchange earnings for countries like Nigeria which depends on crude petroleum alone for its foreign exchange presently. High-quality cassava flour (HQCF) is of particular interest because it can be used as a substitute for 10 percent or potentially more wheat flour in pies, pastries, cakes, biscuits, and doughnuts and has some industrial applications (Ndossi quoted in Gwera, M., 31 March 2009). Beyond these industrial uses of cassava, which utilize HQCF, processed cassava holds other potential uses including sweeteners, mosquito coils, livestock feeds, and brewing ingredients. Sweeteners derived from cassava compete with beet and cane sweeteners. Livestock feeds rely primarily on dried cassava pellets and can be used domestically or exported.(Meridian Institute, 2009.)

Gender and the Cassava Value Chain

Gender differentials in relation to farm productivity in subsistence farming has been of special interest from the standpoint of public policy in developing countries, as the difference is often viewed from the angle of human capital theory and measurement of discrimination. (Tesfaye et al, 2015) On the academic arena, gender differences are often discussed with non-homogenous characters and gender-specific constraints that might vary in the productivity of men and women (Thapa 2008). In this regard, (Urdy C. 1996) shows that yield differences between male and female are due to gender-specific constraints such as land, labor, access to inputs (i.e. fertilizer, modern variety of seeds, oxen and other farm equipment) and credit faced by female managed farms in comparison to male managed farms in Africa.

METHODOLOGY

Study Area

The study was carried out in two of the cassava growing Local Government Areas (LGAs) of Ibadan land in the Oyo State of Nigeria. The Local Government Areas (LGAs) were Egbeda and Ona. Ara in the rain forest zone of the State. Twenty (20) farmers (ten males and ten females) were purposively selected from 12 communities of Egbeda Local Government Area while 76 males and 44 females were purposively selected in Ona- Ara Local Government Area making a total of 240 farmers on the basis of planting cassava solely on their farms. The selection of a farmer snowballed into another with enumerators using structured questionnaires containing questions on the last planting season.

Analytical Techniques

Descriptive statistics such as frequency, percentages, and tables were used to describe the socio-economic characteristics of farmers. The budgetary technique was employed to derive the income accruing to farmers and the profit made. The relationships are stated as follows:

Total Cost (TC) = Total Fixed Cost (TFC) + Total Variable Cost (TVC)

Total Revenue (TR) = Total Farm Output (q) x Unit Price (p)

Gross Margin (GM) = TR – TVC

Net Farm Income (NFI) = GM – TFC

Multiple regression analysis was used to isolate factors determining the magnitude of Net Farm income generated from cassava enterprise

The implicit format of the regression model is presented as $Y = f (X_1, X_2, X_3, X_4, X_5, X_6, X_7, \ldots X_5, U)$

Where; Y = Net Farm Income

X_1 = Age

X_2 = Gender

X_3 =Marital Status

X_4 = Household Size

X_5=Cost of tools and implements

X_6 = Access to fertilizer

X_7= Total Credit utilized

X_8 =Level of Education

X_9 =Sources of Land

X_{10} =Sources of Credit

X_{11} =Sources of Finance

X_{12} =Cost of Transportation

X_{13} =Personal Savings

X_{14} = NPK Fertilizers

X_{15} = Urea Fertilizers

U= Error Term

RESULT AND DISCUSSION

Socio-Economic Characteristics of Farmers (Table 1)

Most respondents (79.2%) were below or 50 years of age and (56.7%)were males while(43.3%) were females. They were mostly (60.4%) married while others were either single (19.6%), divorced(12.1%)or widowed (7.9%).Growing of cassava did not show any religious bias as most religions(Christianity(51.7%),Islam(40.8%)and traditionists,(7.5%)were adequately represented).

Table 1: Socio-Economic Characteristics of Farmers

Variables	Frequency	Percentage
Age(Years)		
<20	8	*3.3*
21-30	53	*22.1*
31-40	65	*27.1*
41-50	64	*26.7*
51-60	41	*17.1*
Above 60	9	*3.8*
Gender		
Male	136	*56.7*
Female	104	*43.3*
MaritalStatus		
Single	47	*19.6*
Married	145	*60.4*
Divorced	29	*12.1*
Widowed	19	*7.9*
Religion		
Christianity	124	*51.7*
Islam	98	*40.8*
Traditional	18	*7.5*

Gender Differentials in Cassava Enterprise (Table 2)

The cassava sector of the economy in the Sub- Saharan Africa provides women the opportunity to ensure food security for their families and also the provision of cash. In terms of economics, a comparison was based on the proportion of males (56.7%) and females (43.3%). However, males had the bulk of the total income (58.7%) and this made the total income for males overwhelmed that of females by 2% mainly because the total cost for females was higher (47.1%), so also was the total variable cost which was slightly higher (44.7%). However, the Total Fixed Cost for the females was lower (40.8%), thus giving the females an edge in terms of higher Gross Margin (48.0% as against 52.0% for the males) and Farm Net Income. (46.3% as against 53.7% for the males)

