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Profitability Assessment of Value Addition of Cocoaby Farmers in Osun State

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Abstract: The study assessed the profitability of value addition of cocoa farmers in Irewole L.G.A, Osun State. A multistage sampling technique was used to select 120 cocoa farmers in the study area. A well-structured questionnaire administered through interview schedules was used to collect data from the respondents. Data were analyzed using descriptive statistics and gross margin analysis. The result showed that, cocoa farming in the study area was dominated by males (70%) and 85.83% of them were married with an average household size of six persons per household. The age distribution of the farmers showed that 56% of the respondents were within the age range of 31 to 55 years, 36% of the respondents had no formal education. About 33% of farmers sourced funds from their personal income, 34% through local buying agents and 33% through cooperative society. Profitability analysis revealed that cocoa production was profitable in the study area.The gross margin of farmers owning between 0.5 and 3.0 acres (# 19,029.68) of land is lower than that of those who own more than 3.1 acres (# 32,006.22), which implies that the size of land resources controlled by each farmers in the study area as a positive effect on the gross margin of each cocoa farming household.

Key words: Profitability · Cocoa · Farmers · Value addition · Osun

INTRODUCTION

Cocoa tree is a shade tolerant, moisture loving tree, which can lives for up to 100 years but productively it can be cultivated economical for about 60 years. It's usually nursed underneath Banana trees in Nigeria; it requires a deep, slightly acidic, moist, well-drained soil. It needs a constituent climate: temperatures of 21 to 32 degree Celsius year round and about 100 to 250 cm of rainfall, well distributed throughout the year with no month less than 10 cm. This implies that cocoa tree grows very well in the tropics. Cocoa flourishes in areas that are not more than 20 degrees north or south of the equator.

In Nigeria, the cocoa tree is grown from seedlings which are raised in nurseries.Cocoa was the mainstay of Nigeria's economy till the 70's, before the oil boom era. It is grown in fourteen States in Nigerianamely;Abia, Adamawa, Akwa Ibom, Cross River, Delta, Edo, Ekiti, Kogi, Kwara, Ogun, Ondo, Osun, Oyo and Taraba. The South West is regarded as the cocoa belt of the country, which accounts for almost 70% of Nigeria's annual cocoa production [1].

The crop was a major foreign exchange earner for Nigeria in the 1950s and 1960s and in 1970s, with about 98% of the annual production exported as primary products [2]. Nigeria was the second largest producer in the world but following investments in the oil sector in the 1970s and 1980s, Nigeria's share of output declined. It contributed about 85.5% to the Nigeria's total export in 1960. However, in 1984 and 2004, its contribution dropped to 2.6% and as low as 0.81%,respectively [3]. Apart from its contribution to the nation's economy, Cocoa is a plant-based food that contains carbohydrates, fats, proteins, natural minerals, some vitamins and a group of compounds which exhibit health benefits [4].

Currently, Nigeria is the fourth largest producer after *Cote D'ivoire*, Ghana and Indonesia contributing 12% of total world production [5]. Nigeria been the 4th world's largest producer and exporter of cocoa. Paradoxically, over 90% of the cocoa produced is exported. There has been a lot of wastages and massive exportation of cocoa pods in its raw states thereby preventing the farmer from maximizing profits and also making cocoa based products relatively expensive in Nigeria.

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Value addition has been found to improve income and shelf-life of product on crops like cocoa [6]. Cocoa value addition is the process of taking the raw cocoa bean and changing its form to produce high quality end products in order to meet the tastes/ preferences of consumers. The process of value addition to cocoa involves fermenting and drying, roasting and grinding, ditching (alkalizing the liquid, which reduces the acidity) storage ability and transformation of the cocoa bean to other improved product e.g.animal feed from cocoa husk, mulch, cocoa butter, cocoa powder andcocoa liquor.

