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Investment in Cocoa Planting and Rehabilitation by Cocoa Farmers in Nigeria

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Abstract

The paper examined investment in cocoa planting and replanting by cocoa farmers in Nigeria. The study sample comprised of 400 cocoa farmers selected from five major cocoa producing states in Nigeria of which 321 farmers responded. Questionnaire technique supplemented by oral interview was used for the study. The data were analysed using multiple regression, Likert rating and percentages. The results show that few cocoa farmers invested in new planting and replanting programme. There is no positive relationship between percentage of annual income invested in new planting and replanting by the cocoa farmers and the number of hectares of farm holding while age of farmers , years of experience as a cocoa farmer and average annual income show marginal positive relationship, however, farmers education has very high positive relationship with a coefficient of 0.935. The result also shows that the independent variables (farmer annual income, number of hectares owned by the farmers, age of the farmers, education and experience of the farmers) have marginal impact on the dependent variable with coefficient of variation of 0.033. The study concluded that cocoa farmers did not invest adequately in new planting and replanting because of lack of capital and non ploughing lack of capital and low ploughing back of kincome due to low income and social needs.

Keywords: Cocoa farm, Cocoa farmers, Hectares, Investment, Replanting, New planting, Farm holding, Capital, Farmers income.

Contents

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1. Introduction

Nigeria ranked as one of the leading cocoa producing countries in West Africa before the oil boom. Cocoa was a major export crop for the nation as it fetched a sizeable percentage of the nation's foreign exchange, regrettably crude oil displaced the agricultural sector of the nation's economy from the early 1970 and till date, the sector has been faltering. Despite the dwindling production of cocoa in Nigeria, the crop still contributes to the nation's economic development in terms of foreign exchange earnings. No single agricultural export commodity has earned more than cocoa. With respect to employment, the cocoa sub-sector still offers quite a sizeable number of employments both directly and indirectly. In addition, cocoa is an important source of raw materials, as well as source of revenue to Governments of cocoa producing states (Nkang *et al.*, 2009) The investment by cocoa farmers in new planting and replanting in Nigeria has been at low ebb. The objective of this paper is to assess the cocoa farmers' investment in cocoa planting and replanting

2. Materials and Methods

Over 70% of Nigeria's estimated 150million population lived in the rural areas and subsist on agriculture (Arnon, 1987). Before independence and shortly after, the country was able to feed itself and export cash crops including cocoa, palm oil, coffee, and groundnut (Isoun, 1987; Adewumi, 1998). In the first decade of the Nigeria's independence, the agricultural sector served as the engine of growth of the overall economy (Ogen, 2003). The agricultural sector has the potential to be the industrial and economic springboard from which a country development can take off Ogen (2007). From the view point of the occupational distribution and contribution to GDP, the agricultural sector as the leading sector in non oil export , has low output growth rate, with the major source of Nigeria foreign exchange coming from oil since 1970 (Olagbaju and Fasola, 1966; Olagunju, 2008).

According to Osalor (2010) traditional involvement with agriculture and the existence of diverse ecological conditions across the country offers great potential for growth of flourishing and suitably inter linked agro processing industry. Nigerian ambitions for accelerated and inclusive economic growth are contingent on achieving a vibrant agricultural sector that can support extensive industrial development and employment. As expressed by Matthew-Daniel (2011) the Nigerian economy was characterised by the dominance of export activities before independence and there was no viable industrial sector and after independence, agriculture continued as the mainstay of the economy. He stated further that in spite of fluctuations in world prices of agricultural products, agriculture contributed about 65% of the GDP and represented about 70% of total exports. Agriculture provided the foreign exchange that was used in importing raw materials and capital goods.

Many nations like Brazil and Malaysia have encouraged investment in agricultural sector. Malaysia is currently the world largest producer and exporter of palm oil and this is achieved through large scale investment in this sector (Basorun, 2007). Brazil's phenomenal agricultural growth has been the backbone of the nation's economy throughout much of its history. This important sector and its country mineral deposits have helped her to become one of the leading manufacturing nations. Brazil possesses large and well developed agricultural, mining, and manufacturing sectors (Isoun, 1987).

The agricultural potential of Nigeria is not fully tapped and this explains the reason why Nigeria has not been able to meet its ever increasing needs for food for the teeming population and raw materials for its agro allied industries. Eboh (2005) stated that the agricultural sector despite being the dominant economic sector with the greatest potential for growth stimulation and poverty reduction; it has the poorest capital accumulation and the lowest quality of private sector investment. He stated further that many private sector concerns lack adequate capacity and knowledge for agricultural sector investment, there is acute shortage of capacity and experiences for agricultural investments among high echelons of private sector and critical private sector investments are also constrained by the inadequate supply of highly skilled and motivated agricultural enterprise managers.

