



EFFECT OF PRODUCER INVESTMENT ON THE PERFORMANCE OF VALUE ADDED CASSAVA PRODUCTION IN SOUTH-EAST NIGERIA

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Abstract

This study analyzed the effect of producer investment on performance of value added cassava production in South East Nigeria. Data used for the study were obtained from 180 respondents using multi-stage sampling technique. The data were analyzed using descriptive statistics, Pearson's correlation analysis and simple regression technique. Findings showed that the initial capital invested in the enterprises averaged ₦107,635.64 (*gari*), ₦99,623.48 (*fufu*), and ₦71,159.39 (*abacha*) and sourced mostly from personal savings. The gross margin was ₦326814.53, ₦353978.00 and ₦267791.69 for *gari*, *fufu* and *abacha* enterprises respectively, while the BCR was 2.17:1.00, 1.77:1.00 and 2.44:1.00 respectively for the enterprises. The correlation analysis showed that there was a strong relationship between capital invested and performance. The regression analysis showed that the amount of capital invested positively influenced the level of profit. The study therefore recommended the provision of credit support to investors in cassava processing not only as agricultural loans but as part of small and medium scale enterprises (SMEs) development grant to expand their capacity, improve scale of operation and income. The amount of credit used by the processors in most of the cases had significant effects on their performance. Therefore the relevance of credit in strengthening the processors is important.

Keywords: Producer investment, performance, value added, and cassava production

Introduction

Nigeria is faced with the challenge of ensuring adequate food supply for her teeming population with current population estimated at more than 190m individuals (NBS, 2018). Food sufficiency is expected to be achieved through innovations in the agricultural sector much faster than through innovations in any other sector of the economy. In 2002, cassava suddenly gained prominence following a presidential initiative on the crop which was aimed at using cassava production as an engine of economic growth in Nigeria (Ayodele *et al.*, 2011).

Agwu and Anyaeche (2007), noted that cassava value added products are the major source for food for many households in Nigeria. The South East region accounts for about 20% of the total cassava output in the country with Abia, Enugu and Imo states producing a total of 634mt, 2,599mt and 2,315mt of the crop annually (NBS, 2007) respectively. The crop is produced in many forms both in the fresh and processed forms, starting from the producers through processors to the end users. Many opportunities abound in cassava production such as: demand for processed products, availability of research and technologies, high potential for large volume of

cassava for processing, vibrant animal feed industries and huge investment opportunities in the sub-sector. However, Investment in cassava value addition is considered risky by different chain actors and is limited as a result of the overall non-competitiveness of the sector. Thus, proper interventions which will strengthen the production link and enlarge the utilization of available opportunities are urgently needed.

In addition, producers encounter several challenges in maintaining and developing cassava in a sustainable manner. Currently, they cannot meet demand. At the farm level, production costs are high relative to those in other countries. The acquisition of even simple processing equipment is an investment which the majority of the small scale cassava producers cannot afford. More so, the lack of accurate cost data for existing processing methods has an effect on pricing of the products and investment decisions. Consequently, poor credit facilities and high interest rates make such investments (in cassava processing enterprise) risky, financially unattractive and hinder the development of the economic potential of the crop (Knipsheer *et al.*, 2007).

Cassava production is characterized by small scale producers who use old varieties and traditional production technologies which largely accounts for low yield and profits. Bayeh (2013) observed that profit is the primary objective of any business enterprise. Profit, which measures the success of a business enterprise and the development of the market for it, is determined by placing revenue against the associated cost, and the survival of an enterprise is hinged on the level of profit. Therefore, a successful business venture requires huge capital investment since investment has a significant and positive impact on enterprise performance. Hence, given the fact that cassava production in Nigeria is mostly consumed domestically (Onabolu *et al.*, 2003; NEPC, 2005; PRC, 2006; PRC, 2007), it is important to ascertain the strength of the relationship and the effect of producer investment on the performance of value added cassava production in South-East, Nigeria.

