



ECONOMIC PRODUCTIVITY OF COCOA PRODUCTION IN IDANRE LOCAL GOVERNMENT AREA OF ONDO STATE, NIGERIA

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Abstract

Cocoa (*Theobroma cacao* Lineus) has remained a valuable crop and major foreign exchange earner among other agricultural commodity export of the Nigerian economy. In spite of its significance however, cocoa production in the country has witnessed a downward trend after 1971 season. The primary aim of this study is to determine the structure of costs and returns and estimate Net farm income profitability in Idanre LGA Ondo state. To achieve this aim, 80 cocoa farmers were interviewed with the use of a well – structured questionnaire through a multi stage random sampling techniques. The cost and return analysis reveals that the net farm income per hectares for the average cocoa farmers is 605, 566 naira per hectare. The efficiency ratio is 2.2 while the profitability ratio is estimated to be 1.21. That is out of every ₦1 invested, the average farmer made a profit of ₦1 and 20 kobo. Production function analysis was used to determine the level of resource use efficiency of farmers. The estimated coefficients of agrochemical, farm equipment's, and land were positive and significant at 1-5 percent alpha levels, but labour was not significant but positive. Agrochemical and labour is currently being over-utilized on cocoa farms. This implies that a decrease in use of these inputs or using less of these inputs in cocoa production is likely to increase profitability. That is decrease use of these inputs or using less of these inputs in cocoa production is likely to increase profitability Increased use of land and farm equipment would increase profitability on cocoa farms in the study area. The study therefore recommends that farmers need to be guided to cut down on the use of agrochemicals and labor on their cocoa farms so as to increase profit. They should be provided with credit facilities from formal credit institutions at affordable interests.

Keywords: Farmers, Cocoa Production, Economic Productivity, Profitability and Nigerian Economy

Introduction

The cocoa tree known as *Theobroma Cacao* belongs to the family *Stericuliniaceae*. Cocoa has its gene center in the upper Amazon region of the South America from where it spread different parts of the world (Osun, 2001). It is generally believed that cocoa cultivation in Nigeria started about 1879 when a local chief established a plantation at Bonny in the defunct Eastern Nigeria. However, cultivation in the western Nigeria began afterwards. Production has been reducing in recent years as a result of old age of farmers and farms, as well as inefficiency in the use of resources by farmers. The implication of this has

been reduced cocoa production at a time when there are more processing industries and the increased global demand for cocoa.

Cocoa is a concentrated food with high nutritive value. It provides carbohydrate, protein, fat and minerals. Again, it is usually used for making beverages, wine chocolate, cream chocolate, and livestock feed. Nigeria was second largest cocoa producer in the world with about 97% of its total production from the southwestern region. The trend seems to have changed in the negative with production declining rapidly. The fall in percentage share of cocoa output may be attributable to two reasons. First is the negligence of the agricultural sector by the past administrations due to the discovery of the petroleum resources that now accounts for the enormity of foreign exchange earnings. Second is the endemic problem in the cocoa industry.

The Nigerian cocoa economy has a rich history which is well documented in literature.

The contributions of cocoa to the nation's economic development are vast and have been reported by many authors (Olayide, 1969; Folayan, Daramola & Oguntade 2006). Cocoa has been the main agricultural stake of Nigeria's economy until 1970's when the crude oil was discovered in the country in commercial quantity. It has remained a valuable crop and major foreign exchange earner among other agricultural export commodities of the country (Ajayi & Oyejide, 1974; ICCO, 2001).

