

EFFECTS OF FINANCING ON CASSAVA VALUE CHAIN IN OWO LOCAL GOVERNMENT AREA, ONDO STATE, NIGERIA

Similoluwa ADEWOLE, Akinwunmi OMEYE

The Federal University of Technology, Department of Agricultural and Resource Economics, Akure.+2347034926341; Emails: restismine13@gmail.com, rest_mine@yahoo.com

Corresponding author: restismine13@gmail.com

Abstract

The study examined the effects of finance on cassava value chain actors in Owo Local Government Area, Ondo State, Nigeria. Primary data was collected through the aid of structured questionnaire and interview format. Ninety four respondents were interviewed from the study area, consisting of farmers, processors and marketers of cassava and cassava products. Descriptive, financial and regression analysis was carried out on the data collected. Results showed that the majority of the respondents were aged between 36 and 45 years and were married. It also revealed that men are more involved in cassava cultivation and processing while women are more involved in marketing of cassava products. Findings also revealed that cassava value chain actors had some formal education. Fifty Nine (59%) percent of respondents interviewed had no access to formal credit at all while 41% have access to formal credit for cassava farming. Also, 86% of respondents interviewed farmed cassava with their own capital alone while 14% respondents farm using credit from various sources. Inadequate access to credit, high interest rate and fragmentation of farm holdings accounted for this. It also revealed that 45% have access to credit through micro finance banks, 32.5% through farmers union and 22.5% through “aajo” (Daily contribution). The regression result indicated an R^2 value of 0.988 for farmers, 0.959 for marketers and 0.967 for processors. It was revealed that the major factors that influence the level of profitability of the respondents in the study area are age, level of education, years of experience, access to capital while source of capital and technology used by processor increased the level of profitability.

Key words: actors, segments, Cassava, credit, value chain

INTRODUCTION

Nigeria is the largest producer of cassava tuber in the world with production of about 45 million mt of the world's production of 242 million mt in 2009. Average annual production in the country was about 35 million metric tonnes (2002-2008) and the total area under cassava cultivation in Nigeria is about 3.60 million hectares [6]. Although the world leader in cassava production, Nigeria is not an active participant in cassava trade in the international markets due to weak segments in the cassava value chain [2].

Efforts, which include commercialising cassava production and processing and increase its range of manufactured products in Ondo State, directed at increasing competitiveness in the chain have not been effective [2]. The activities of value chain actors have not been recognized thus farmers concentrate on the value addition using the common and traditional method of cassava

production. They do not recognize that there are other links in the value chain that can help them to regain the losses they encountered during the time of planting and value addition. The broad objective of the study was therefore to identify the effects of value chain financing on the cassava value chain in Owo Local Government Area, Ondo state, Nigeria.

In order to achieve this, it examined the socio-economic characteristics of actors in the cassava value chain in the study area, identified the various sources of finance for actors in the cassava value chain in the study area, determined and compared the profitability of users and non-users of credit in the cassava value chain in the study area, identified the factors that influence the productivity of the actors in the value chain and the various constraints faced by value chain actors in the study area.

A good understanding of value chain finance will improve the overall effectiveness in the cassava value chain. It also gives an

opportunity for cassava value chain development, improve efficiency and repayments in financing, and strengthen or solidify linkages among participants in the chain. Value chain finance contributes to

meeting the growing need for agricultural finance and investment in response to greater consumer demands for more processed or value added products.

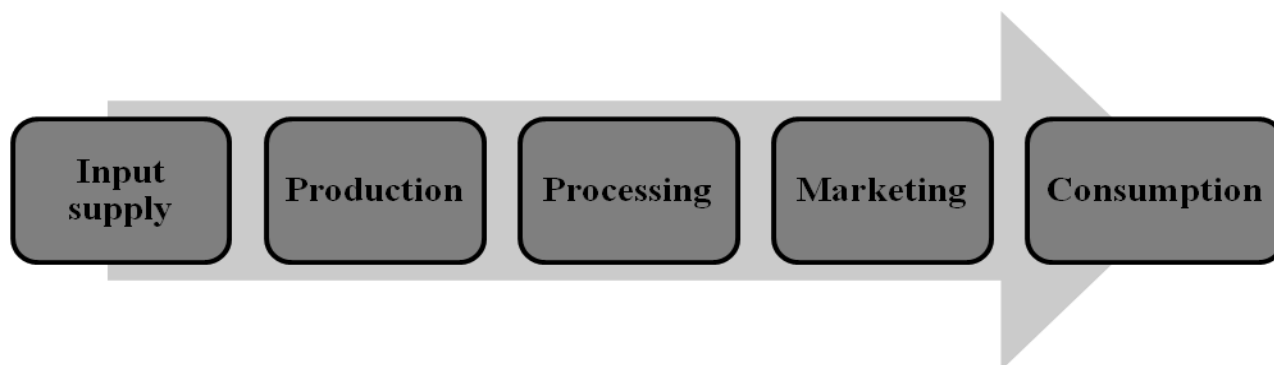


Fig. 1. Five stages of a value chain
 Source: [4]