The annual cocoa beans production in Nigeria within the last five years (2008 -2012) ranges between 200,000 tonnes to 240,000 tonnes. This production level is considered very low when compared with that of Ghana which ranges between 730,000 tonnes and 870,000 tonnes and Cote D'ivoire ranges between 1,431,000 tonnes and 1,668,000 tonnes in the same period (International Cocoa Organisation (ICCO), 2012). This production level in Nigeria indicates that not much investment is done in planting and rehabilitation of cccoa farms.

Investment decision in cocoa by cocoa farmers in the cocoa value chain are very important for the development of cocoa sector in Nigeria. Larrrea and Lynch (2012) defined sustainable cocoa economy as where each person investing time and money into the cocoa supply chain would be able to earn a decent income for themselves and their family, work in good condition and in a manner which would not harm the environment. They asserted that in Latin America and the Carribean (LAC) the producers do not have enough financing, which has been the major limiting factor for the growth of cocoa sector in LAC. Also, in Cote Divoire majority of the farmers are at subsistence level with limited ability to invest in their farm. The financial instability of cocoa producers also contributes to the slow growth in the sector. The investment in cocoa create positive financial returns, there are also an array of possible social and environmental impacts that such investment may generate. However, poor access to finance has been one of the most significant barriers to the growth of cocoa sector in Nigeria. Lack of investment in cocoa sector in Nigeria has created a major constraint to its expansion, creating investment level of productivity, preventing business development and market growth.

Investment has been deemed to be both the engine of economic activity and the primary cause of economic malaise since the time of Adam Smith and Karl Marx, Modern theories of investment generally begin from Fisherian capital theory, which explains investment in terms of optimal decision-making over time. The investment decisions of a firm are generally known as the capital budgeting decisions which are the firm decision to invest its current funds most efficiently in the long term assets in anticipation of an expected flow of benefits over a series of years (Pandey, 2010). For a cocoa farmer to plant or replant his cocoa farm, is a capital budgeting decision aimed at increasing expected future earnings over a series of years. When it comes to the creation of value, the investment decision is the most important decision. As stated by Dwived (2002) investment is an activity of spending resources

(money, labour, and time) in creating assets that can generate income over a long period of time or which enhances the returns on the existing assets.

There is a very large number of constraints affecting investment in the Nigerian economy in general and the agricultural sector in particular. Manyong *et al.* (2003) identified constraints from different sources under eleven constraint categories, namely technical, infrastructural, economic, financial, political, social, policy, institutional, environmental, external environmental and labour market constraints. Policy instability is the most mentioned nature of policy constraints. The specific nature of economic constraint includes poor economic and investment climate, economic mismanagement, high cost of production, poor access to market information, high investment risk among others. Social constraint is mainly in the forms of corruption, indiscipline, insecurity of life and property, social instability/crises among others. Political constraint manifests in the form of political instability, high country risk and poor governance Ajuwon and Ogwumike (2013) and Onyenweaku (2000). Financial constraint is mainly in the forms of inadequate supply of credit, inadequate financial services and high external debt burden (Okafor, 2010; Adebayo and Waziri, 2012).

Finance is very crucial to investment (Mckinnon, 2006). Financial institutions must pool savings and direct them through viable investment if growth must take place. Private sector credit and retention of earnings are very significant in the finance of business concern (Okpara, 2010). Therefore a farmer need to have access to credit and retain some of its earning to enhahce growth of his farm holdings.

3. Methodology

The sample for this study consists of 400 farmers selected from Ondo, Ekiti, Osun, Oyo and Edo states. These five states produced the bulk of cocoa in Nigeria. The questionnaire and oral interview techniques were adopted to gather the primary data for the study. The questionnaire contains questions on variables specify in the model form the study and other relevant question related to investment in cocoa farming. The model specification for the study is as follows:

$I = a + b_{x1} + b_{x2} + b_{x3} + b_{x4} + b_{x5}$

Where:

I = Percentage of income invested in cocoa planting (Average percentage invested in cocoa planting/ rehabilitation (2009-2013)

x_1 = Average yearly income of Farmers (2009 -2013)

x_2 = Average hectares of farm holding (2009 – 2013)

x_3 = Years of experience of cocoa farmers

x_4 = Age of cocoa farmers

x_5 = Education of cocoa farmers

(Farmers education was given quantifiable factors as follows:

No Formal Education	1
Adult Education	2
Primary Education	3
Secondary Education	4
Post Secondary	5