Apart from its contribution to the nation's economy, Cocoa is a plant-based food that contains carbohydrates, fats, proteins, natural minerals and some vitamins and like several other plant foods such as tea, red wine, fruits, vegetables and nuts; cocoa contains a group of compounds which exhibit health benefits (Taubert *et al*, 2007). Research conducted at Harvard Medical School showed that heavy consumers of cocoa had significantly lower rates of heart disease and cancer compared to those who consume less. Cocoa has a unique natural taste and colour and possesses a delicious aroma used in many food products for extra flavour and colour (ICCO. 2005). In spite of its significance however, Folayan, et al (2006), Nigeria witnessed a downward trend after the 1971 season. Cocoa export declined to 216,000 metric tons in 1976, and 150,000 metric tons in 1986, therefore reducing the country's market share to about 6% and to fifth largest producer to date, due to a combination of labour shortages and low producer prices. In recent times, the Federal and State governments of Nigeria have given increased policy attention to diversifying from the present over dependence of the country's economy on oil, by focusing on tree crops such as cocoa and food crops such as cassava production, and this resulted in the setting up of the presidential initiative on the production of these crops. The Federal Government's concern for diversifying the nation's export base has placed cocoa in the center-stage as the most important export tree crop. However, with the continued decline in the fortunes of the sub-sector, an empirical insight into production performance and factors affecting product output in the sector would be of immense importance to policy makers. This study seeks to find and provide answers to the following research questions:

1. What is the cost structure for Cocoa production among farmers in Idanre LGA of Ondo State?
2. How profitable is cocoa production in the study area
3. What are the problems affecting cocoa production in the study area

Cocoa Economy in Nigerian

Cocoa is an important generator of income for most rural farmers in Nigeria especially in the South West and serves as a backbone for their livelihood. Before the discovery of crude oil in Nigeria, major

agricultural products such as palm oil, rubber and cocoa (from the South, West and East); groundnut and cotton (from the North) played prominent roles in the growth, development and stability of the nation's economy (Afolayan, 2015; Okaiyeto 2020). Cocoa is the leading non-oil foreign exchange earner in Nigeria. However, growth in the sector has been slow since the abolition of the Nigerian Cocoa Board in 1986 (Folayan, Oguntade, & Ogundari, 2006). The dominance of smallholders in the cocoa production sector and the lack of farm labor due to increased rate of urbanization held back production. Nigeria has the potential to produce over 300,000 tons of cocoa beans per year, but production only amounted to 145,000 tons in 1999 (Nigeria Agriculture Stats, 2014). Low yield, ageing trees, and lack of proper equipment have been identified to inhibit production (Iremiren, 2011). In the early 2000s, Nigeria had slipped from being the world's second largest producer (rising to about 308000 MT in 1970/71) to the fifth position, behind Cote d'Ivoire, Ghana, Indonesia and Cameroon with a production figure of 160 thousand tonnes representing 4.6% of the world production in 2006-2007 (International Cocoa Organization [ICCO], 2005). Reasons elicited for the reduction in production included; less emphasis on agriculture, inadequate government program on agricultural input subsidy such as chemicals and planting materials, small farm sizes, inadequate capital, inadequate labour availability and most importantly, change in global climate (Oduwole, 2004).

Idowu *et al.* (2007) attributed the consistency in economic down turn and decline aggregate cocoa output in Nigeria to the introduction of SAP programmer in 1986. In addition, Awe (2013) blamed the reduction in cocoa production on military intervention in Nigeria politics in 1986. This negatively affected the cooperatives which virtually collapsed after the abolition of the commodity boards. By 1999, the production level had declined to 225,000 metric tones

In terms of export earning agricultural export accounted for 81% of total export in 1955-59, 80% in 1960-64 and 57% in 1965-69. In terms of contribution to GDP, agriculture was the leading sector in the 1950s and 1960s, agricultural output accounted for 63 percent of GDP, and in 1965-69 for 54 percent (Aigbokhan, 2001). In 1970-74, it declined to 33 percent, a period which marked the watershed in Nigeria's economic history through the 1973/74 crude oil price shocks. However, from 1970, the decline became very dramatic and this coincided with the prominence of crude oil as the country's main export commodity. In 1970-74, agriculture accounted for 26% of the total exports, thereafter it accounted for less than 10%, being 5.7% in 1975-79, 2.7 and 5.6% in 1980-84 respectively. In 1990-93, it's nose-dived to its lowest at 1.8%, before some recovery in 1994-98 (Aigbokhan, 2001).

Despite the absolute paradigm shift by the government from agriculture to crude oil, cocoa still remain the second largest foreign exchange earn in Nigeria. In Nigeria, cocoa is a major export crop with revenue of at least 34 billion naira, derived annually from the export of cocoa beans alone, besides revenue from cocoa by-products like butter, cake, liquor and powder (Akinwale, 2006; Ibiremo *et al.*, 2011).