MATERIALS AND METHODS

The study was carried out in Owo Local Government in Ondo State, which is situated in the south western part of Nigeria. Its headquarters is Owo. It has an area of 331 km and a population of 222,262 at the 2006 census. The climate is hot and humid, influenced by rain-bearing southwest monsoon winds from the ocean and dry northwest winds from the Sahara desert. The rainy season lasts from April to October, with rainfall of about 1,524 mm per year. Temperatures vary from 7 11'N 5 35'E to 7.183N 5.583E with mean annual relative humidity of about 80%. Agriculture is their main occupation, providing income and employment for more than 75% of the population.

Primary data was used for this study. The primary data was collected through the use of structured questionnaire and personal interview of the respondents selected using random and purposive sampling techniques. In the first stage, five (5) districts out of the seven (9) districts in the Local Government Area were purposively selected based on their market and predominance in cassava cultivation. In the second stage, two (2) villages were randomly selected from each districts making a total of 10 villages. In the final stage, 4 farmers, 4 processors and 4

marketers respectively were purposively selected from each village making a total of 120 respondents.

Descriptive statistics like frequency distribution, percentages and means, the Ordinary Least Squares Multiple Regression techniques and gross margin was used to analyse data collected.

The multiple regression model is specified as follows;

$$Y=f(X^1,X^2,X^3,X^4,X^5,X^6,X^7,X^8,X^9,X^{10},X^{11},X^{12}, e)$$

where:

Y = Productivity (Gross Margin)

X¹= Age (in years)

X²= Educational level (years)

X³ = Household size (numbers)

X⁴= Experience (years)

X⁵ = Farm size (hectares)

X⁶ = Occupation (farming as primary =1, farming as secondary = 0)

X⁷ = Sex (1 for male, 0 for female).

X⁸ = Access to capital.

X⁹ = Source of capital.

X¹⁰ = Member of association

X¹¹ = Access to loan

X¹² = Technology used

e = error term.

The gross margin was calculated as follows

$$\text{Gross Margin} = \text{TR} - \text{TC}$$

Where:

TR = Total revenue

TC = Total cost

In calculate the Gross margin, the total variable cost was computed by aggregating the cost of roots, processing and marketing. Processing costs include the cost of carrying out the activities in the process flow of producing the products. For instance, garri production involved cost of roots and its transportation/handling (loading and offloading) charges, peeling, washing, grating, pulverizing and toasting (frying). Similarly, marketing costs involved bagging, cost of packaging materials (bags, polyethylene) and transportation to point of sale (markets)

RESULTS AND DISCUSSIONS

Socio-economic characteristics

Age

Table 1 shows that the majority of the respondents was aged between 36 – 45 years. This implies that the respondents are young and this will increase the efficiency and effectiveness in cassava cultivation, processing and marketing.

Table 1. Age distribution of the respondents

Age (year)	Farmers		Processors		Marketers	
	Freq	%	Freq	%	Freq	%
<= 35	3	9.7	1	3.1	5	16.1
36 – 45	20	64.5	16	50.0	17	55.0
46 – 55	6	19.4	13	40.6	6	19.4
56 – 65	1	3.2	1	3.1	2	6.5
66 +	1	3.2	1	3.1	1	3.2
Total	31	100	32	100	31	100

Source: Field Survey, 2017.

Sex

Fig 2 shows that men are more involved in cassava cultivation and processing than women while women are more involved in marketing than men. This was as a result of the stress involved in the production. This finding was against the view that men are more involved in the cassava production and processing and women showed less interest in the production of cassava.[2]

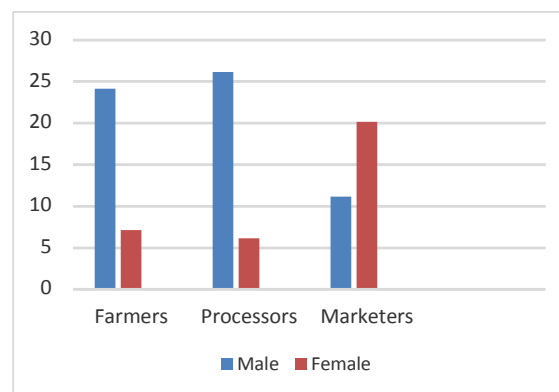


Fig. 2. Gender distribution of respondents
 Source: Field Survey, 2017.

