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Factors influencing cashew farmers' output in Ejigbo local government area, Osun state, Nigeria

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Abstract

The study aimed to identify the most important factors influencing the cashew farmers' output in Ejigbo Local Government Area, Osun State, Nigeria. A sample of 120 cashew farmers was selected from communities in the local government area using a multistage sampling procedure. Primary data were collected from respondents using a structured interview schedule. Data were analysed using descriptive (means, frequency, and percentages), and inferential (regression analysis) statistics. Results reveal that the cashew farmers were aged, with a mean age of 60.00 years; male (86.67%); married (77.50%) with a mean household size of 7 persons per household with a mean of 4.02 years of formal education. The mean cashew farm size, years of cashew farming experience, and cashew output were 4.43 hectares, 23.63 years, and 63.47 tonnes per year respectively. Farm size and cashew farming experience influenced cashew output positively. Constraints to cashew production are the unavailability of farm inputs, low prices of cashew nuts, and poor infrastructural facilities.

Keywords: Cashew farming, Cashew output, Cashew production constraints

Introduction

Cashew (Anacardium occidental) is a tree crop of immense importance in the Nigerian economy and other tropical countries. It is an essential source of food and medicinal and industrial products. Its horticultural attributes make it an ornamental and alley tree. Also, it is of immense assistance in soil erosion control, especially in protecting water shade and dams [1]. The cashew tree is cultivated in tropical areas for its two essential parts; cashew nut and apple (pseudo fruit). However, cashew is often grown for its nut which is highly nutritive, but the fleshy apple produces a juice rich in vitamins and minerals. Citric acid which is of industrial importance is obtained from cashew juice through biotechnology. Africa currently produces an estimated 2,334,405 tonnes of cashews or about half (50%) of the world's total. According to

[2], the continent continues to be the world's top producer and exporter of raw cashew nuts.

Annually, cashew nuts exports earned Nigeria ₦ 24 billion in 2012 and provided about 600,000 jobs to people engaged in its production [1]. Between 2000 and 2018, the global trade in raw cashew nuts increased to 2.1 million tonnes, which is more than double what was obtained before 2000. African countries, championed by Côte d'Ivoire, are responsible for almost two-thirds of the global growth rate in cashew nuts during this period. In 2020, the global trade in cashew nuts was valued at US$6.87 billion [2]. Nigeria is ranked sixth in global production of cashew nuts, with production estimated at 100,000 metric tonnes [3]. The country exports over 80 percent of cashew nuts produced in raw form to two major trading partners; Vietnam and India for the production of consumables such as butter, roasted nuts, food, and cosmetic ingredients. Currently, about 200,000 to 240, 000 metric tonnes of raw cashew nuts are harvested annually in Nigeria [3]. Like other African countries, over 85 percent of the cashew nuts produced are exported in their raw form [2].

Cashew is cultivated in almost all 30 states in Nigeria; however, the major production hubs are concentrated in the Eastern, Western, and Middle Belt areas of the country, with Anambra, Oyo, Enugu, Osun, and Kogi having the largest production [4]. Annually, Cashew farming and related activities generate about ₦24 billion (about US$58 million) for the Nigerian economy, creating employment for about 60,000 people [2]. According to [5], despite the huge potential and immense revenue accruing from cashew nuts export to the national economy, the problem of declining output and productivity constituted a colossal threat to the cashew value chain actors. Like other agricultural export crops, cashew cultivation has suffered serious neglect from successive governments in Nigeria since the discovery, exploration, and exportation of crude oil in the early 1970s. This has led to the abandonment of large cashew plantations, leading to a significant decline in the output of the crop in areas of cultivation across the country [6, 7].

Recently, the agricultural sector has been recognized as key to driving Nigeria's economic diversification plan from oil as a major source of the country's revenue. Significant efforts have been made by the government to revitalise the cashew subsector. The Agricultural Transformation Agenda (ATA) programme of the government has incorporated cashews into the existing value chain crops to boost production and productivity. [5,4] further stated that for instance, a 400-ha cashew plantation in Ogun State was rehabilitated by the intervention of scientists from Coca Research Institute of Nigeria (CRIN) to prevent it from being moribund. Similarly, CRIN in collaboration with the federal government distributed 10,000kg of jumbo cashew nuts to farmers in 22 States of Nigeria from 23rd to 31st July 2014. This support was part of the government efforts in the transformation process in the cashew sub-sector. It is expected that these interventions will help to improve the yield of cashew farmers in the country [5, 4].

However, despite these tremendous efforts of the government to improve cashew production and productivity, cashew farmers' output remains significantly low, especially at the farm level. Given the foregoing, the study looked into the factors that influence cashew production output among farmers in Ejigbo Local Government Area, Osun State, Nigeria. Specifically, the objectives of the study are to; describe the socio-economic characteristics of cashew farmers, determine the level and factors influencing the output of cashew production, and examine the constraints to cashew production in the study area.