Methodology

The study was conducted in South East Nigeria. The South East agro-ecological zone is made up of five States: Abia, Anambra, Ebonyi, Enugu and Imo, with 34,320,891 persons (NPC, 2016). Farming is the predominant occupation of the people in the zone majority of who are the small-holder farmers. Major food crops cultivated include: cassava, maize, rice, sweet potatoes, yam, plantain, banana and vegetables (Onyeukwu, 2012). A multi- stage sampling technique was used for data collection. The first stage involved the purposive selection of three states (Abia, Enugu and Imo) based on intensity of cassava value added production. In the second stage, 2 agricultural zones from each state were randomly selected. The third stage involved the purposive selection of two Local Government Areas (LGAs) from each zone giving a total of 12 LGAs. In the fourth stage 2 communities from each of the LGAs were randomly selected giving a total of 24 communities. Lastly, a list of 270 cassava processors was purposively compiled from the 24 communities. Out of these, 60 processors were purposively selected for a particular product (20 processors from each state), depending on the level of

cassava processing activities going on in those communities. This gave a sample size of 180 cassava processors for the study. Data were collected from primary sources with the use of structured questionnaire designed in line with the objective of the study in 2015.

Data Analysis

Data from this study were analyzed using different tools and techniques. The sources of capital and amount of initial capital used in the cassava processing were analyzed descriptively. Pearson's correlation analysis was used to analyze the relationship between investment (capital) and performance (profit). The effect of producer investment on the level of profit of the enterprises was estimated by the use of simple regression model. The Pearson's Product Moment Correlation coefficient model is expressed thus:

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{[n(\sum x^2) - (\sum x)^2][n(\sum y^2) - (\sum y)^2]}} \dots\dots\dots (1)$$

Where,

- r = Correlation coefficient
- x = Capital invested (Naira)
- y = Profit (Naira)
- n = Number in years

The simple regression model is specified thus:

$$Y_i = b_0 + b_1 X_i + e_i \dots\dots\dots(2)$$

Where,

- Y_i = Profit (Naira)
- X_i = Capital invested (Naira)
- b_0 = Constant
- b_1 = Coefficient
- e_i = Error term

Results and Discussion

Source of Capital and Initial Capital Invested in the Enterprises

The distribution of the processors according to their source of capital and initial capital invested in the enterprises are presented in Table I.

Table 1: Distribution of Value Added Cassava Processors according to Source of Capital

Source	*Frequency	Percentage
Personal	94	52.22
Bank	11	6.11
Cooperative	4	2.22
<i>Isusu</i>	88	48.87
Friends and relations	13	7.22

Source: Field survey, 2015. * Multiple responses recorded

Many processors (52.22%) financed their enterprise through personal savings, about 48.87% borrowed from *Isusu*, while 7.22% and 6.11% obtained theirs from friends and relations and banks/financial institutions respectively. This result is consistent with the findings of Ikwaakam (2013), who noted that most producers finance their productive activities with their personal savings and funds borrowed from informal credit sources. This indicates that there is inadequate number of banks or other financial institutions for financing

agricultural production in the study area. This is capable of impacting negatively on the adoption and use of improved technologies/processing methods. The processors have not been able to exploit the low interest charge by the formal credit institutions (Bolarinwa and Fakoya, 2011).

The average initial capital invested in the enterprises is ₦107,635.64, ₦99,623.48 and ₦71,159.38 for *gari*, *fufu* and *abacha* respectively (Table 2).

Table 2: Distribution of the Processors According to the Initial Capital Invested in the Enterprise

Variable	Frequency (n = 60)	Percentage
Gari		
< 21,000	7	11.67
21,000 – 40,000	7	11.67
41,000 – 60,000	4	6.67
61,000 – 80,000	1	1.67
>80,000	41	67.78
Mean	107635.64	
Fufu		
< 21,000	7	11.67
21,000 – 40,000	9	15
41,000 – 60,000	3	5
61,000 – 80,000	2	3.33
>80,000	39	65
Mean	99623.48	
Abacha		
< 21,000	49	81.67
21,000 – 40,000	3	5
41,000 – 60,000	4	6.67
61,000 – 80,000	2	3.33
>80,000	2	3.33
Mean	71159.39	