Marital status

From Table 2, majority of the respondents were married. This indicates that there were more married individuals who engaged in the cassava value chain in the study area. This may be to reduce the cost of labour by deciding to use members of the household as source of labour for the value chain activities.

Table 2. Marital status of respondents

Status	Farmers		Processors		Marketers	
	Freq	%	Freq	%	Freq	%
Married	20	64.5	28	87.5	20	64.5
Single	1	3.2	3	9.4	1	3.2
Widowed	10	32.3	1	3.1	10	32.3
Total	31	100	32	100	31	100

Source: Field Survey, 2017.

Educational level

In Fig 3, all of the value chain actors had some formal education.

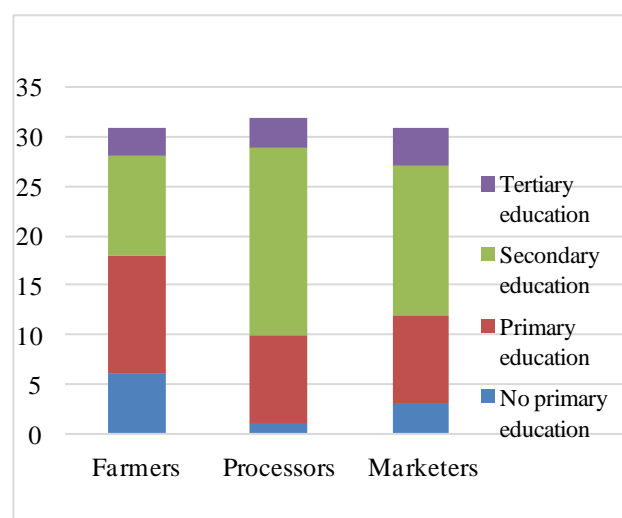


Fig. 3. Respondent's level of education.

This suggests that education attainment influence the way men and women participate in cassava value chain.

Thus, this somewhat agrees economists who posited that education is an important factor to facilitate the adoption of improved technology by increasing the farmer's knowledge and understanding of new farm practices.[3]

Years of experience

Table 3 shows that majority of the respondents had more three (3) years of experience in cassava business. This indicates that the majority of the respondents have acquired some level of experience in production, processing and marketing of cassava which could be very helpful in coping and adapting with the challenges that come with cassava value addition.

Table 3. Years of experience

Year	Farmers		Processors		Marketers	
	Freq	%	Freq	%	Freq	%
<= 3	1	3.2	2	6.5	2	6.5
4 – 6	20	64.5	19	61.3	19	61.3
7 – 9	10	32.2	11	34.5	10	32.3
Total	3	100	32	100	3	100

Source: Field Survey, 2017.

Farm size

Table 4 reveals that the mean farm size in the study area is 1.301 hectares. This confirmed the findings that the average land holdings of small scale farmers were often too small for efficient land utilization [5]. With direct correlation between farm sizes and gross income, it implies that small farm sizes will naturally lead to low cassava output and low productivity.

Table 4. Farm size of the respondents

Farm size (ha)	Farmer		Processors		Marketers	
	Freq	%	Freq	%	Freq	%
0.1 – 0.4	1	3.2	6	18.8	4	12.9
0.5 – 1.4	15	48.4	19	59.4	16	51.6
1.5 – 1.9	3	9.7	1	3.1	2	6.5
2.0 – 2.5	10	32.2	5	15.6	8	25.8
2.5 +	2	6.5	1	3.1	1	3.2
Total	31	100	32	100	31	100

Mean (1.301)

Source: Field Survey, 2017.

Household size

Table 5 shows the mean size of household was 6.17 implying that there will be more hands to assist in the activities of the famers, processors and marketers in cassava value chain thus reducing the cost of hired labour. This result is supported by researchers, who asserted that large household size provides most of the labour force for farming households.[6]

Table 5. Household size

HH size	Farmers		Processors		Marketers	
	Freq	%	Freq	%	Freq	%
<= 3	2	6.5	1	3.1	2	6.5
4 – 6	15	48.4	16	50.0	20	64.5
7 – 9	14	45.2	15	46.9	9	29.0
Total	31	100	32	100	31	100

Source: Field Survey, 2017.

Access to credit

Figure 3 shows that 65.6% of the farmers, 65.6% of the producers and 69.7 of the marketers interviewed had no access to formal credit at all while only 34.4% of the farmers, 34.4% of the processors and 30.3% of the marketers had access to formal credit for cassava business. The reasons attributed to this by the actors was that the financial institutions, which loan money to its members have not been doing much and government efforts to make credit available to the actors does not exist.

