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ANALYSIS OF THE DETERMINANTS OF PROFIT FROM COCOA BEANS MARKETING IN OGUN STATE, NIGERIA

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ABSTRACT

This paper examined the factors that influenced profit from cocoa beans marketing in Ogun State, Nigeria. Fifty (50) cocoa beans marketers were selected using a multi-stage sampling technique. Data were collected with the aid of a structured questionnaire designed to solicit information on the socio-economic characteristics of the cocoa beans marketers, their operating costs and return and problems associated with cocoa beans marketing in the study area. Descriptive statistics, marketing margin analysis, gross margin analysis and the Ordinary Least Square (OLS) regression technique were employed in the analysis of the study data. The study revealed that men (84%) are more involved in cocoa beans marketing than women. Further, the study finds cocoa beans marketing to be a profitable venture in the study area having a gross margin of ₦137,719.27 (US $ 885.51) per month and a marketing margin of N40,600 (US $ 261.94). The percentage marketing margin was 34.73% which implies that the cocoa beans marketers realize a margin of 34.76% of the farm price. The result of the OLS regression analysis revealed that cost of transportation, communication cost, volume of cocoa traded and membership of market union are the significant determinants of the profit margin that accrue to the cocoa beans marketer. The identified constraints to cocoa beans marketing in the study area include low quality of cocoa beans, poor transportation facilities and inadequate capital. The study concluded that cocoa beans marketing is economically rewarding in the study area. It recommends that the government should help to provide good transportation facilities. Also, agricultural and commercial banks as well as other micro credit financial institutions should assist in providing credit facility to the marketers as this will enable them expand their scope of marketing and consequently improve their profit margin.

Keywords: ***Cocoa beans, Marketing Margin, Determinants, Multistage***

INTRODUCTION

The contribution of cocoa to the economic growth of Nigeria's over the years cannot be over emphasized (Folayan, *et al.* 2006, Nkang *et al.* 2009). Nkang *et al*. (2007) asserted that cocoa has the highest foreign exchange earnings of all agricultural commodities being exported in Nigeria and that the sub-sector, both directly and indirectly provides employment opportunities for a large number of people. In addition, it serves as an important source of revenue genera-

tion to the governments of cocoa producing states (Nkang *et al*. 2007). Although the discovery and exploitation of petroleum in Nigeria have resulted in the decline of the importance of cocoa to the Nigerian economy, the crop still remains the second largest foreign exchange earner after petroleum (Adegeye, 1995; CBN, 2012).

Apart from being a foreign exchange earner to the exporting countries (Olayemi, 1973; Abang, 1984; Folayan et al. 2006), cocoa is also means of conserving foreign exchange through the production of intermediate products and cocoa-based products such as cocoa butter, cocoa cake, cocoa powder, cocoa juice which can be sourced locally to produce milk chocolate, cocoa biscuits and cocoa husk-based livestock feeds. Cocoa also provides raw materials for industries depending on their processed form, for manufacturing of various commodities (Adesina, 2004). Besides foods, cocoa is also processed into other consumables such as soaps, creams and related cosmetics in huge commercial quantities. Significant health benefits of cocoa have also been identified. Cocoa and its processed product, chocolate contain flavanol, which has a cardiovascular health benefit (Schroeter et al. 2006; Taubert et al., 2007). Similarly, Davison et al. (2010) reported that flavanol rich cocoa helps to lower blood pressure in humans. Folayan et al. (2007) reported that in recent times plans have been made by the government of Nigeria to reduce her over dependence on oil by diversify into the production of tree crops such as cocoa and food crops such as cassava. These have given rise to the establishment of more cocoa plantations with a resultant increase in the number of people involved in cocoa marketing (Folayan et al. 2007).

Cocoa marketing has been defined by several authors. Wood (1977) defined cocoa marketing as the process whereby the ownership of cocoa beans is transferred from the grower to the manufacturer. Ajayi and Okoruwa (1996) defined cocoa marketing as the economic activities which add form and place utilities to cocoa beyond farm gate. According to Haruna *et al*. (2012) increase in agricultural productivity depends heavily on its marketability. Several studies have shown that an efficient marketing system stimulates agricultural production (Awoyinka and Ikpi 2005; Adesope et al. 2005). However, food marketing in Nigeria has been characterized with a lot of deficiencies (Adekanye, 1970 and Abdullahi 1983) leading to hindrances in sustainable agricultural development. FAO (1997) asserted that agricultural marketing is ineffective and inefficient in Nigeria due to inadequate infrastructures and social amenities such as transportation facilities, communication system, good storage facilities and good pricing systems. Hence, there is a need for a good and comprehensive economic analysis in order to improve agricultural marketing in Nigeria with specific emphasis on cocoa beans marketing in Ogun State, Nigeria. Also, with cocoa marketing in Nigeria operating under the free market system, there is a need to analyze the factors affecting the profitability of cocoa beans marketing.