This study determines the returns of value addition of cocoa by famers in the study area. These could be informing of converting the cocoa bean to butter, powder and liquor for commercial sales. 18, argued that value addition (among other things) in agriculture should be enhanced in order to promote market oriented smallholder agriculture in the developing countries. As such, there is need to assist the farmers by making major investment in the addition of value to agricultural produce.

Objectives of the Study:

- To examine the socio-economic characteristics of cocoa farmers.
- To determine the extent and profitability of value addition in cocoa farming.
- To examine the factors that influences the productivity of cocoa farmers.

Methodology: This study was carried out in Osun state, south-western Nigeria. The state is rich in human and material resources. It covers an area of approximately 14,875 km^2 lies in the tropical rainforest. Due to her extensive fertile soil, agriculture is practiced both at commercial and subsistence scales. As regards cocoa production, Osun state accounts for about 50% of Nigeria's annual cocoa production [7, 8]. Well-structured questionnaires which consist of open-ended and closed-ended questions were used for the study.A four-stage random sampling technique was used in selecting respondents for the study. The first stage was a purposive selection of Osun state being one of the highest producing state in Nigeria. The second stage involved selecting of Irewole LGA (Local Government Area)out of nine major cocoa producing Local Government in the state. The third stage involved sampling of localities in IrewoleLGA by randomly selecting 5 communities/ villages. The fourth and final stage involved the selection of 24 farmers from each of the selected villages/ communities. Making a total sample size of 120 respondents that wereinterviewed for the study.Descriptive statistics such as means, median, mode, frequencytabulation and percentage tables were used to analyze information on farmers' socio-economic and farm characteristics.Gross margin analysis was used to estimate the profitability of cocoa value addition as recommended by2.

- Gross Margin (GM) = Total Income (TI) – Total Variable Costs (TVC).

The total variable costs of production are the cost of labor, fertilizers, agro-chemicals, and other miscellaneous expenses.Gross margin of an enterprise is the difference between the total revenue and total variable cost.

- Return per Naira Invested = Gross margin ÷ Total Variable Cost.

It measures the naira earned per Naira invested per year by Cocoa farmers in the study area.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents: From Table 1, 70% of the respondents were male and the remaining 30% were female, this implied that men dominated the production of cocoa in the study area. This finding agrees with the opinion of [9], who stated that cocoa production requires routine management practices that are considered too strenuous for the female to cope with. The Table also reveals that majority (858%) of the respondents are married,11.7% are widowed and 2.5% are single which implies that most of the respondents in the study area has household members who assist in cocoa farm production thereby reducing the cost spent on yearly production thus increasing their profit margin. The study further revealed that 35.83% of the cocoa farmers had no formal education and4.16% had tertiary education. It could be inferred that, few cocoa farmers in the study area are literates who could read and write. The low level of education of the farmer's contributed to the poor adoption of new and improved technologies observed among the cocoa farmers. According to [5], education is an important factor influencing adoption of farm innovations. Also, it was revealed from the Table that

Table 1: Socioeconomic characteristics of the respondents.

Sex	Frequency	Percentage
Male	84	70.00
Female	36	30.00
Total	120	100
Marital status	Frequency	Percentage
Single	3	2.50
Married	103	85.83
Widowed	14	11.66
Divorced	0	0
Total	120	100
Educational status	Frequency	Percentage
Primary Education	47	39.16
Secondary Education	25	20.83
Tertiary Education	5	4.16
None	43	35.83
Total	120	100
Age	Frequency	Percentage
< 30	3	2.50
31 – 45	45	37.50
46 – 55	23	19.16
56 – 65	37	30.83
>65	12	10.00
Total	120	100
Years of Experience	Frequency	Percentage
1-10	15	12.60
11-20	51	42.85
21-30	27	22.68
31-40	26	21.84
Total	119	100
Household size	Frequency	Percentage
1 – 4	61	50.83
5 – 8	50	41.66
9 – 12	9	7.50
Total	120	100
Do you have access to credit	Frequency	Percentage
Yes	109	90.84
No	11	9.16
Total	120	100
Source of Credit		
Local buying agent	41	51.25
Cooperative society	39	48.75
Total	80	100
Major source of capital		
Personal Income	40	33.33
Local buying agent	41	34.16
Cooperative society	39	32.50
Total	120	100