Given its inherent link to natural resources, agricultural production is at the mercy of uncertainties driven by climate variation, including extreme events such as flooding and drought. Over the last fifteen years, climate change (in terms of long-term changes in mean temperature or precipitation, as well as an increased frequency of extreme climate effects) has gradually been recognized as an additional factor which, with other conventional pressures, will have a significant weight on the form, scale, and spatial and temporal impact on agricultural productivity.

Theoretical Framework

The study is anchored under theory of production. The production function analysis gives the physical or technical relationship between inputs and output in any production scheme or process (Farrel, 1957; Olayide and Heady, 1982; Olukosi and Ogungbile, 1989). Mathematically, this function is differentiable. Its differentiability enables the calculation of the rate of return. It is assumed that the technical relationship between variable factors of production and output can be represented by a production function, which is mathematically expressed as;

$$Y = f(X_1, \dots, X_n) \dots \dots \dots (1)$$

Y is the quantity of output and $X_1, \dots, X_n$ are factors of production.

It is presumed that there are n factors, one or all may be varied and any of which may be considered fixed. Since output is measured in physical terms, Y is referred to as total physical product. Important physical concepts are the average and marginal physical products. The average physical product APP, measures the average rate at which an input is transformed into a product, while the marginal physical product MPP is the change resulting from a unit increment or unit change in variable input. It measures the amount that total output increases or decreases as input increases (Okaiyeto & Itua, 2022). The APP and MPP are differentiable and allows us to vary one factor while the others are held constant and it gives an insight into the efficiency of resource use. There is need to develop a sound knowledge of the current situation as regard cocoa producers in Nigeria, and most especially as regards to the utilization of the available resources to them. This study is designed to investigate the profitability and efficiency of resource-use among cocoa farmers in the study area.

The Three Stages of Production

These concepts come together to provide a large amount of information regarding the economics of production processes. Stage I of production is defined by a level of input use that is to the left of point A in Figure 1, where $APP = MPP$. Stage I is an “irrational” stage of production, in the sense that the producer can become more efficient if he or she increases the quantity of input used. The APP curve in Stage I shows this. The APP curve represents the average productivity of the production process. Since the average productivity is increasing, the producer could

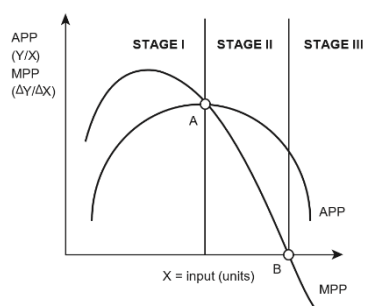


Figure 1 The stages of production.

Become more productive by increasing the level of input use. Therefore, the rational producer will never locate in Stage I, because productivity could increase by using more inputs. This stage of production depicts an area resource use inefficiency. Resources are under-utilized.

Stage III is also an irrational stage of production. The third stage of production includes all input levels greater than the point at which MPP becomes negative (point B in Figure 1). In Stage III, the producer is using too much input, since total productivity diminishes with each additional unit of input use. Total output would increase if the quantity of inputs were decreased. In other words, higher levels of productivity are possible at lower levels of input use. Thus, stage III of production also depicts inefficiency in resource use in the form of overutilization. Stage II, the stage between Stage I and Stage III, is the “rational” stage of production. This is the most profitable region for producers to operate. The exact point of input use that is “optimal,” or profit maximizing, depends on the price of the input, or the cost of acquiring the productive resource.