Specifically the study sets to:

1. describe the socio-economic characteristics of the cocoa beans marketers,
2. estimate the marketing margin and gross margin of cocoa beans marketing,
3. examine the factors influencing profit from cocoa beans marketing and
4. identify constraints to cocoa beans marketing in the study area.

MATERIALS AND METHODS

Study Area

The study was carried out in Ogun State one of the cocoa producing states in Nigeria as marked out by the National Cocoa Development Committee of the Federal Ministry of Agriculture and Rural Development, Abuja, Nigeria. Ogun State is situated between Latitudes 6.2°N and 7.8°N and Longitudes 3.0^{0}E and 5.0°E. The mean annual rainfall varies from 128mm in the southern area of the State to 105mm in the northern area. Agriculture is the main occupation of the larger percentage of the population. The State is blessed with a climate that supports the cultivation of both food and cash crops. Cocoa is one of the major cash crops grown in the area with Egbeda-north, Obafemi Owode, Ijebu-north and Ijebu-east being the four Local Government Areas contributing the highest production volumes. The average monthly temperature ranges from 23°C in July to 32°C in February (www.ogunstate.gov.ng).

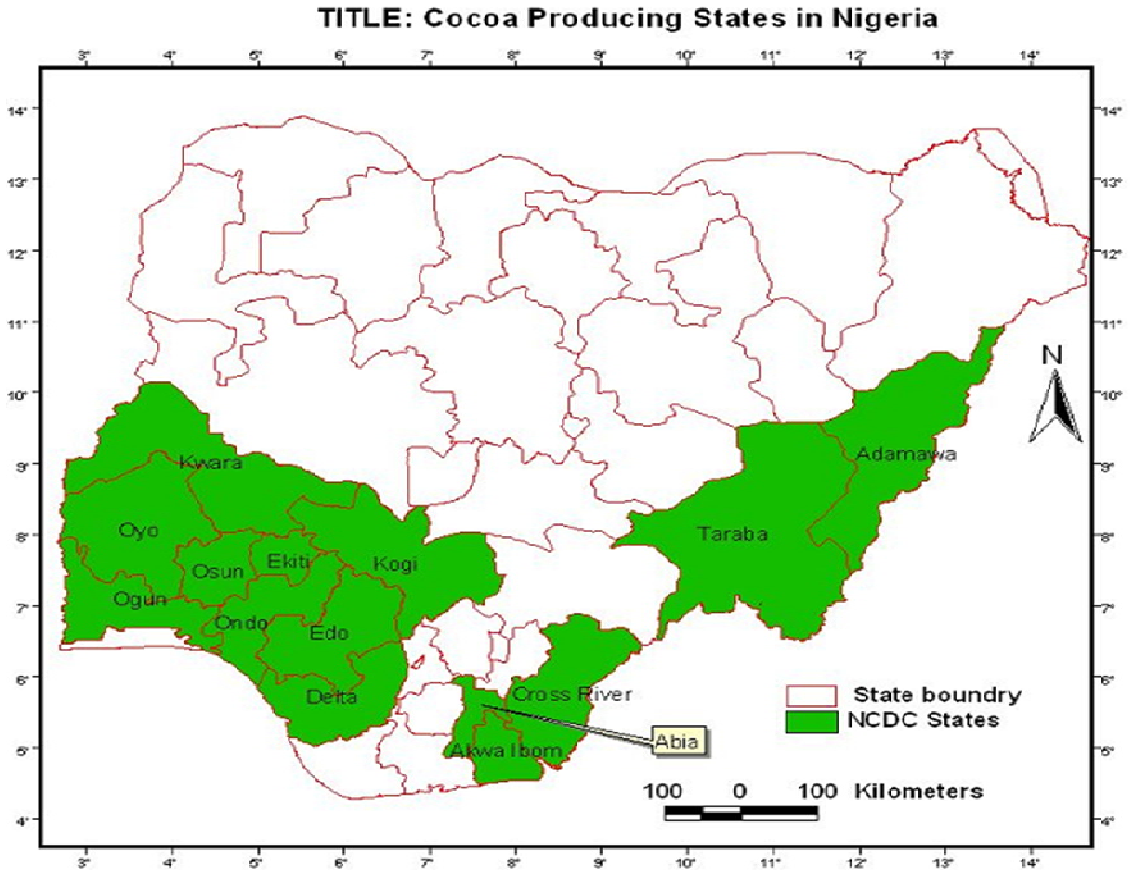