2.5% of the respondents were within the age range of less than 30 years, whilemajority (37.50%) was within the age range of 31-45 years. This indicates that most of the farmers in the study area were within the economically active age. Thereby, the mean age of respondents is 51 years which is in line with the observation recorded by [10] and [1]. Only 21.84% of the respondents have more than 31years of cocoa farming experience while 51% of the respondents have been in cocoa farming between 11-20 years. This implies that there is high productivity since majority of the respondents are experienced cocoa farmers which is in line with the findings of [11, 12], that farmers sometimes count more on their experience than educational attainment in order to increase their productivity.The average household size is 5 members which imply there are large household sizes of respondents in the study area. According to [13], a relatively large household size enhances the availability of family labour which reduces constraints on labour demand in agricultural production. The Table also revealed that 90.84% of the respondents have access to credit while the remaining 9.16% do not have access to credit. A total of 80 respondents depend on external source of capital in the study area, more than51.25% of the respondents in the study area depend on local buying agents as their major source of capital. These findings are in contradiction with the findings of [14] who opined that 70% of cocoa farmers sourced funds from their personal savings.

Profitability Assessment of Value Addition of Cocoa Farmers: The given Table 2 revealed that 100% of the respondents in the study area ferment the cocoa bean and sundry.The dried cocoa beans are packed in bags of 55kg for sell to local buying agents who later export it; this is in line with the findings of [1, 15] who stated that out of 75% of world production about 14% is processed in Africa. It also revealed that majority (81.66%) of the farmers added value to their primary products because of their want for an increase in income.Nearly 15.83% of the respondents in the study area added value because of the high yield of harvest they got every season, while a little fraction (2.5%) of the respondents added value because of the training they acquired from farmers field school (extension agents).The implication of this is that the extension agents are doing just little on educating the cocoa farmers on value addition for higher profitability.It was revealed from the study that factors inhibiting cocoa farmers from adding value to their produce are high intensiveness of labour (59%), difficulty of adapting to the new method of drying of the cocoa bean on raised platform rather than spreading the beans on the floor (24%) and high risk of getting injured during the value addition process (64%). This exposed that all the process involved in value addition practicing by respondents were not mechanical and thus less economical. This is justified in given Table 2, revealing that 100% of the respondents in the study area did not have access to any machines or equipment used for value addition.

Table 2: Distribution of the Respondents Based on value addition to produce

Do you add value to your harvest	Frequency	Percentage
Yes	120	100.00
No	0	0.00
Total	120	100
Why do you add Value		
Increased income	98	81.66
High yield of Produce	19	15.83
Training received from Farmers Field School	3	2.50
Total	120	100
Are you aware of Cocoa value Addition		
Yes	120	100.00
No	0	0.00
Total	120	100
Factors influencing Decision to Add Value		
Knowledge and Training received from Farmers Field School	82	82.00
More Income and Higher profit margin	40	40.00
Access to Improved Seedlings	2	2.00
Challenges Faced in the Processof Adding Value		
Labour Intensive	59	59.00
High cost of Processing	6	6.00
Difficulty in Adapting to new Techniques of Adding value (Taraga)	24	24.00
Physical Constraint (Transportation, Pest, Injury)	64	64.00
Do you Have access to Machines/Equipment for Value Addition		
Yes	0	0.00
No	120	100.00
Total	120	100
Would you Add More Value If Funds/ Equipment's were made Available		
Yes	120	100.00
No	0	0.00
Total	120	100
Form of Labour used in the Process of Adding Value		
Self/Household Labour	115	95.83
Hired Labour	5	4.16
Total	120	100
Quantity of Dried Cocoa Bean that was sold (kg)		
<500	38	31.66
500 – 1,000	42	35.00
1,000 – 1,500	19	15.83
1,500 – 2,000	14	11.66
2,000 – 2,500	5	4.16
>2500	2	1.66
Total	120	100
Selling Price of 55kg bag of Dried seeds (N)		
450 – 550	3	2.50
550 – 650	45	37.5
650 – 750	71	59.16
750 – 800	1	0.86
Total	120	100