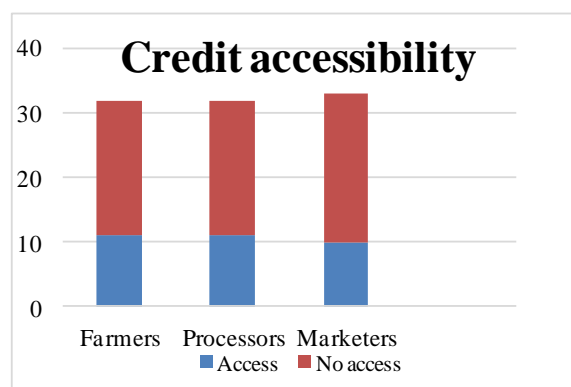


Fig. 4. Credit accessibility of respondents.

Source: Field Survey, 2017

High interest rate charged by informal sources of credit and administrative bottlenecks involved in getting loans from government are other reasons why farmers were not interested

in accessing credit from them. Also, because farmers did not have the required collateral security, it was extremely difficult, if not impossible, to get loans from commercial banks.

Source of capital

Source of capital is an important determinant of the size of farm holdings and whether the farm was subsistence or commercial. Figure 4 shows that majority of the respondents interviewed are using their own capital alone while others respondents farm using credit from various sources. Inadequate access to credit, high interest rate and fragmentation of farm holdings accounted for this.

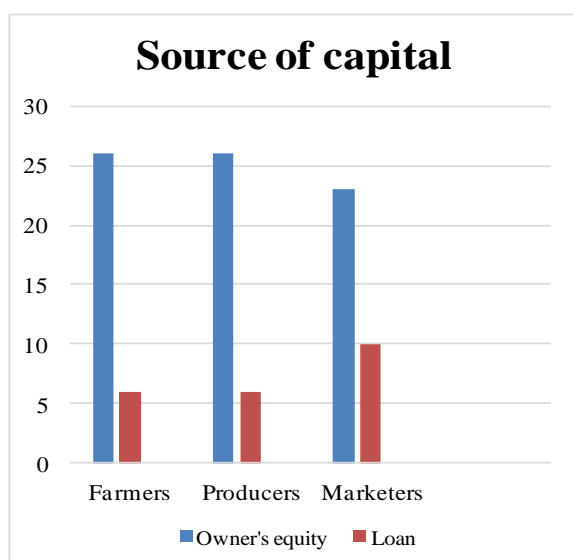


Fig. 5. Source of capital
 Source: Field Survey, 2017

Sources of finance for actors in the cassava value chain.

Table 6. Source of finance

Source	Farmers		Producers		Marketers
	Freq	%	Freq	%	Freq
Micro finance bank	6	19.4	15	46.9	14
Farmers Union	15	48.4	9	28.1	9
Aajo	10	32.2	8	25.0	10
Total	31	100	32	100	31

Source: Field Survey, 2017

Table 6 shows that 45% have access to through micro finance banks, 32.5% through farmers union and 22.5% through “aajo” (daily contributions).

Factors influencing profitability of cassava value chain actors.

Farmers

The regression result as shown on table 7, indicated an R^2 value of 0.988 for farmers. Major factors that influence the level of profitability of the respondents in the study area were age, sex, level of education, years of experience, access to capital and source of capital. These factors have a positive significant effect on the level of profitability of cassava value chain actors in the study area. This suggests that increase in age, level of education, years of experience, access to capital and source of capital will increase the level of profitability.

Processors

The regression result indicated an R^2 value of 0.967 for processors. Major factors that influence the level of profitability of the respondents in the study area are age, sex, level of education, years of experience, access to capital, source of capital, source of finance and technology used. These factors have a positive significant effect on the level of profitability of cassava value chain actors in the study area. This suggests that increase in age, level of education, years of experience, access to capital, source of capital and technology used will increase the level of profitability.

Marketers

The regression result indicated an R^2 value of 0.959 for farmers meaning that 95.9 percent of the variability in the model was explained while the remaining 4.1 percent could be attributed to error terms and omitted variables on table 6. It was revealed that the major factors that influence the level of profitability of the respondents in the study area are age, sex, level of education, years of experience, access to capital and source of capital. These factors have a positive significant effect on the level of profitability of cassava value chain actors in the study area. This suggests that increase in age, level of education, years

of experience, access to capital and source of capital will increase the level of profitability.