Table 2: Gender Differentials in Cassava Enterprise

Variables	Pooled Data (Naira)N=240	Male (Naira) N= 136	Percentage 56.7	Female(Naira)N=104	Percentage 43.3
Total Income	91830691	53885200	58.7	37945491	41.3
Total Cost	42626221	22558700	52.9	20067521	47.1
Total Variable Cost	11906710	6581230	55.3	5325480	44.7
Total Fixed Cost	3920570	2322927	59.2	1597643	40.8
Gross Margin	30719511	15977470	52.0	14742041	48.0
Farm Net Income	26798941	14379827	53.7	12419114	46.3

Factors Affecting the Magnitude of Farm Net Income Made

In order to know the factors affecting the magnitude of Farm Net Income made, a regression analysis was carried out. The R-Square was 0.461 indicating that 46.1% of the variability in the Farm Net Income was captured by the system while the remainders were exogenous to the system. The F-statistic was 8.435 and this was significant at 1% level showing a number of variables would be significant. Sex was significant at the 10% level and the coefficient was positive indicating being male or female impactedpositively on the Farm Net Income. The quantities of NPK and Urea fertilizers were

significant at 5% and 1% levels respectively and their coefficients were negative indicating that the higher the quantities of these fertilizers used the deeper they ate into the Farm Net Income. However, the total amount of fertilizers used impacted positively on the Farm Net Income and was significant at 5%. This scenario could be true in that higher fertilizer application would result in higher yield which in turn translated to higher Farm Net Income. Sources of Land acquisition were significant at the 10% level and the coefficient was negative indicating a negative impact on Farm Net Income. This might be true for females that find it difficult to acquire more land in the familial system of land tenure. Expenses on Transportation and Tools impacted negatively on Farm Net Income and were significant at 1% level. Total Credit Utilized and Personal Savings impacted positively on Farm Net Income and were both significant at 1% level. The higher the level of these variables the higher the level of Farm Net Income.

Table 3: Factors Affecting the Magnitude of Farm Net Income Made

Variables	T	Sig
Age	.308	.758
Sex	1.764	.079
Marital Status	-.632	.528
Religion	.429	.669
Other Occupation	-.842	.401
Level of Education	.244	.807
NPK Fertilizer	-2.339	.020
Urea	-3.979	.000
Quantity of Fertilizer Used	2.179	.030
Sources of Land acquisition	-1.670	.096
Sources of Finance	-2.863	.005
Expenses on Transportation	-3.399	.001
Expenses on Tools	-5.132	.000
Total Credit Utilized	4.246	.000
Personal Savings	6.964	.000
R-Square	0.461	
F-Statistic	8.435	.000

CONCLUSIONS

Despite the fact that males had the bulk of the total income mainly because the total cost and the total variable cost for females were higher, their Total Fixed Cost was lower thus giving the females an edge in terms of higher Gross Margin and Farm Net Income.

REFERENCES

1. *Bolhuis. 1954. The toxicity of cassava roots. Neth. J. Agric. Sci 2 (3): 176–185*
2. *Gwera, M. (2009, March 31). Food Centre to Improve Cassava Production. Daily News.*
3. *Hillocks, R. (2002). Cassava in Africa. In R. Hillocks, J. Thresh, & A. C. Bellotti, eds., Cassava Biology, Production and Utilization. CABI Publishing.*
4. *Meridian Institute: (http://merid.org/value-chain-innovations), 2009*
5. *Nhassico, D., Muquingue, H., Cliff,J.CumbanaA.and J Bradbury (2008) Review: Rising African cassava production, diseases due to high cyanide intake and control measures. Journal of the Science of Food and*

Agriculture, 88, 2043-2049.

6. *Nweke, F.I. (1996b). Cassava: A cash crop in Africa. COSCA Working Paper No. 14 Collaborative Study of Cassava in Africa, IITA, Ibadan, Nigeria.*
7. *Nweke Felix (2002), Controlling Cassava Mosaic Virus and Cassava Mealybug in Sub-Saharan Africa IFPRI Discussion Paper 00912 November 2009Ramatu, Al-Hassan and Egyir, Irene "The potential for farm/non-farm linkages in the cassava subsector in Ghana", FAO 2002.*
8. *Tesfaye Solomon, Mesay Yami, Bedada Begna. (2015) Journal of Economics and Sustainable Development www.iiste.org ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) Vol.6, No.1, 2015*
9. *Sangoyomi, T. E., & Ayandiji, A. (2013). Status of cassava production, distribution and utilization in Osun State, Nigeria. International Journal of Agricultural Science and Research (IJASR), 3(1), 1-5.*
10. *Thapa, Sridhar.(2008) "Gender differential in Agricultural productivity: evidence from Nepalese household data: CIFREM, Faculty of Economics, University of Trento." (Munich Personal RePEc Archive) December 2008.*
11. *Udry, C., 1996. Gender, Agricultural Production, and the Theory of the Household. Journal of Political Economy. 104(5), 1010–1046.*
12. *Ugwu, B.O. & Ay, P. 1992. Seasonality of cassava processing in Africa. COSCA Working Paper No. 9. Collaborative study of Cassava in Africa. International Institute of Tropical Agriculture, Ibadan, Nigeria.*
13. *Westby, A. (2008). Cassava Utilization, Storage and Small-scale Processing. In R. Hillock, J. Thresh, & A. C. Bellotti, eds., Cassava Biology, Production and Utilization. CABI Publishing. Cassava Value Chain Overview*