Table 3: Gross Margin Analysis of the Respondents In Relation to Their Farm Size

Distribution on land Size (acres)	Frequency	Percentage
0.5 – 3.0	75	62.50
>3.1	45	37.50
Total	120	100
Total Variable Cost	Amount (₦)	
0.5 – 3.0	4,720,750	43.41
>3.1	6,152,750	56.58
Total	10,873,500	100.00
Total Revenue		
0.5 – 3.0	32,123,500	38.07
>3.1	52,241,700	61.92
Total	84,365,200	100.00
Mean Farm Expenditure		
0.5 – 3.0	39,339.58	43.41
>3.1	51,272.92	56.58
Total	90,612.49	100.00
Mean Monthly Farm Expenditure		
0.5 – 3.0	3,278.30	43.41
>3.1	4,272.74	56.58
Total	7,551.04	100.00
Mean Farm Income per annum		
0.5 – 3.0	267,695.83	43.41
>3.1	435,347.50	56.58
Total	703,043.33	100.00
Mean Monthly Farm Income per annum		
0.5 – 3.0	22,307.99	38.07
>3.1	36,278.96	61.93
Total	58,586.94	100.00
Mean Monthly Gross margin		
0.5 – 3.0	19,029.68	37.28
>3.1	32,006.22	62.72
Total	51,035.90	100.00
Return/naira Invested		
0.5 – 3.0	5.80	
>3.1	7.49	
Average	6.75	

Source: Field Survey.

Gross Margin Analysis of Cocoa Farmers: Results presented in Table 3 revealed that the mean annual expenditure of the respondents is ₦10,873,500, and the mean monthly expenditure is ₦906,125 while their annual farm income from cocoa sales is ₦84,326,755 and the monthly farm income is ₦7,027,229.58.It shows that majority (62.50%) of the respondents in the study area possess acres of land which lies between 0.5 and 3.0 for cocoa cultivation while the rest (37.50%) own lands which are more than 3.1 acres.

The study Table also show that the gross margin of respondents owning between 0.5 and 3.0 acres (₦19,029.68) is lower than that of those respondents who

owned more than 3.1 acres (₦32,006.22), which implies that the size of land resources controlled by each respondent in the study area as a positive effect on the gross margin of each cocoa farming household. The findings above are in line with that of [16] who stated that cocoa production in the study area is a profitable venture and farm size, access to credit chemical inputs andfarmer's age were identified as the significant factors affecting the output of cocoa production.

The Table further revealedthat the return per Naira invested by respondents who owns between 0.5 and 3.0 acres of land and 3.0 acres and above was ₦5.80 and ₦7.49 respectively. This indicated that for every one naira invested on cocoa production; for respondents who own between 0.5 and 3.0 acres of land get an average return of ₦5.80 while those respondents who own above 3.0 acres of land get an average return of ₦7.49.

CONCLUSIONS

The study concludes that cocoa production in the study area is a profitable venture.Also, farm size, household, age, years of experience,and technical knowhow were identified as the significant factors affecting the output of cocoa production. It was also revealed from the study that participation of cocoa farmers in value addition has a positive influence on the level of production and income.In order to remove the drudgery arising from increasing labour intensity observed from the study, efforts must be geared towards mechanizing the activities involved in cocoa production through mandating agencies such as National Centre for Agricultural Mechanization (NCAM) to developed simple adaptive technologies to aid the Cocoa farmers in adding value to their produce. Also, government should come up with programmes and policies at improving farm size by encouraging farmers to form Cooperatives.

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