Figure 1: Cocoa Producing States in Nigeria.
Source: CRIN, 2008

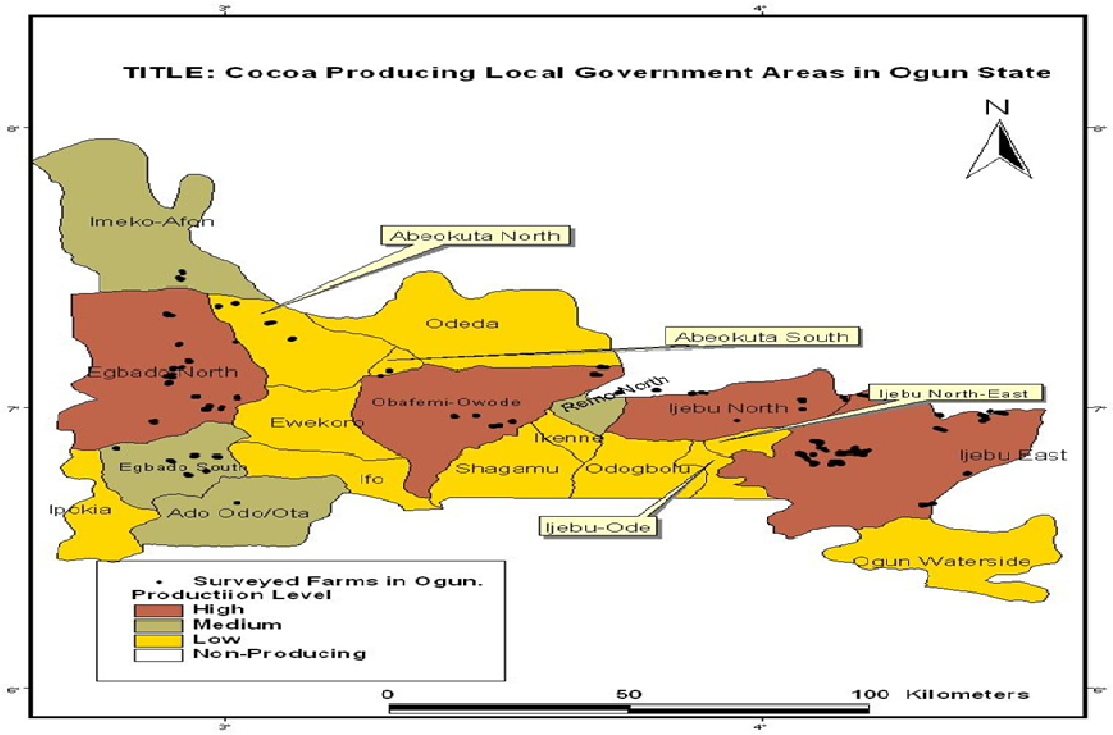

Figure 2: Cocoa Producing Local government Areas in Ogun State, Nigeria. Source: CRIN, 2008

Sampling technique and data collection

Multi-stage sampling technique was used to select the cocoa beans marketers interviewed for the study. In the first stage, Egbado North, Obafemi-Owode, Ijebu North and Ijebu East local governments were purposively selected from the cocoa producing local governments in Ogun State. This is because they have the highest production level of cocoa in the state (figure 1). Second, two villages were randomly selected from each of the selected local governments giving a total of eight villages used for the study. In the final stage, 7 cocoa marketers were selected from each of the selected villages using snow balling technique thereby giving a total of 56 cocoa marketers' interviewed for the study. However, only 50 respondents were included in the analysis due to incomplete information from 6 of the cocoa farmers. Data were collected from the cocoa beans marketers with the aid of a structured questionnaire designed to elicit information on their socio economic characteristics, operating costs and return as well as constraints to cocoa beans marketing in the study area.