Methodology

The study was carried out in Idanre LGA Ondo State; Ondo State is in the Southwest of Nigeria. Southwestern Nigeria produces, 95 percent of total cocoa produced in the country (Alabi, 2003). Ondo State has 17 Local Government Areas (LGAS) with State Capital in Akure. It has about 3,441,024 people (NPC, 2006). Ondo State Agricultural Development Project (ODSADEP) has grouped the state into 3 zones on ecological basis. The three zones are (1) IleOluji/Ondo zone, (2) Akure/Owo zone and (3) Owena/Idanre zone. The annual average rainfall is between 1100 mm; relative humidity is days/year. The rain has a binomial distribution, with peaks in June and in September and a period of lower precipitation in August. December to February constitute a major dry season. The main vegetation types are mostly evergreen forest in the south and derived savannah of Saki zone where there is mixed semi deciduous forest and dry deciduous forest. The soils are mainly Alfisols and Entisols. Agriculture is the principal occupation of men; women frequently farm independently of their husbands and, in general, are engaged in gainful activities such as food processing and petty trading in addition to their domestic responsibilities.

Idanre is a local government Area and historic town in Ondo state, Nigeria. The town is located at the scenic Idanre hill which is of unique cultural and environmental significance. and attracts many tourists. The town is about 20km southeast of the state capital Akure, it has an area of 1914 km² 340. Idanre is largest cocoa producing area. Idanre is mainly a Yoruba speaking tribe (similar Ondo dialect) with the majority into farming and trading. Idanre controversially divided under three leadership rule, is divided into three localities of Atosin, Alade, Ode Idanre.

The data were generated through a well-design questionnaire which was administered to 80 selected farmers. The questionnaire sought general information on: Age measured in years, farm size in hectares, Educational status measured by the number of years spent in school, Years of experience, Sex, Labour in man days, Output of cocoa in kg, Input costs in naira.

Multi-stage sampling technique was adopted for the study. The first stage of the techniques was random selection of five villages from each of the three districts (Odode-idanre, Alade and Atosin) in Idanre Local Government area. The second stage involved choosing communities by random sampling of six respondents from each four villages making the sum of thirty respondents per each district making the sum total of eighty (80) respondents in the study area.

The analytical tools used to address the set objectives of the study include descriptive statistics, net income analysis, and production function analysis

Descriptive Statistics

Frequency and percentage table were used to describe the socio-economic characteristics of respondents such as age, sex, farm size, etc. and to identify the main problems faced by cocoa farmers in the study area.

Income Analysis

The following arithmetical relations will be used in the study to analyze the cost structure and the net farm income in the study area.

Net farm income analysis will be used to analyze objectives two and three The farm income is the total output multiplied by the price per unit. Therefore, gross farm income is the total revenue generated from the production, while net farm income is the difference between the total revenue and total cost. The total cost of production includes both total variable cost and total fixed cost. Total variable cost includes; cost of seed, cost of labour, and cost of agrochemical while total fixed cost includes cost of sprayer, cost of sickle, cost of cutlass and cost of file.

The formula for estimating the net farm income is stated as follows.

$$NFI = TR - TC \text{ ----- (13)}$$

Where:

NFI= Net Farm Income (Naira/ha)

TR= Total Revenue (Naira/ha)

TC= Total Cost of Production (Naira/ha)

TC= TVC+TFC

Total Cost (TC) = Total Variable Cost (TVC) + Total Fixed Cost (TFC)

TVC = (seed, fertilizer, labour and agrochemicals)

TFC = (cost of cutlass, cost of sickle, cost of file, cost of knapsack, and depreciation of tools)

The fixed inputs are not normally used up in a production cycle. They were depreciated using the straight line method given by

D = Depreciation (Naira)

P = Purchase value (Naira)

S = Salvage value (Naira)

N = Life span of asset (years)

Return on Investment (ROI) is obtained by dividing the Total revenue (TR) over the Total Cost (TC).

Therefore,

Where:

ROI = Return on Investment

TR = Gross Income

TC = Total Cost

Results

Socio-economic Characteristics of Cocoa Farmers This comprises of the of the attributes of the respondents which includes variables such as their age, gender distribution, marital status, household size, educational status.

Table 1: Sex Distribution of Respondent Cocoa Farmers

Gender	Frequency	Percent (%)
Male	65	81.3
Female	15	18.7
Total	80	100.0

Source: Field Survey, 2019

Table 1 shows the gender distribution of cocoa farmers. Results reveals that majority of the cocoa farmer's males (81.3%) It can therefore be said that the enterprise is currently dominated by male farmers.

