ECONOMIC ANALYSIS OF KOLANUT PRODUCTION IN OSUN STATE, NIGERIA

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ABSTRACT

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The extent of profit in any enterprise determines the sustainability of such an enterprise. Therefore this study determines the extent of profit (or otherwise) that could be generated in kolanut production in the study area. The study was carried out in Osun State, Nigeria between June and July 2007. Structured questionnaire was used to collect information from kola farmers and the data collected was analyzed using Budgetary Analysis as well as Ordinary Least Square (OLS) Regression Analysis. The result of budgetary analysis shows that the proportion of the net income to the total cost was 32.9% showing that the enterprise was profitable. Regression analysis shows that the level of revenue derivable from kolanut production in the study area is critically determined by the cost of weeding ($P<0.01$), cost of chemical application ($P<0.05$), cost of harvesting ($P<0.05$), cost of on-farm processing ($P<0.05$) and cost of transportation ($P<0.01$). The study recommended that government and non-governmental organizations (NGOs) should assist farmers by providing soft loans to the farmers. Also, farmers should organize themselves into cooperative societies, as this will help them to get financial assistance from government.

Keywords: kolanut, profit, production, sustainability, budgetary analysis, regression analysis

Introduction

Kola is a member of the tropical family sterculiaceae and it grows as a tree form. It is believed that kola trees are native to Ghana and Ivory Coast and their spread has brought about by humans (American Horticultural Society, 2002). There are over fifty species of kola. Of these, seven have edible nuts, but only two have been widely exploited, these are *cola nitida* and *cola acuminata*.

These species have been important objects of trade for a long time. The most important is *cola nitida* because of its wide economic value. Kola is mostly produced in Africa and is cultivated to a large degree in Nigeria but also in Ghana, Ivory Coast, Brazil and the West Indian Islands (Eunatten, 1973; Oludemokun, 1983; Opeke, 1982). Annual production from these countries alone is in excess of 250,000 tons while the world production is about 300,000 tons (American Horticultural Society, 2002). According to Quarcoo (1969), Nigeria produces 88% of the world's kola production and 90% of this is consumed locally while the remaining 10% is exported. This finding was buttressed by Oluokun and Oladokun (1999) who claimed that Nigeria produces two million metric tons of kolanut annually which represented 70% of the world's kolanut production.

Kolanut, apart from the fact that it is widely consumed by virtually all categories of income groups, the commodity has been found to be useful in the production of beverages, flavoring material alkaloids, caffeine, theobromine, laxatives, heart stimulants and sedatives. In addition, kolanut husk which is a by-product from processing the seed is widely used for animal feeding because of its high nutritive quality and there was a report that there has been an outstanding growth performance and the apparent nutrient utilization of broilers fed with kolanut husk meal diets (Babatunde and Hamzat, 2005).

However, with all these robust potentials from kola, the crop has been faced with some challenges. According to Facheux *et al* (2001), there are clear limitations to significantly increasing income from kolanut business as a result of limited market access, low resource regeneration, limited available capital and lack of appropriate technology. Furthermore, kola weevils attacking the nuts both prior to harvest and during storage are major problems faced by kola producers, wholesalers, retailers and even consumers. However, with all these challenges facing kola production, could the enterprise still make a breakthrough that could justify its sustainability in production? It is the question that this study addresses by examining the economic analysis of kola production in the study area.

METHODOLOGY

The study was carried out in Osun State. Osun State is a notable producer of kolanut in Nigeria. Five Local Government Areas (LGAs) were randomly selected from thirty LGAs in the state. The randomly selected LGAs were Ede North, Ife North, Ife South, Iwo and Osogbo. Two communities were randomly selected from each of the LGAs making a total of ten communities. In each of the communities, twenty respondents (farmers) were randomly selected to make a total of two hundred respondents used for this study. Information was collected from the respondents with the aid of structured questionnaires. The information collected was done between June and July 2007 and it was annual information that was collected.

The date from the information collected was analyzed with budgetary analysis as well as Ordinary Least Square (OLS) regression analysis

1. Budgetary analysis – this was used to estimate the cost of production as well as the revenue generated from kola nut production.

Total Cost (TC) = Total Fixed Cost (TFC) + Total Variable Cost (TVC)…….... (i)
Gross Revenue (GR) = Total Output (Total number of tons of kolanut sold) X unit price…… (ii)
Gross Margin (GM) = GR – Total Variable Cost (TVC) ……..... (iii)
Net Income (NI) = GR – Total Fixed Cost (TFC) ……..... (iv)

2. Ordinary Least Square Regression Analysis – this was used to estimate the effects of the cost of production on the revenue generated from kola nut production.

The implicit model is: -
$IogREVE = \alpha_1 logWEED + \alpha_2 logCHEM + \alpha_3 logHARV + \alpha_4 logPROC + \alpha_5 logTRAN + ei$ …… (v)
Where:
REVE = Revenue from kolanut output (₦)
WEED = Cost of weeding (₦)
CHEM = Cost of chemical application (₦)
HARV = Cost of harvesting (₦)
PROC = Cost of on-farm processing (₦)
TRAN = Cost of transportation (₦)
ei = Random error term.