Table 7. Results of multiple regression analysis of the factors influencing profitability of cassava value chain actors

Variables	Farmers		Producers		Marketers	
	Coeff	Sig	Coeff	Sig	Coeff	Sig
Age	.206	.054	-.089	.000*	.033	.866
Sex	.141	.080**	.179	.002**	-.336	.100**
Household size	-.009	.891				
Farm size	.140	.146				
Years of experience	.597	.000*	-.114	.005**	.073	.741
Years of education	.245	.088	.082	.008**	-.064	.733
Access to credit	-.044	.010**	-.358	.000*	.036	.001*
Source of capital	.193	.009**	-.109	.604	-.150	.480
Source of finance			-.049	.841	-.066	.727
Technology used			.546	.020**		
Constraints	.896	.001*	-.243	.008*	.277	.010**
R		-.994		.907		.949
R ²		.988		.967		.959

* = sig at 1%, ** = sig at 5%

Source: Field Survey, 2017

Comparative analysis of profitability of credit users and non-credit users

Table 8 and 9 showed the gross margin among farmers, processors and marketers of

credit users and non-credits users. The importance of credit was revealed by its users having higher profit compared with non-credit users.

Table 8. Average gross margin of credit users per year

	FARMERS	PROCESSORS	MARKETERS
Quantity of product sold (kg)	540	620	585
Price per kg (₦)	6,000	7,000	5,500
Total Revenue (TR) (₦)	32,400,000	4,340,000	3,217,500
Labour Cost(₦)	372,000	115,200	115,200
Transportation(₦)	131,000	344,000	430,500
Energy(₦)		357,000	
Interest Rate (5%)(₦)	135,000	371,000	234,000
Total Cost (TC) (₦)	638,000	1,187,200	779,700
Gross Margin (TR-TC) (₦)	2,602,000	3,152,800	2,437,800

Source: Field Survey, 2017

Table 9. Average gross margin of non-credit users per year

	FARMERS	PROCESSORS	MARKETERS
Quantity of product sold (kg)	180	320	342
Price per kg (₦)	6,000	7,000	5,500
Total Revenue (TR) (₦)	1,092,000	2,240,000	1,881,000
Labour Cost(₦)	183,000	192,000	24,200
Transportation(₦)	101,000	144,000	234,000
Energy(₦)		194,000	
Interest Rate (5%)(₦)	135,000	371,000	234,000
Total Cost (TC) (₦)	284,000	530,000	258,200
Gross Margin (TR-TC) (₦)	808,000	1,710,000	1,622,800

Source: Field Survey, 2017

Constraint faced by respondents in the study area

Table 10 reveals that 45.2% farmers, 50% producers and 9.1% marketers were faced with the problem of high cost of transportation due to the distance of their farm

to the market. 37.5% processors and 27.2% marketers were with unstable power supply during processing. 16.1% farmers experience problem of infestation of diseases and insects which reduce their output while producers and marketers are not affected by infestation,

9.4% producers and 27.3% are faced with the problem of water scarcity. Poor roads were the major problem faced by the actors which lead to post harvest loss and increase in price of cassava products.

Table 10. Constraints faced by respondents in the study area

Constraints %	Farmers		Producers		Marketers	
	Freq	%	Freq	%	Freq	%
Unstable power supply	0	0	12	37.5	7	21.2
Transport cost	14	45.2	16	50.0	3	9.1
Water scarcity	0	0	3	9.4	9	27.3
Poor roads	12	38.7	1	3.1	8	24.2
Pest infestation	5	16.1	0	0	0	0
Total	31	100	32	100	31	100

Source: Field Survey, 2017

CONCLUSIONS

It was concluded that the activities of cassava value chain actors involved in farming, processing and marketing cassava in the study area are restricted through low financial support hindering the enhancement of mechanised farming, lager scale in processing and marketing.

Based on the findings of this study, the following recommendations were made:

- (i)The education of farmers, processors and marketers in the value chain should be a continuous one. Introduction of adult education and skill acquisition programmes will equip the actors to make their activities more profitable,
- (ii)Financial institutions and other avenues through which credit can be offered to farmers, small scale processors and marketers should be empowered and enlightened,
- (iii)Efforts aimed at increasing farmers' access to more land for farming should be intensified by government and other stakeholders. This will increase output and ensure a steady supply of the raw material and the final product while also increasing profit,
- (iv)Special programmes targeted at bringing interaction of ideas between experienced actors and younger ones in the value chain should be encouraged,
- (v)Government and non-governmental organizations should embark upon the

commercialization of the processing and marketing of the cassava value chain and technological upgrading of the processing.

ACKNOWLEDGMENTS

Data for this research collected by my B.Tech Student, Akinwunmi Omeje.

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