Table 2: Age

Age Bracket	Frequency	Percent (%)
30-39	13	16.3
34-49	21	26.3
50-59	17	21.3
60-69	13	16.3
70 And above	16	19.8
Total	80	100.0

Source: Field Survey, 2019

Result in Table 2 reveals the distribution of the cocoa farmers based on their ages. Finding indicates that the mean age of cocoa farmers is 51 years. This does not differ from earlier findings of Job et al, (2015). The age distribution is expected to have a positive influence on the quality of respondent participation in cocoa production, which invariably means better efficiency in production.

Table 3: Distribution of Cocoa Respondents Farmers by Household Size

House hold size	Frequency	Percentage	Mean
1-5	28	35.0	
6-10	39	48.8	
11-15	10	12.6	
16-20	2	2.5	
21-25	1	1.3	
Total	80	100.0	7.1

Source: Field Survey, 2019

Table 3 shows the distribution of cocoa farmers by household size. The majority of the farmers (48.8%) had household size that ranging from 6-10 persons. The average household size is 7.1persons. However, the absolute number of people in a certain family cannot be used to justify the potential for productive farm work. This is because it can be affected by some important factors namely; age, sex and health status.

Table 4: Distribution of Respondents Based on their Farm Size

Farm size	Frequency	Percent
1-5	43	53.8
6-10	31	38.8
16-20	2	2.5
21-25	2	2.5
>25	2	2.5
Total	80	100.0

Source: Field Survey, 2019

According to the table below, the cocoa farmers farm size varies between one hectares to 25 hectares which are owned by the respondents in the study area. 35.0% of the respondents had between 1 and 3 hectares of farm land under cocoa plantation, 48.8% had between 6 and 10 hectares, while 12.6% had 11 and 15 hectares 2.5 % had 16-20 hectares. The average farm size of the respondents had approximately 7.1 heaters, indicating that, most of the cocoa farmers are large medium scale producers which may be due to some factors like, lack of fund, access to improved inputs, and land .

Table 5: Distribution of Cocoa Farmers According to Experience

Farming experience	Frequency	Percentage
1-5	12	15.0
6-10	14	17.5
11-15	15	18.8
16-20	12	15.0
21-25	8	10.0
26-30	3	3.8
>30	16	19.9
Total	80	100.0

Source: Field Survey, 2019

The process of gaining knowledge and skills many a times come with years of experience. It is a measure of the period an individual farmer has been involved in cocoa production. The more numbers of years of production by a cocoa farmer, the more knowledge and skills is expected to be gained. Experience influences individuals. perception and understanding of the management requirements and consequently improve farm productivity. Farming experience is another important socio-economic

factor that can bring about increase in productivity. The result in Table 5 shows that 20% of cocoa farmers had an experience of 30 years and above, 18.8% of the respondents have experience of within 11-15 years, while 17.5% of the respondents have farming year experience of between 6-10 years

Table 6: Distribution of farmers based on their Education Level

Education	Frequency	Percentage
No formal education	12	15.0
Primary school education	25	31.3
Secondary school education	23	28.8
Tertiary	20	25.0
Total	80	100.0

Source: Field Survey, 2019

Education is an important socio-economic factor that influences farmers. decision making because of its influence on farmers. awareness, perception and adoption of innovations that can bring about increase in productivity. The result in Table 6 showed that 51.0% of cocoa farmers had no formal education, while 31.3% of the respondents had only primary school education, and 28.8% had secondary school education while 25.0% had tertiary education. This indicates that the farmers educational level is low in the study area. This showed that, majority of the cocoa farmers had one form of education or others, which implies that, they will be able to adapt to and adopt any form of innovation brought to them that can boast their farming system.

Table 7: Distribution of Respondents According to Membership Association

Membership	Frequency	Percentage
Yes	33	41.3
No	47	58.8
Total	80	100.0

Source: Field Survey, 2019

Table 7 shows that 58.8% of respondents do not belong to cooperative, while 41.3% belong to cooperative association. Ekong (2003) stated that membership of cooperative societies has advantages of accessibility to micro-credit, input subsidy and also as avenue in cross breeding ideas and information.