The data collected for the study were subjected to statistical analysis using Simple Percentage, Multiple Regression Analysis, Analysis of Variance and Likert Rating and subjected to Duncan Multiple Range test

4. Results and Discussion

Out of a sample of 400 farmers from five cocoa producing states a total of 321 completed the questionnaire which were then analysed. The study reveals that 62% of the cocoa farmers aged above 50 years while 38 % were less than 50 years. The mean age of the farmers was 49.4 years with a standard deviation of 8.3 years. The results is an indication that majority of the farmers were ageing. The result also corroborates the findings of Kyei *et al.* (2011) and Idowu *et al.* (2007) which revealed that 65% and 68% of cocoa farmers in Ashanti Region in Ghana and southwest Nigeria respectively were over 50 years of age. None of the farmers was less than 20 years of age while only 4.1% were between the age of 21 to 30 years, This also indicates that less youth were taking part in cocoa farming. The study shows that 30.9% of the respondents cocoa farmers had no formal education, 39,6% of the farmers are educated up to primary school level, 5.6% had adult education while only 18.1% and 5.9% had secondary and tertiary education respectively. This indicates that majority of cocoa farmers had little or no education.

Table 1 shows the new planting between 2008 and 2013 of 321 farmers. The table revealed that (47.9%) of the farmers had not done any new planting during this period, , 26.2% and 13.4% had planted between 1 and 2 hectares respectively in this period.. Only a negligible percentage of 1.87% planted above 5 hectares within this period. This is an indication that investment in new cocoa plantation is very low.

Table 2 shows the farm holding of the farmers. Majority (72%) of farmers held less than 4 hectares of cocoa farm. Only few of the farmers (4.7%) held more than 10 hectares of cocoa farm. The result further revealed that 21.3%, 19.8%, 11.4%, 10.5% and 6.5% of Ondo, Ekiti, Osun, Oyo and Edo states cocoa farmers respectively held between 4 and 8 hectares of cocoa farm. Out of the 15 farmers (4.7%) that had over 10 hectares of cocoa farm, 9 (2.8%) were from Ondo state. This indicates that farmers invested more in cocoa farming in Ondo state than any other states in Nigeria .This was due to the cultivation of cocoa in new openings in the forest reserves. Table 3 revealed that 76% of the farmer invests less than 20 % of their income on new planting, replanting and rehabilitation.

This result clearly shows that farmers only plough back very little percentage of their income for further investment in cocoa planting

Table-1. New planting between 2009 and 2013 by cocoa farmers

	Number of respondents											
Number of Hectares	**Ondo**	**%**	**Ekiti**	**%**	**Osun**	**%**	**Oyo**	**%**	**Edo**	**%**	**Total**	**% of Total**
0	27	29.35	41	50.62	49	62.03	29	76.32	8	25.81	154	47.98
1	34	36.96	19	23.46	14	17.72	5	13.15	12	38.71	84	26.17
2	8	8.70	13	16.05	12	15.19	2	6.26	8	25.81	43	13.39
3	7	7.60	5	6.17	3	3.80	2	5.26	1	3.22	18	5.60
4	10	10.87	2	2.45	1	1.26	-	-	2	6.45	17	5.29
5 and above	6	6.52	1	1.24	-	-	-	-	-	-	6	1.87
Total	92	100	81	100	79	100	38	100	31	100	321	100

(**Source:** Field Survey 2015)

Table-2. Farm holding in hectares

	Number of respondents											
Hectares	**Ondo**	**%**	**Ekiti**	**%**	**Osun**	**%**	**Oyo**	**%**	**Edo**	**%**	**Total**	**% of Total**
0 < 2	11	11.96	21	25.92	38	48.10	25	63.79	25	80.64	120	37.38
2 < 4	37	40.22	33	40.74	29	36.71	8	2.11	4	12.90	111	34.58
4 < 6	13	14.13	11	13.58	7	8.86	4	10.53	1	3.23	36	11.21
6 < 8	7	7.16	5	6.17	2	2.53	-	-	1	3.23	15	4.67
8 < 10	15	16.30	8	-	1	1.26	1	26.32	-	-	25	7.79
> 10	9	9.78	3	3.70	2	2.53	-	-	-	-	15	4.67
Total	92	100	81	100	79	100	38	100	31	100	321	100

(**Source:** Field Survey 2015)