Materials and Methods

The Study Area

The study was conducted in Osun State, Nigeria's Ejigbo local government area (LGA). The LGA lies in Southwest Nigeria's Osun state, and the town of Ejigbo serves as the region's headquarters. Other significant cashew nuts producing towns and villages in the LGA are Ola, Iwata, Ayegbogbo, Masifa, Ilawo, Afake, Ife-Odan, and Olori. There are an estimated 79,882 people living in the LGA. The LGA has a total land area estimated at f 373 square kilometers [8]. The LGA is dominated by agrarian communities involved in the production of yams, cassava, maize, cocoa, coconut, oil palm, potato, and cocoyam. The LGA is one of the cashew production hubs in the state, and a significant source of farm income in the LGA [9,8].

Population of the Study

The population of the study is the cashew farmers in the study area.

Sampling techniques and sample size

The study employed a multi-stage sampling approach. The first stage involved the purposive selection of five (5) towns in the local government area where cashew production is concentrated. In the second stage, twelve (12) communities were randomly selected from the five (5) towns. Finally, ten (10) cashew farmers were selected from each community making a total of one hundred and twenty (120) cashew farmers as the sample for the study.

Source of data and method of data collection

Primary sources provided the data used in this study. The data were collected with the aid of a structured interview schedule. The interview schedule was structured to collect information on the socioeconomic and production characteristics of the cashew farmers. The data collected were aggregated and analyzed statistically.

Analytical techniques

Socioeconomic characteristics of the respondents such as age, farming experience, and education level were measured in years, household size was measured as a number of people eating from the same pot, the family size was measured as the number of people in a family, labor in man-days, and farm size in hectares.

Data in this study were analyzed with both descriptive and inferential statistics. The descriptive statistics that were employed included means, frequency, and percentages while the inferential statistic that was employed in the study is the ordinary least

square regression technique. The ordinary least square regression technique was used to isolate the determinants of cashew output in the study area.

The empirical model that was used in the study is expressed as:

$\text{Log } Y = f \log (X_1 X_2, X_3, X_4, X_5, X_6, X_7 e_t)$

Where Y represents cashew production (kg)

X_1 represents cashew farm size (hectares)

X_2 represents the quantity of chemicals used (litres)

X_3 represents cashew farming experience (years)

X_4 represents years of formal education

X_5 age of cashew trees in years

X_6 represents the household size (number of people living together)

X_7 labour (man-days)

e_t represents the stochastic error

Results and Discussion

Socio-economic characteristics of cashew farmers

Descriptive analysis of the socioeconomic characteristics of cashew producers in the study area is presented in Table 1. With a mean age of 60 years, Table 1 shows that the majority of cashew growers (61.67%) were between the ages of 50 and 69 years. They are still in their prime for economic activity, based on this. According to data in Table 1, the majority of cashew growers were male (86.67%), with only a small percentage (13.33%) being women. According to this finding, cashew production in the study area was dominated by the male gender. The study area's cashew producers' marital status distribution is displayed in Table 1. The table shows that married people made up the majority of responses (77.50%). The distribution of household sizes among cashew growers is displayed in Table 1, where the majority of homes (63.03%) had between one and eight occupants, with an average of seven individuals per household. The cashew farmers' years of formal education are distributed in Table 1. Few farmers (38.33%) had between 6 and 8 years of formal education, while the majority (61.67%) had little to no formal education for 1 to 5 years, according to the table, with an average of 4 years of formal education, the cashew farmers in the study area have a poor literary level.

By farm size, the distribution of cashew farmers is displayed in Table 1. With a mean farm size of 8 hectares, the majority of farmers (88.05%) in the table work on land that ranges from 1 to 6 hectares, indicating that they are small-scale farmers. Table 1 shows the distribution of cashew growers by number of years of cashew cultivation experience. According to the table, most of the farmers (52.5%) have 15–28 years of experience growing cashews. 24 years is the average number of years spent by the farmers on cashew farming.

Table (1): Socio-economic characteristics results of the cashew farmers (n =120)

Socio-economic character-istics	Frequency	Percentage (%)
Age		
20-29	2	1.67
30-39	5	4.17
40-49	11	9.17
50-59	29	24.17
60-69	45	37.50
70-79	24	20.00
80-85	4	3.33
Mean age = 60. 00 years		
Gender		
Male	104	86.67
Female	16	13.33
Marital status		
Single	1	0.83
Married	93	77.50
Separated	3	2.50
Divorced	7	5.83
Widowed	16	13.33
Household size		
2-4	18	15.13
5-7	75	63.03
8-10	19	15.97
11-13	7	5.88
Mean = 7 persons per household		
Years of formal education		
0-2	54	45.00
3-5	20	16.67
6-8	46	38.33
Mean = 4 years		
Farm size (ha)		
1-6	100	83.05
7-12	10	8.47
13-18	5	4.24
19-24	2	1.69
31-36	3	2.54
Mean = 8 ha		
Years of cashew farming		

experience		
1-7	6	5.00
8-14	11	9.17
15-21	34	28.33
22-28	29	24.17
29-35	34	28.33
36-42	3	2.50
43-50	3	2.50
Mean = 23.62 years		

Source: Field Survey, 2023.

