Profitability Analysis of Groundnut Production in Chikun Local Government Area, Kaduna State, Nigeria

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Abstract: **This study assessed the profitability analysis of groundnut production in Chikun Local Government Area of Kaduna State. Structured questionnaire was used to generate primary data for the study. Descriptive statistics, Net farm income analysis, and profitability ratios were employed in the analysis. Results revealed that majority of the respondents (87.95%) were relatively young and fell within the active age (21 – 50 years). Male respondents marginally dominated groundnut production at 55.42 % and majority (59.04%) were married. Results further revealed that significant (73.50%) number of the respondents had below 11 inhabitants in their households. Educationally, 64.00 % of respondents had post primary education. The net farm income per hectare was N81, 518.33 and gross income of N173, 952.45 were obtained per hectare of groundnut cultivated with a return on capital invested determined at 0.47 implying that for every naira invested, the farmers makes 47 kobo (N0.47)and the gross rati o was calculated at 0.53 indicating that total farm costs was about 53% of the gross income which shows that groundnut production is a viable, beneficial and profitable enterprise in the study area. Major constraints faced by the farmers were incidence of pests and diseases infestation plus inadequate capital. Despite these constraints, the farmers made profit. Therefore, groundnut production could be one of the poverty alleviating enterprise, if well-articulated. It is recommended that: credit facilities should be provided so that farmers can have fund to purchase farm inputs such as pesticides and insectices to combat problem of pests and diseases infestation identified, improve varieties of groundnut should be developed and made available to the farmers so that their yield can increase, and farmers should form themselves into cooperative groups so that they can pool their resources together in getting adequate funds to finance groundnut production activities.**

Keywords**: Profitability; groundnut; production; Constraints; Kaduna State.**

I. INTRODUCTION

The role of Agriculture is to provide food output that will ensure global food security and enhance economic development (Adesina, 1991).Groundnut is a major food crops and widely grown in Kaduna State, however with increased population over the year, demand for the crop have gone up but the production has not increased significantly (Agwu,2011). The negligence of resources used in groundnut production has not being giving serious attention, thus poised threat to successful yield and production of groundnut in Kaduna State and in Nigeria as a whole. Groundnuts being recognized as one of the most important oil crop in Nigeria account for about 65.5% oil consume in most households (FAO, 2014). The need to investigate the level of productivity and profitability of groundnut production in the study area and in Nigeria as a whole is necessary owing to the importance of the crop nutritive value which is of benefit to both human and animals.

Groundnut (*Arachis hypogaea*) is a major crop grown in the arid and semi-arid zone of Nigeria. It is either grown for its nut, oil or its vegetative residue (haulms). Recently, the use of groundnut meal is becoming more recognized not only as a dietary supplement for children on protein poor cereals-based diets but also as effective treatment for children with protein related malnutrition. It is the 13th most important food crop of the world and the 4th most important source of edible oil. Its seeds contain high quality edible oil (50%), easily digestible protein (25%) and carbohydrates (20%) (FAO, 2004). The crop is mainly grown in the northern part of Nigeria; over 85% of the groundnuts produced in the country were accounted for by Kano, Kaduna, Taraba, Bauchi, Bornu, and Adamawa states (Abal and Harkness, 2008). Groundnuts are a popular source of food all over the world.. In many countries groundnuts are consumed as peanut butter or crushed and used for the groundnut oil or simply consumed as a confectionary snack roasted, salted or in sweets. In other parts of the world they are boiled, either in the shell or unshelled.

Nigeria is the largest groundnut producing country in West Africa, accounting for 51% of production in the region. The country contributes 10% of total global production and 39% that of Africa (Ajeigbe,2014). Between 1956 and 1967, groundnut was the country's most valuable single export crop, exemplified by the famous Kano groundnut pyramids. Groundnut is a major source of edible oil as well as livelihoods for small-scale farmers in Northern Nigeria. Being a labor-intensive crop, it generates employment for the rural poor. It is planted on about 34% 2 of total cultivated area and contributes to 23% of household cash revenue (Ajeigbe,2014). Groundnut products like oil and cake accounted for a significant percentage of total Nigerian export earnings. Before the fossil oil boom, groundnut was one of the major sources of revenue and foreign exchange earnings. However, in the post-1967 period, the combined effects of drought,