Results and Discussion

Table 1 shows the summary of the cost of production and the returns from kolanut production. The result shows that the total variable cost was ₦928,520.00 while the average variable cost per farmer was ₦443.00. The average fixed cost and the average gross revenue were ₦3961.00 and ₦11,432.00 respectively. The gross margin and the net income per farmer were ₦6790.00 and ₦2829.00 respectively. The total cost involved in kola production and the gross revenue derived were ₦1,720,620 and ₦2,286,415.00 respectively while the average total cost per farmer and the average gross revenue per farmer were ₦8603.00 and ₦11,432.00 respectively. The proportion of the net income to the total cost therefore was 32.9%. Hence, 32.9% of the total cost expended on kola production was generated as profit.

Therefore kola production enterprise is profitable in the study area.
However, according to the farmers, some of the problems faced by them are lack of adequate fund to properly maintain their farms, occasional scarcity of agrochemicals such as insecticides, high cost of agricultural inputs and occasional scarcity of labour.

Table I: Cost and Returns Analysis

S/N	Item	Amount (₦)
1.	Total Variable cost	928,520.00
2.	Average Variable Cost/farmer	4643.00
3.	Total Fixed Cost	792,100.00
4.	Average Fixed Cost/farmer	3961.00
5.	Total Cost	1,720,620.00
6.	Average Total Cost/farmer	8603.00
7.	Gross Revenue	2,286,415.00
8.	Average Gross Revenue/farmer	11,432.00
9.	Gross Margin	1,357,895.00
10.	Gross Margin/farmer	6,790.00
11.	Net Income	565,795.00
12.	Net Income/farmer	2829.00

Source: Field survey, 2007.

Table 2 shows the result of the regression analysis. The result shows that the regressors can explain 83.5% of the variations in the dependant variable, that is, the coefficient of determination (R^2) was 83.5%. The F-ratio as well as the standard error for the model was 28.246 and 0.01563 respectively. Hence, the overall equation is significant at

1% level. The coefficients for the cost of weeding, cost of chemical application, cost of harvesting, cost of on-farm processing and cost of transportation were all positive and significant. However, while the cost of weeding, cost of on farm processing and cost of transportation were significant at 1% level; the cost of chemical and the cost of transportation were significant at 5% level. The positive sign of the variables shows that as expenditure on these cost items increases, revenue also increases. The significance of the variables indicates that all the variables (cost of weeding, cost of chemical application, cost of harvesting, cost of on-farm processing and cost of transportation) were important determinants of revenue in kola production in the study area.

Table 2: Result of OLS Regression Analysis

Variable	Estimate	t-values
Constant	3.407	5.120
Log WEED	0.953***	6.231
Log CHEM	0.305**	2.05
Log HARV	0.245**	1.99
Log PROC	0.490***	4.002
Log TRAN	0.519***	3.546
R^2	0.835	
Standard Error	0.01563	
F	28.246	

Source: Computed from the field survey data; 2007.

Elasticity of input

The elasticity of the cost of weeding, cost of chemical application, cost of harvesting, cost of on-farm processing and cost of transportation are 0.953, 0.305, 0.245, 0.490, and 0.519 respectively. This means that there is an increase of 0.953%, 0.305%, 0.245%, 0.490% and 0.519% respectively in the gross revenue of the farmers with 1% increase in the cost of weeding, cost of chemical application, cost of harvesting, cost of on-farm processing and cost of transportation. However, this is interpreted to mean that it is the cost of weeding that revenue is mostly responsive to followed by the cost of transportation and the least is the cost of harvesting.

Conclusion

The proportion of the net income generated to the total cost incurred in kola production was 32.9% showing that kola production in the study area is profitable.

Also, costs such as the cost of weeding, cost of chemical application, cost of harvesting, cost of on-farm processing and cost of transportation are critical costs in determining the level of revenue derivable from kola production.

The elasticity of production for the cost of weeding, cost of chemical application, cost of harvesting, cost of on-farm processing and cost of transportation are 0.953%, 0.305%, 0.245%, 0.490% and 0.519% respectively. Hence, it is the cost of weeding that is most responsive.

Recommendations

1. Government and non-governmental organizations should assist farmer by providing soft loans to the farmers. With this, farmers will be able to get enough funds to maintain their farmer.
2. Farmers should organize themselves into cooperative societies. This will help them to get financial assistance from government.
3. Farmers should be encouraged to adopt some labour displacing technologies, such as tractorisation, and use of herbicides on their farms. This will lessen their total reliance on labour thus alleviating the problem of labour.
4. Government should subsidize the cost of agrochemicals for the farmers. This will enable the farmers to be able to afford to purchase the inputs.

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