Level of cashew production

Table 2 shows the cashew production level in the study area. The Table shows that the majority (67.50%) of the cashew farmers had their output in the range of 11-32 tons, with a mean of 63.47 tons per year. This result suggests that cashew production in the study area is still under small-scale production.

Table (2): Results of the distribution of the respondents according their level of cashew production (n=120)

Output(tons)	Frequency	Percentage
0-10	39	32.50
11-21	40	33.33
22-32	41	34.17
Total	120	100.00

Mean of Output = 64 tons
Source: Field Survey, 2023.

Factors influencing the output of cashew production

The result of the double log regression analysis showing factors influencing the production of cashew in the study area is presented in Table 3. The R^2reveals that about 59.30 percent of the variability in the production of cashew is attributed to the specified explanatory variables in the model. This shows that the specified explanatory variables were an important determinant of cashew production in the study area. The F-statistic value of 22.24 is statistically significant ($p>0.01$) and the estimated regression equation has the goodness of fit.

From the table, the coefficient of farm size (X_1) (0.064) is positive and significant at 1 percent level. This implies that farm size is directly related to the cashew output, that is, as the farm size increases, it is expected that 1% increase in the farm size would lead to about 0.604% increase in output of cashew in the study area.

Similarly, the coefficient of the cashew farming experience (X_3) (0.421) is positive and statistically significant at a 5% level, showing a direct relationship with the output of cashew in the study area. A percent increase in cashew farming experience will lead to about 0.421% in cashew output.

Finally, the labour input coefficient of 0.102 indicates that a 1% rise in labor input leads to a 0.102 % increase in cashew output, which is also significant at the 1% level. In summary, farm size, cashew farming experience, and labour input positively influences the output of cashew in the study area.

Table (3): Results of factors influencing the output of cashew production in the study area

Variables	Coefficients	Standard error	t-value	Probability
Cashew Farm size (X_1)	0.064	0.092	7.11	0.000*
Quantity of chemicals (X_2)	-0.017	0.013	-1.31	0.191
Cashew farming experience (X_3)	0.421	0.067	6.28	0.000*
Years of formal education (X_4)	-0.019	0.022	-0.87	0.386
Age of cashew trees (X_5)	0.004	0.009	0.43	0.669
Household size (number of people living together) (X_6)	0.003	0.008	0.34	0.645
Labour (man days) (X_7)	0.102	0.045	2.27	0.025**
Constant	2.345	0.478	4.91	0.000*

R-squared = 0.593, Adjusted R-squared = 0.472, F value = 22.24*
*mean significant at 1% level
**mean significant at 5% level
Source: Data Analysis, 2023.

Perceived constraints to cashew production

Table 4 presents the perceived constraints to cashew production in the study area. The Table reveals that the most severe, severe, and not severe constraints are unavailability of farm inputs, high cost of hired labor, and unavailability of land respectively. Ranking second behind these for most severe, severe, and not severe constraints are poor infrastructural facilities, high transportation cost, and lack of technical know-how respectively, while low prices, inadequate market access, and unavailability of farms ranked third for most severe, severe and not severe constraints respectively.

Table (4): Results of perceived constraints to cashew nuts production

Constraints	S A(5)	A(4)	U(3)	D(2)	SD(1)	Scores	Rank
Unavailability of land	160	144	9	18	36	367	4th
Unavailability of farm inputs	135	204	54	88	8	409	2nd
Unavailability of labour	70	160	27	110	8	375	6th
High cost of farm inputs	380	128	9	12	3	532	1st
High cost of hired labour	125	64	6	48	53	296	9th
Inadequate extension service	50	120	9	64	45	288	12th
Lack of technical Know-how	45	132	6	108	22	313	7th
Perishability	35	188	81	50	14	368	3rd
Market access	35	192	57	58	17	359	5th
Low prices (glut)	115	68	9	48	53	293	11th
High transportation costs	125	60	3	58	50	296	10th
Poor infrastructural facilities	130	72	0	44	54	300	8th

KEY: SA = Strongly Agree; A = Agree; UD = Undecided; D = Disagree; SD = Strongly Disagree

Source: Data Analysis, 2023.

The findings indicate that factors such as farm size, the experience of farmers, and labour input play a crucial role in determining the output of cashew farmers in the Ejigbo Local Government Area. Also, the major constraints limiting cashew farmers' production in the study area were unavailability and high cost of inputs, perishability, and land scarcity policymakers need to focus on improving these elements through supportive agricultural initiatives, like increasing access to extension services on improved production technology to improve land productivity for the farmers and encouraging the efficient use of inputs, especially labour, to boost cashew production in the area.

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