increasing prevalence of diseases such as rust, leaf spots and groundnut rosette disease (GRD) have caused a decline in groundnut production. The total output of groundnut in 1970 was 1.6 m tons, but fell to 0.47 m tons in 1980(Ajeigbe,2014). Due to insufficient groundnut stocks, processors and marketers in Kano State source groundnut from as far as Chad Republic. The year-round demand for groundnut means farmers can increase production without any fear of market glut. Since 1984, production has been increasing at an estimated growth rate of 8%, resulting both from area expansion (6%) and increase in productivity of 2% (Ndjeunga and Ibro 2010). Agroecologies for groundnut production in Nigeria: Traditional commercial groundnut producing areas encompass the Sahel, Sudan and derived savanna, Northern Guinea and most parts of the Southern Guinea vegetation zone. The major groundnut producing states are Kano, Katsina, Kaduna, Jigawa, Sokoto, Zamfara and Kebbi in the Northwest; Adamawa, Bauchi, Yobe and Borno in the Northeast; and Benue, Plateau, Taraba, Nasarawa, FCT Abuja, Kogi, Niger and Kwara in the Central Zone(Ajeigbe,2014).

Groundnut products like oil and cake accounted for a significant percentage of total Nigerian export earnings, and Kaduna State as well. Before the fossil oil boom, groundnut was one of the major sources of revenue and foreign exchange earnings. However, in the post-1967 period, the combined effects of drought, increasing prevalence of diseases such as rust, leaf spots and groundnut rosette disease (GRD) have caused a decline in groundnut production. This study is therefore aimed at evaluating the costs and return associated with groundnut production in Chikun Local Government Area of Kaduna State, Nigeria.

II. MATERIALS AND METHODS

A. Study Area

The study was carried out in Chikun Local Government Area of Kaduna State. The local government covers area of about 4456.59km and lies between the latitude 10˚N and longitude 90˚E. and situated in the Northern Guinea Savannah Zone. It shares boundary with Igabi and Kaduna South Local Government Area to the North - East and with Kajuru to the East, Birnin Gwari and Giwa Local Government Area to the North - West and Kachia Local Government Area to the South East. The ethnic group in the study area comprises of Gbagyi predominantly, awith other tribes like Hausa, Kataf, Igbo, Fulani and Yoruba. Their occupation is farming and crops cultivated include groundnut, rice, yam, maize, guinea corn, millet and cassava. They also reared livestocks such as goat, sheep, pig, cattle and poultry bird.

B. Sampling Techniques and Frame

Multi-stage and random sampling techniques were adopted to select the respondents for the study. In the first stage three (3) districts namely; Matagyi, Kakau and Narayi were selected purposively due to high concentration of groundnut farmers in the districts. In the second stage one village each from the three (3) districts were also purposively selected which includes; Kamazo, Sabon-Gaya, and Bayan-Dutse because of their predominance and intensively cultivation of groundnut. In the third stage random sampling was used to select thirty (30) groundnut farmers in the selected villages in the study area which gave a total of ninety (90) respondents respectively. However seven of the questionnaires were discarded due to non retrieval. Eighty three farmers were used for the study.

C. Data Collection

Data for this study was obtained from primary sources. The primary data was obtained through the use of structured questionnaire and oral interview to gather information on the socio-economic characteristic such as age, sex, level of education, household size etc. other information that was gather from the respondents include the inputs and output variables associated with groundnut production in the study area.

D. Data Analysis

The following tools of analysis were employed to achieve the stated objectives of the study.

i. Simple descriptive statistics

ii. Net farm income analysis

iii Profitability ratios

1).Simple Descriptive Statistics: This involves the use of descriptive statistics such as table percentage, mean and frequency distribution.

*2) Net Farm Income Analysis.:*Net farm income analysis was used to estimate costs and return associated with groundnut production in the study area. It is expressed as follows:-

$$GM=GI-TVC$$

$$NFI = GM - TFC$$

Where: GM=Gross Margin (Naira/ha)

TVC=Total Variable Cost (Naira/ha)

GI= Gross Income (Naira/ha)

NFI = Net Farm Income (Naira/ha)

TFC = Total Fixed Costs (Naira/ha)

3) Profitability Ratios: The gross, operating and return per capital invested ratios were employed to analyse the performance of the groundnut farmers in the study area.