Table 8 Respondents Source of Capital

Source of capital	Frequency	Percent
Personal saving	62	77.5
Non family	9	11.3
Family	9	11.3
Total	80	100.0

Source: Field Survey, 2019

Table 8 indicates source of capital of the respondents .77.5% of the respondents started their farming work through their personal savings, while 9% started their farming work with capita through loans.

Table 9: Distribution of respondents based on extension agent visit

Extension agent visit	Frequency	Percentage	Mean
No visit	36	45.0	
1-2	35	43.8	
3-4	9	11.3	
Total	80	100.0	7.1

Source: Field Survey, 2019

Table 9 shows that 45% of the respondents were not visited by extension agents in the past cropping season, while 43.8% were visited once or twice. These results indicated that majority of the farmers had an extension agent visit. The average number of extension visits is 7.1

Table 10: Distribution of cocoa farmer's access to subsidy

Access	Frequency	Percentage
Yes	24	30.0
No	56	70.0
Total	80	100.0

Source: Field Survey, 2019

Table 10 shows that only 24% of respondent farmers have access to subsidy while 56% of the respondents do not have access to the subsidy in the study area. These results imply that majority of the farmer do not have access to subsidy which can discourage production and motivation to increase cocoa output in the study area.

Post-Harvest Activities in The Study Area

Post-harvest activities are very important in cocoa production and how well it is done tend to affect the quality and sweet aroma of cocoa beans, as well as, the price of the kilo of the cocoa. The following are the post-harvest activities which cocoa farmers in the study area are involved in harvesting, pod breaking, fermentation, sun drying, packaging, transportation and selling in the market.

Fermentation

Fermentation is induced by heat which is essential to obtain a chocolate favor. fermentation in the study area is completed in the study area. Fermentation is an important post-harvest activity and about 68.8% of the respondents are involved in it in the study area.

Sun drying

These is the post-harvest activity that follows after fermentation of the cocoa bean. 100%of respondents engage in cocoa sun drying in the study area. Fermented cocoa beans can be dried up in the open sun for

7- 14 days or can be dried by artificial dryer which are owned and operated by the cocoa store house in the study area.

Packaging

Table 11 shows that only 13.8% of the respondents carry out packaging activity. This is because packaging of the cocoa beans is mainly carried out by the central store house in the study area.

Transportation

The transportation of the cocoa bean after drying are mainly carried out by the cocoa store sales workers. These sales workers visit individual farms to collect and transport to the stores house

Table 11: Post-Harvest Activities in the Study Area

Variables

Sun Drying	Frequency	Percentage
Yes	80	100
No	0	0
Total	80	100.0
Fermentation		
Yes	55	68.3
No	25	31.3
Total	80	100.0
Packaging		
Yes	11	13.8
No	69	86.3
Total	80	100
Transportation		
Yes	7	8.8
No	73	91.3
Total	80	100.0
Selling In Market		
Yes	1	1.3
No	79	98.8
Total	80	100.0

Source: Field Survey, 2019

Table 12:Cost structure and Net farm Income of Average farmer in the study Area

Variable cost item	Value in(₦)	Percentage
Cost Chemical	80369.39	16.1
Cost of labour	390228.50	78.3
TVC	470597.9	94.4
Fixed depreciated cost item		
Cost of cutlass	16520.38	3.3
Cost of file	6835.63	1.3
Cost of sprayer	1859.69	0.37
Cost of sickle	568	0.11

Variable cost item	Value in(₦)	Percentage
Cost of hoe	965.98	0.15
Cost of basket	750	0.19
		5.6
		100
TFC	27499.68	
TC=FC+VC 498,096		
Revenue= unit price of cocoa in bag* quantity		
Cocoa revenue	1103663	
Other revenue Plantain, Orange, Cassava, Oillpalm,banana	89668.75	
Total revenue		
Net farm income=TR-TC=	1193331	
Profitability Ratio NFI/TC=	₦605,566	
Efficiency Ratio TR/TC=2.2	1.21	