Analytical techniques

Descriptive statistics

Descriptive statistics involving the use of measures of central tendencies such as frequency, means and percentages were used to describe the socio-economic characteristics of the cocoa beans marketers as well as the constraints to cocoa beans marketing in the

study area.

Marketing margin analysis

Marketing margin analysis was used to estimate the marketing margin of cocoa beans marketing in the study area. The marketing margin also known as the farm-to-retail price spread is the difference between the farm value and retail price. It represents payments for all assembling, processing, transporting, and retailing charges added to farm products (Elitzak, 1996). The marketing margin of cocoa in percentage was calculated in this study adopting the formula specified by Olukosi & Isitor (1990) and as used by Ali *et al.,* (2008) and Nwaru *et al.,* (2011) mathematically as follows:

$$\text{Marketing margin (\%)} = \frac{\text{Retail price} - \text{Farm price}}{\text{Retail price}} X\ 100$$

…… ….(1)

Gross margin analysis

Gross margin analysis was used to determine the profitability of cocoa marketing. It is expressed mathematically as:

GM = TR – TVC……
……(ii)

Where:
GM = Gross Margin
TR = Total Revenue
TVC = Total Variable Cost

$TR = P_y \times Y$……
…… (iii)

$TVC = P_x \times X$
……
…… (iv)

P_y = Unit price of output produced (₦)
P_x = Unit price of input (₦)
Y = Quantity of output (ton)
X = Quantity of input

Multiple regression analysis

The Ordinary Least Square (OLS) multiple regression technique was used to examine the determinants of profit that accrue to the cocoa beans marketers. The model used is explicitly specified as follows:

$Y = ¦(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, \mu)$ …… (v)

Y = Profit (N),
Profit = TR-TC
Where,
TR=Total Revenue
TC= Total Cost

X_1 = Transportation cost (N)
X_2 = Education (years)
X_3 = Packaging cost (N)
X_4 = Communication cost (N)
X_5 = Loading/unloading cost (N)
X_6 = Volume of cocoa traded (tons)
X_7 = Market Association (Member = 1, 0 = otherwise)
X_8 = Age of Marketers (Years)
X_9 = Source of Supply (Farmer = 1, 0 = otherwise)
μ = Stochastic error term

Four functional forms were fitted and the appropriate was chosen based on statistical and economic criteria. These criteria are *a priori* – expectation, the magnitude of the coefficient of determination (R^2), the number of the explanatory variables that are significant, significance of the F-value and the sign of the regression coefficients.

RESULTS AND DISCUSSION

The results of the socio-economic characteristics of the cocoa beans marketers are presented in Table 1. Accordingly, the table revealed that majority (84%) of cocoa beans

marketers were male and only 16% of them are female. About three quarter (76%) of the cocoa beans marketers fall within the age bracket of 31-50 years with a mean age of 42.3 years which indicates that the marketers are still in their economically active years. This implies that they are still strong and energetic to carry out the rigorous activities involved in cocoa trade. Further, most (94%) of the cocoa beans marketers were married. This implies that majority of the respondents could be termed "responsible" and this can enhance their marketing decision as crucial marketing decisions can be taken jointly with their spouses. Majority of the cocoa beans marketers are literate as about 80% of them went through formal education (primary, secondary and tertiary education) with mean years of schooling of 8.3 years. Majority of the marketers sourced for cocoa beans through the village market while only 36% directly source from the farmers' farm. In addition, majority (74%) of the respondents belongs to cocoa beans marketers association.

Table 1: Socio-economic characteristics of cocoa beans marketers (N=50)

Variables	Frequency	Percentage
Gender		
Male	42	84
Female	8	16
Age		
≤30	3	6
31-40	25	50
41-50	13	26
>50	9	18
Mean	42.3	
Marital status		
Married	47	94
Single	2	4
Widow	1	2
Family size		
1 – 4	13	26
5 – 8	26	52
9 – 12	9	18
Above 15	2	4
Mean	7.2	
Educational level in years		
No formal education	10	20
Primary	15	30
Secondary	18	36
Tertiary	7	14
Mean	8.3	
Source of supply		36
Farmers farm	18	64
Village market	32	
Market union membership		74
Yes	37	26
No	13	

Source: Field Survey, 2011

Marketing margin analysis

Table 2 presents an analysis of the marketing margin of cocoa beans marketing. The marketing margin in percentage was 34.76% which implies that the cocoa beans marketers realize a margin of 34.76% of the farm price.