The Gross Ratio (GR) is given as Total Cost (TC) divided by Gross Income (GI). That isGR=TC ÷ GI. This shows the proportion of the G.I. that goes into the total farm costs during the production period.

Operating Ratio (0R) is given as Total Variable Cost (TVC) divided by Gross Income (GI). That is OR=TVC÷GI. The

ratio indicates the proportion of the G.I that goes to pay for the operating cost. It is directly related to the farm variable input usage.

Return Per Capital Invested (RPCI) is given as Net Farm Income (NFI) divided by Gross Income (GI). That is RPC I= NFI÷ GI. This indicates the amount of money return to the investor for every Naira invested on a business.

III. RESULT AND DISCUSSION

A. Socio-economic Characteristics of respondents in the study area

1). *Distribution of the Respondents based on Age Group*: Table 1 shows that respondents (42.17%) are within the age range of between 21-30 years, (28.92%) of the respondents are within the age range of 31-40 years, (16.86%) of the respondents are between the range of 41-50 years, (6.23%) of the respondents are below 20 years, while few (4.82%) of the respondents are 50 years and above. The result shows that most of the respondents are in their youthful age which makes them active in groundnut production, Taru *et. al.* (2008), opined that eligibility of one's performance in certain activities or role including agricultural activities is determined by the age and too young or too old people are generally inactive or of low productivity on the farm.

2). *Distribution of the Respondents based on Gender:* Table.2 revealed that majority of the respondents (55.42%) are male while (44.58%) are female. This implies that male dominated groundnut production in the study area. This result is in line with the finding of Audu *et. a*l. (2017) that reported that majority of groundnut producers in Lafia LGA of Nassarawa State are male (51.70 %).

3). *Distribution of the Respondents based on Marital Status:* Table 3 shows (59.04%) of the respondents are married, (33.73%) of the respondents are single, (4.82%) of the respondents are widow, while (2.41%) of the respondents are divorcee. This implies that majority of the respondents are married people.

4). *Distribution of the Respondents based on Religion:* Table.4 revealed that majority of the respondents (65.06%)are Christians, (27.71%) are Muslims, while very few (7.23%) are traditional worshippers. This implies that Christians dominated groundnut production in the study area. This result is in line with the finding of NAERL (2011) that most groundnut producers in Chikun LGA of Kaduna State are predominantly Christians.

5). *Distribution of the Respondents based on Household Size:* Table 5 shows that majority of the respondents (37.35%) have household size ranging from 1-5 members, (36.15%) of the respondents have household size ranging from 6-10 members, (13.25%) of the respondents have household size that is between 11 – 15 and 16 above. respectively. This implies that majority of the farmers have over five household members which signifies that labour can be easily sourced from the family members. Alabi *et. al.* (2005) stated that family with high family members is more helpful to their family in terms of agricultural production than family with small family members.

6). *Distribution of the Respondent based on Educational Qualification*: Table 6 shows that (33.74%) of the farmers have secondary education, (30.12%) of the respondents have tertiary education, (15.66%) of the respondents have Qur'anic education, (12.05%) have non-formal education, while few of the respondents (8.43%) have primary education. This shows that about 64 % of the farmers had secondary school certificate and above. Murtala *et al* (2004), stated that education plays a important role in farming activities. It gives the farmer an insight about important technology and decision making that determines success of their farming enterprise.

7). *Distribution of the Respondents based on Sources of Capital:* Table 7 shows that (65.06%) of the respondents acquire their capital from personal saving, (15.66%) of the respondents sourced their capital from Asusu (cooperative),14.46% from family, and (4.82%) of the respondents sourced their capital from Bank loan. This implies that most of the farmers sourced capital through personal saving which implies that they will have ability to manage their finances well if given credit loan.

8). *Distribution of the Respondents based on Farm Size:* Table 8 revealed that (33.74%) of the respondents have farm size of one hectare of land, (32.53%) of the respondents have farm size of less than one hectare, (16.87%)of the respondents have three hectares, (13.25%) of the respondents have two hectares, while (3.61%) of the respondents have four hectares and above. The result shows that most of the respondents are small scale groundnut farmers..