Source: Computed from Field survey, 2019

Analysis of Cost structure and Net Farm Income per Hectare for Cocoa production

The incurred cost items in the cocoa farms were grouped into variable and fixed cost. The variable cost considered include expenses on labour, agrochemicals, while the fixed cost which are at depreciated cost are cutlass, sprayer, hoe, file, basket, and sickle. The average cost per acre of cocoa production is presented in Table 12. The table shows that labour cost accounted for 78.3% of the total cost, chemicals accounted for 16.1% cutlass accounted for 3.3%, file accounted for 1.3%, sprayer accounted for 0.37%, sickle accounted for 0.11%, hoe accounted for 0.15, % and basket accounted for 0.15%. The total fixed cost accounted for only 5.42% of total cost. A partial reason for this low share of fixed cost is that all fixed costs are depreciated values. The results interpret that labour is highly essential for production so as to increase the output yield of cocoa in the study area, the average variable cost which is agrochemicals and labor accounted for ₦470,597, while the average fixed cost depreciated accounted ₦27,499 for the last production season in the study area. Cocoa farmers in the study area also cultivated crops such as oil palm, orange, banana, yam, cassava and mostly cocoyam in the study area. The average revenue for the other crops was calculated as ₦89,668, while the revenue of cocoa was ₦1,103,663. The net farm income was calculated by subtracting the total cost of production from the total revenue in the last production season. The average net farm income per acres for the average cocoa farmers are 605,566 per hectares. The profitability ratio per acre of cocoa is estimated by net farm income per naira invested and the efficiency ratio is gross revenue per naira invested. The profitability ratio is estimated to be 1.21, which indicate that out of every ₦1 invested, the average farmer will make ₦12 these signifies that cocoa

production in the study area is profitable. The efficiency ratio of cocoa production in the study area is 2.2, that is for every 1~~N~~ invested in cocoa production in the study area the average farmer per acre will make 2.2~~N~~.

Major Problem Militating against Cocoa Farmers in the study Area

Farmers in the study area faced a lot of challenges in the course of producing cocoa for commercial purpose. These major problems are highlighted, ranked and presented in Table 16, According to the result, the problems range from bad road network to unfavorable climatic condition, pest and disease, lack of finance to price fluctuation. As shown on Table 13, the study identified 5 major problems that cocoa farmers in the study area face. These problems ranked in order of importance are: unfavorable climatic conditions). Bad road network, inadequate finance, pest and diseases, and price fluctuations.

Table 13: Distribution of Respondents Major Problem Faced by Farmers

Major problems	Frequency	Percentage	Rank
Bad road network	50	20.8	2
Unfavorable climatic condition	52	21.7	1
Pest and disease	46	19.2	4
Inadequate finance	48	20.0	3
Price fluctuation	44	18.5	5
	240	100.0	
Source: Field Survey, 2019			

Most Farmers (21.7%) farmers claimed that unfavorable climatic condition is the most important problem they face. The farmers explained that heavy and prolonged rainfall in the last cropping season led to increased pest and disease infestation on their farms. 20.8 % of farmers said poor road network is the most important challenge they face with their cocoa business. Inadequate finance is most important problem to 20% of the farmers. The farmers lamented that most of the chemicals which are inevitable in cocoa production are very costly and farmers require financial support to get adequate quantities of the chemicals. 18.7% of the farmers complained that price fluctuation is the most important problem they face.

Conclusion

From the result obtained in this study, cocoa production in the study area is a profitable venture. Agrochemicals, farm equipment's and land size were identified as the significant factors affecting the output of cocoa production in the study area.

Agrochemicals and labour are currently being over-utilized on cocoa farms. That is decrease use of these inputs or using less of these inputs in cocoa production is likely to increase profitability Increased use of land and farm equipment would increase profitability on cocoa farms in the study area. Unfavorable climatic conditions were ranked as the major problem that affect cocoa production in the study area.

Recommendations

The following recommendations are made based on the findings of this study

First, Farmers need to be guided to cut down on the use of agrochemicals and labor on their cocoa farms so as to increase profit.

Secondly, cocoa farmers should be provided with credit facilities from formal credit institutions at affordable interests.

Thirdly, emphasis should be laid on local stores in the study area. Investment on these cocoa stores should be through public private partnership in order to strengthen the stability of the industry rather than one-man business. This will also reduce unemployment rate.

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