Table 2: Marketing margin of cocoa beans marketing

Price	Amount (₦/tons)
Retail	116,800
Farm	76,200
Marketing Margin (Percent)	34.76

Source: Field Survey, 2011

Gross margin analysis

The result of the gross margin analysis of cocoa beans marketing is presented in Table 3. According to the table, the variable costs incurred in cocoa beans marketing in the study area include purchase, packaging, transportation**,** loading/unloading and communication costs. The result shows that purchase and transportation costs were the major variable costs incurred in cocoa beans marketing with a percentage of 91.52% and 4.50% respectively. The average farm and retail price per ton of cocoa was ₦76, 200 and ₦116,800 respectively. An average of 4.11 tons of cocoa beans were sold per marketer per month. Thus, the marketers realised total revenue of ₦480,048.00/month. The gross margin of the cocoa marketer per month was ₦137,719.27. This is an indication that cocoa beans marketing must be a profitable venture in the study area.

Table 3: Gross margin analysis of cocoa beans marketing

Variable	**Cocoa Marketing Value (N /month)**	***Percentage**
Total Revenue	480,048.00	
Variable Costs		
Purchase	313,182.00	91.52
Packaging	4,072.15	1.19
Transportation	15,386.90	4.50
Loading/unloading	7,330.03	2.14
Communication	2,234.35	0.65
Total Variable Cost	342,205.43	100
GM(N)	137,719.27	

Percentage of total variable cost

Source: Field Survey 2011

Determinants of profit from cocoa beans marketing

The result of the determinants of the profit from cocoa beans marketing is presented in Table 4. The table shows that transportation and communication costs, volume of cocoa marketed and market union membership significantly influenced the profit that accrue to the cocoa beans marketers in the study area ($p<0.05$, $p<0.05$, $p<0.01$ and $p<0.1$ respectively). Volume of cocoa beans marketed and communication costs positively affected profit from cocoa beans marketing which implies that as volume of cocoa beans marketed and communication cost increases, the profit that accrues to the marketers also increases. The cost of transportation has a negative influence on the profit margin of the cocoa beans marketers. The higher the transportation cost, the lower the profit that accrues to the cocoa beans marketers. Market union (membership) negatively affected the profit from cocoa beans marketing. This implies that those that are members of a market union experienced a decrease in their profit margin. This could be as a result of their financial obligations to the union.

Table 4: **Determinants of profit from cocoa beans marketing**

Variables	Coefficients	Standard error	t-ratio
Constant	10.4	0.935	11.123
Transportation cost	-0.188**	0.0212	8.867
Educational level	0.045	0.734	0.061
Packaging cost	0.07	0.061	1.148
Communication cost	3.48**	1.35	2.578
Loading/unloading cost	-0.194	0.329	0.589
Volume of cocoa beans	0.0456***	0.0099	4.606
Market union	-0.05492*	0.061	-0.900
Age	-0.6358	0.4362	-1.458
Source of supply	0.4935	0.4123	1.197
R2	0.52		
Adjusted R2	0.43		
F-statistic	21.64***		

*****Sig. at 1%, ** Sig. at 5%. * Sig. at 10%**
Source: Field Survey, 2011

Constraints to cocoa beans marketing

The most important constraint identified to militate against cocoa beans marketers in the study area is inadequate capital (82%). About three quarter 78% of the respondents identified low quality of cocoa beans as another important constraint with a great influence on the price they received per ton of cocoa beans. In addition, the problem of poor transportation facilities such as bad roads is faced by about 72% of the cocoa beans marketers in the study area.

Table 5: Major constraints faced by cocoa beans marketers

Constraints	Frequency*	Percentage (%)
Quality of beans	38	78
Poor transportation facilities	34	72
Inadequate capital	41	82

***Multiple response**

CONCLUSION AND RECOMMENDATIONS

The findings of the study shows that cocoa beans marketing is economically rewarding in Ogun state, Nigeria.The implication of this finding is that cocoa beans marketing has the potential of improving the standard of living of the participants. However, the study recommends that agricultural and commercial banks as well as other micro credit financial institutions should help provide source of finance to the marketers to enable them expand their scope of marketing which will consequently increase their profit margin. Also, the government should help provide a good transportation network to facilitate ease of marketing and reduce the marketers' cost of transportation. Furthermore, while regulating unions' charges, the market unions should help curb sharp practices by famers or traders who sell substandard quality beans as good quality beans. There should be generalised and effective grading standard for grading the product to assist in solving the perennial problem of low beans quality.

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