Source: Field survey, 2015

A total of 41 and 39 (68.33% and 65%) respondents reported initial capital investment of more than ₦80,000 for *gari* and *fufu* enterprises respectively, while 49 (81.67%) respondents less than ₦20,000 for *abacha* enterprise. About 14 and 16 respondents (23.34% and 26.67%) indicated an initial investment capital less than ₦40,000 for *gari* and *fufu* enterprises respectively. This is consistent with the findings of Oluwemimo (2010) that the initial investment capital is small and typical of

investment operations in the informal sector of the national economy. Therefore, micro credit banks should readily assist the processors with funds to improve their productivity.

Profitability Analysis of Cassava Value Addition

The profitability of the major products from cassava processing is presented in Table 3.

Table 3: Summary Cost and Returns Analysis for Cassava Value Added Product Enterprises

Variable	Gari	Fufu	Abacha
Total Revenue	544,490.94	750,450.00	431,770.05
Total Variable Cost	217,676.41	396,472.00	163,978.36
Total Cost	250,465.75	424,226.18	177,041.16
Gross margin	326,814.53	353,978.00	267,791.69
Revenue Cost Ratio	2.17:1.00	1.77:1.00	2.44:1.00

Source: Field survey, 2015

Result shows estimated total variable cost of ₦217,676.41 for *gari*, ₦396,472.00 for *fufu* and ₦163,978.36 for *abacha*, while the estimated total cost was ₦250,465, ₦424,226.18 and ₦177,041.16 respectively. The estimated total revenue was ₦544,490.94 for *gari*, ₦750,450.00 for *fufu* and ₦431,770.05 for *abacha*. The result showed a gross margin of ₦326,814.53, ₦353,978.00 and ₦267,791.69 for *gari*, *fufu* and *abacha* respectively. Furthermore, the result showed that the processing of cassava into *fufu* generated a higher gross margin than the other enterprises, followed by *gari* and *abacha*. The *gari* enterprise made more than double the amount on every ₦1.00 invested. The result was same for *abacha*, while *fufu* enterprise made 77% profit on every ₦1.00 invested in the venture. This could be seen in the estimated Revenue to Cost ratio for the enterprises. For every

₦1.00 spent, there was a return of ₦1.17 (2.17:1.0), 77k (1.77:1.0) and ₦1.44 (2.44:1.0) for *gari*, *fufu* and *abacha* enterprises respectively. This confirms the findings of Ehinmowo *et al.*, (2015) that the processing of cassava is profitable, with a RCR of 1.75 to 2.24 in South West Nigeria.

Effect of Producer Investment on the Level of Profit among the Enterprises

This section ascertained the strength of the relationship and the effect of producer investment (capital) on the level of profit among the enterprises using a correlation matrix and simple regression technique. The result of the correlation analysis is presented in Table 4. The findings of Pearson's correlation indicate the variables are positively correlated to each other at the 10%, 5% and 10% levels of significance for *gari*, *fufu* and *abacha* enterprises respectively. This suggests that there is

evidence of relationship between the two variables and an increase in one unit of capital invested will lead to increase in profit with 0.5565, 0.7663 and 0.4325 units for *gari*, *fufu* and *abacha* respectively. An increase in the size of capital invested in the enterprises translates to

sustained profit growth. This conforms to the study Shubita and Jaafer (2012) who indicated that there is a strong positive relationship between capital and earning (profit) in a firm.

Table 4: Pearson Product Moment Correlation Matrix of Capital invested and Performance of Value Added Cassava Enterprises

Gari	Capital	Profit
Capital	1.0000	
Profit	0.5565 0.0224*	1.0000
Fufu		
Capital	1.0000	
Profit	0.7663 0.0040**	1.0000
Abacha		
Capital	1.0000	
Profit	0.4325 0.0264*	1.0000

Source: Field survey, 2015

*, ** implies 10% and 5% significant level

In fitting the functional forms, regression analysis was employed and the estimated results are shown in Tables 5 to 7. The explicit equations are considered with respect to their explanatory powers, R-squared values and F-ratios. The double log, linear and semi-log models were consequently selected because they had relatively strongest explanatory powers than the other models for the *gari*, *fufu* and *abacha* enterprises respectively.