Table-3. Percentage of yearly income invested on planting

	Number of respondents											
	Ondo	**%**	**Ekiti**	**%**	**Osun**	**%**	**Oyo**	**%**	**Edo**	**%**	**Total**	**% of Total**
0 – 20%	77	83.70	55	67.90	67	84.81	26	68.42	19	61.29	244	76.01
21 – 40%	1	9.78	17	20.99	8	10.13	9	23.68	4	12.90	47	14.64
41 – 60%	4	4.35	2	2.47	3	3.80	1	2.63	5	16.13	15	4.67
61 – 80%	2	2.17	7	8.64	1	1.27	2	5.26	3	9.68	15	4.67
81 – 100%	-	-	-	-	-	-	-	-	-	-	-	-
Total	92	100	81	100	79	100	38	100	31	100	321	100

(**Source:** Field Survey 2015)

The study identified some factors that influenced investment in new planting and rehabilitation, which include availability of land, funding, labour, government support and seedlings. The mean ratings for these factors were 2.17, 2.27, 2.75, 2.76 and 3.00 for land availability, funding, labour, government support and improved seedlings respectively (Table 4).There was a significant difference ($F = 29.338$, $P < 0.05$) in the ratings of the factors . All the factors were inadequate except improved seedling (3.00) which was fairly adequate. Farmers interviewed confirmed that there were government agencies that take care of providing seedlings to cocoa farmers at avoidable prices

Table-4. Adequacy of factors determining investment in new planting

	Very Adequate	**Adequate**	**Fairly Adequate**	**Inadequate**	**Grossly Inadequate**	**Total Response**	**Weighted Score**	**Mean Rating**
Land Availability	22 (7%)	14 (4%)	28 (9%)	188 (59%)	69 (21%)	321	695	2.17d
Funding	11 (3%)	29 (9%)	37 (12%)	203 (63%)	41 (13%)	321	729	2.27c
Labour	30 (9%)	12 (4%)	161 (50%)	84 (26%)	34 (11%)	321	883	2.75b
Government Support	29 (9%)	37(12%)	128 (40%)	81 (25%)	46 (14%)	321	885	2.76b
Seedlings	41 (13%)	23 (7%)	167 (52%)	75 (23%)	15 (5%)	321	963	3.00a

(**Source:** Field Survey 2015)

Analysis of Variance: $F = 29.338$, $p < 0.05$, means followed by the same letter are not significantly different ($p < 0.05$)

Note: Rating 1 - Grossly inadequate
2 - Inadequate
3 - Fairly adequate
4 - Adequate

5 - Very adequate

The result of the regression equation shows that:

$I = 8{,}745 + 0.0000007_{x1} - 0.335_{x2} + 0.054_{x3} + 0.050_{x4} + 0.935_{x5}$

Where:

I = Percentage of income invested in cocoa planting(Average percentage invested in cocoa planting/ rehabilitation (2009-2013)

x_1 = Average yearly income of Farmers (2009 -2013)

x_2 = Average hectares of farm holding (2009 – 2013)

x_3 = Years of experience of cocoa farmers

x_4 = Age of cocoa farmers

x_5 = Education of cocoa farmers

The regression equation obtained as shown above reveals that there is no positive relationship between percentage of annual income invested in new planting and replanting by the cocoa farmers and the number of hectares of farm holding. Other independent variables show marginal positive relationship except farmers' education with a very high positive coefficient of 0.935. This indicates that if there are more educated farmers, there will be more awareness of investing more percentage of farmers' income in new planting and replanting

The summary of the multiple regression model is shown below::

R	0.183
R Square	0.033
Adjusted R Square	0.018
Standard Error of estimate	10.93841

The coefficient of correlation R and the coefficient of determination R Square measure the explanatory power of multiple regression models. From the above data, there is low correlation (0,183) between the dependent variable (percentage of income invested in planting and replanting) and the independent variables (farmer annual income, number of hectares owned by the farmers, age of the farmers, education and experience of the farmers) this implies that there is a low positive relationship between the variables and therefore the independent variables does impact positively on percentage of annual income invested in planting though very low.. The R square shows the coefficient of determination which is .033 and it implies that the independent variable has marginal impact on the dependent variable. The Adjusted R square shows a small positive result of .018. This result is not unexpected in view of the fact that most farmers income is still generally very low and the substantial portion of their income are expended on many social and domestic issues.

Interview of cocoa farmers conducted indicated that they have received little support from cocoa major marketers, cocoa processors and the government especially in time of finance for new planting They opined that policy need to be put on place to allow cocoa farmers have easy access to finance from Agricultural Bank, without much encumbrance.