The result of the analysis for the *gari* enterprise in Table 5 gave an R² of 0.4855 and a high F-ratio. This indicates that producer investment has a 48.55% influence on the variability of profit level for the enterprise. The remaining 51.45% was contributed by other factors. This suggests that profit increases with 0.39% with 1% increase in the amount of capital invested.

Table 5: Effect of Producer Investment (Capital) on the Level of Profit for Gari Enterprise

Variable	Linear	Semi-log	Double log+	Exponential
Constant	4300.372 (16.14)***	-11887.23 (-5.62)***	5.4031 (15.12)***	8.3442 (180.83)***
Investment (Capital)	0.2718 (3.84)***	2160.218 (8.07)***	0.3919 (8.66)***	0.00004 (3.91)***
R-Squared	0.1113	0.3555	0.4855	0.1148
Adj. R-Squared	0.1038	0.3501	0.4834	0.1073
F-ratio	14.78***	65.10***	74.98***	15.30***

Source: Field survey, 2015. + = Lead equation, *, **, *** = Significant at 10%, 5% and 1% respectively. Figures in parenthesis are t-values

The result in Table 6 shows that producer investment has significant effect on the level of profit for *fufu* enterprise by 64.64%. The remaining 35.36% is influenced by

other factors. This shows that any increase in capital invested will lead to a corresponding increase in profit.

Table 6: Effect of Producer Investment (Capital) on the Level of Profit for Fufu Enterprise

Variable	Linear+	Semi-log	Double-log	Exponential
Constant	64364.25 (5.62)***	-476777 (-6.56)***	8.3178 (16.66)***	11.3079 (131.91)***
Investment (Capital)	17.2180 (14.69)***	77975.32 (9.55)***	0.4319 (7.70)***	0.0001 (10.97)***
R-Squared	0.6464	0.4358	0.3346	0.5047
Adj. R-Squared	0.6434	0.4310	0.3289	0.5005
F-ratio	215.74***	91.15***	59.33***	120.26***

Source: Field survey, 2015. + = Lead equation, *, **, *** = Significant at 10%, 5% and 1% respectively. Figures in parenthesis are t-values

For results in Table 7 (*abacha*), the R-squared value of 0.5662 for the enterprise implies that producer investment contributed to performance (level of profit)

by 56.62%. The remaining 43.38% is influenced by other factors. This suggests that profit increases by additional increase in the amount of capital invested.

Table 7: Effect of Producer Investment (Capital) on the Level of Profit for *Abacha* Enterprise

Variable	Linear	Semi-log+	Double log	Exponential
Constant	5493.797 (23.55)***	11382.49 (5.25)***	9.8075 (18.97)***	8.5145 (152.87)***
Investment (Capital)	0.2681 (2.51)**	0.8981 (2.89)***	0.1966 (2.65)**	0.0001 (2.20)*
R-squared	0.3507	0.5662	0.4564	0.3393
Adj. R-squared	0.3427	0.5583	0.4484	0.3311
F-ratio	6.31***	8.37***	7.05***	4.82***

Source: Field survey, 2015. + = Lead equation, *, **, *** = Significant at 10%, 5% and 1% respectively. Figures in parenthesis are t-values

Conclusion

The producer investment in value added cassava production among the rural households was estimated. The enterprises were profitable at varying levels with *gari* and *abacha* returning more than double the amount invested, though *fufu* enterprise had the highest gross margin. Empirical result showed that capital invested and profit was positively correlated among the enterprises. The study therefore concludes that amount of capital invested had a positive effect on the performance as measured by the gross margin of cassava processing in the study area. The findings therefore call for provision of credit support to investors in cassava processing not only as agricultural loans but as part of small and medium scale enterprises (SMEs) development grant, to expand their capacities, adopt new technologies / innovations, and enhance scale of operation and income. There is also need for policies aimed at provision of credit at minimal interest rates to enhance performance and ensure sustainability of the value chain.

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