5. Conclusion and Recommendations

The study covered 400 Cocoa farmer selected from five major cocoa producing states in Nigeria farmers from which a response rate of 80,25% was obtained. Majority (76.01) % of the farmers invested between 0 and 20% of their income in new planting Some of the farmers(47.98%) have not invested in new planting between 2009 and 2013 while only 1.87% have invested in new planting of more than five hectares, There is high positive correlation between percentage of cocoa farmers income invested in planting and the level of education of the farmers.

Based on the findings of the study, the following suggestions and recommendations are made to improve the farmers willingness to invest in new planting and replanting programme.

6. Recommendations

(i) Farmers must be encouraged to invest in new cocoa farm and replanting by having access to credit without much encumbrance which should be channeled through cocoa farmers' cooperative unions.

(ii) There should be reawakening of the farmers to join co-operative unions to encourage farmers to save from their income which can be ploughed back for new planting and replanting programme..

(iii) In view of the land tenure system in Nigeria, government should acquire land and create farm settlement for young farmers to plant cocoa and they should be given necessary improved seedling and stipend to sustain them during the gestation period.

The above recommendations would lead to increase in investment in cocoa farming in Nigeria and the rebirth of cocoa industry in Nigeria

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Appendices

Appendix-1. Adequacy of Factors Determining Investment in New Planting

ANOVA

	Sum of Squares	df	Mean Square	F	Siq
Between Groups	123.243	4	30.811	29.338	.000
Within Groups	1679.246	1599	1.050		
Total	1802.489	1603			

Duncan Multiple Range Test Result

POST HOC TESTS
Homogenous Subsets

Duncan[a,b]

Factors		Subsets for alpha =0.05			
	N	1	2	3	4
Land Availability	321	2.1651			
Funding	320		2.5813		
Labour	321			2.7508	
Government Support	321			2.7570	
Seedling	321				3.0000
Sig.		1.000	1.000	.939	1.000

Appendix-2. Regression

Descriptive Statistics

	Mean	Std. Deviation	N
% of Income Invested	14.6729	11.03838	321
No. of Hectare	4.49	3.089	321
Average Income	212772.5857	1.86184E5	321
Education	2.63	1.254	321
Years of Experience	16.93	6.927	321
Age	49.42	8.276	321

Correlations

		% of Income Invested	No. of Hectare	Average Income
Pearson Correlation	% of Income Invested	1.000	-.053	.102
	No. of Hectare	-.053	1.000	.358
	Average Income	.102	.358	1.000
	Education	.113	-.059	.049
	Years of Experience	.045	-.004	.011
	Age	.047	.055	.036
Sig. (1-tailed)	% of Income Invested	.	.172	.034
	No. of Hectare	.172	.	.000
	Average Income	.034	.000	.
	Education	.021	.147	.189
	Years of Experience	.209	.469	.424
	Age	.202	.162	.259
N	% of Income Invested	321	321	321
	No. of Hectare	321	321	321
	Average Income	321	321	321
	Education	321	321	321
	Years of Experience	321	321	321
	Age	321	321	321

		Education	Years of Experience	Age
Pearson Correlation	% of Income Invested	.113	.045	.047
	No. of Hectare	-.059	-.004	.055
	Average Income	.049	.011	.036
	Education	1.000	-.081	-.063
	Years of Experience	-.081	1.000	.492
	Age	-.063	.492	1.000
Sig. (1-tailed)	% of Income Invested	.021	.209	.202
	No. of Hectare	.147	.469	.162
	Average Income	.189	.424	.259
	Education	.	.075	.130
	Years of Experience	.075	.	.000
	Age	.130	.000	.
N	% of Income Invested	321	321	321
	No. of Hectare	321	321	321
	Average Income	321	321	321
	Education	321	321	321
	Years of Experience	321	321	321
	Age	321	321	321

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Age, Average Income, Education, No. of Hectare, Years of Experience[a]	.	Enter

a. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.183[a]	.033	.018	10.93841

a. Predictors: (Constant), Age, Average Income, Education, No. of Hectare, Years of Experience

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1301.250	5	260.250	2.175	.057[a]
	Residual	37689.405	315	119.649		
	Total	38990.654	320			

a. Predictors: (Constant), Age, Average Income, Education, No. of Hectare, Years of Experience
b. Dependent Variable: % of Income Invested

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**T**	**Sig.**
1	(Constant)	8.745	4.087		2.140	.033
	No. of Hectare	-.338	.213	-.095	-1.588	.113
	Average Income	7.623E-6	.000	.129	2.160	.031
	Education	.935	.492	.106	1.902	.058
	Years of Experience	.054	.102	.034	.531	.596
	Age	.050	.085	.037	.584	.560

a. Dependent Variable: % of Income Invested