9). *Distribution of the Respondents Based on their Years of Experience :* Table 9 shows that majority of the respondents (38.55 %) have 1-5 years farming experience in groundnut production, (33.74%) of the respondents have less than one years in groundnut farming experience, (12.05 %) of the respondents have within 11-15 years of experience in farming, (9.64 %) of the respondents have 15 and above years while 6.02% of the respondents have between 6 – 10 years eperience in groundnut farming in the study area. According to Alabi *et al* (2005) more years of experience in farming enhance efficiency and productivity in business.

B. Costs and Return associated with Groundnut Production in the Study Area.

Net farm income analysis in Table 10 represents costs and returns on production of groundnut in the study area and was determined on a per hectare basis. The costs (variable and fixed) include all the expenses encountered in the groundnut production process. These include cost of variable inputs namely, labour, seed, agro-chemical, fertilizer, transportation, hiring and fueling of tractor, empty bags, rent on storage

facilities and security levy while the fixed cost includes cutlasses, hoes, and wheelbarrow which were depreciated. On the other hand, revenue was computed by considering the money realized by selling the groundnut. . The total variable cost (TVC/ha) was estimated at N89, 863.12 which represented the total farming cost, while the depreciated cost on fixed items (TFC/ha) was N2571.00, the total revenue per hectare was computed at N173,952.45 though, farmers yield were observed to vary from one farmer to another and from one location to the other on the average. The gross margin and net farm income were N84,089.33 and N 81,518.33 respectively. This implies that groundnut production is profitable in the study area. The result agreed with the finding of Audu *et.al. (2017) that* carried out a research on productivity and profitability analysis of groundnut production in Lafia Local Government Area of Nassarawa State, Nigeria. They reported that groundnut production is a profitable investment with a gross margin of N15087.00/ha and a profit of N14355.00/ha. However the overall return from this study is high compared with that obtained by Audu *et.al. (2017).*

C. Profitability Ratios.

In order to have a clearer picture of the performance of any enterprise, it is necessary to examine other measures of financial analysis such as, returns to the various factors of production inputs and other financial ratios. So this study therefore considered some profitability ratios namely, gross, operating and return per capital invested ratios which were also computed in Table 10

Gross ratio generally helps in measuring the overall financial success or otherwise of a farm. The gross ratio (GR) from the table is obtained by dividing the total farm costs (TFC) by the gross income (GI) and this was computed to be 0.53. The ratio reveals that the total farm costs was about 53% of the gross income. Therefore, as a rule, a less than one ratio is always desirable for any investment. This means that the lower the ratio, the higher the return per Naira invested.

Table 10 also captured the operating cost ratio (OCR) for the respondents in the study area and it was calculated by dividing the total variable cost (TVC) by the gross income (GI) and from the analysis it was found to be 0.52 (52%). This established the proportion of the gross income that goes to service the operating expense of the respondents and this is directly related to the farm variable input usage. As a rule, an operating ratio of one means that the gross income just defray the expenses incurred on the variable inputs used on the farm.

The return per capital invested in this study was computed to be 0.47. This shows that for every one naira invested on groundnut production a return of 47 kobo is obtained which an indication that the investment is a worth one. These ratios are similar to the values reported by Audu *et.al.* (2017) that obtained gross ratio of 0.55 and operating cost ratio of 0.53.

Table 1: Distribution of the Respondents based on Age Range

Ages	Frequency	Percentage (%)
Below 20	6	7.23
21-30	35	42.17
31-40	24	28.92
41-50	14	16.86
Above 50	4	4.82
Total	83	100

Source: Field survey, 2018

Table 2: Distribution of the Respondents Based on Gender

Religion	Frequency	Percentage (%)
Male	46	55.42
Female	37	44.58
Total	83	100

Source: Field survey, 2018

Table.3: Distribution of the Respondents Based on Marital Status

Marital status	Frequency	Percentage (%)
Single	28	33.73
Married	49	59.04
Divorcee	2	2.41
Widow	4	4.82
Total	83	100

Source: Field survey, 2018

Table 4: Distribution of the Respondents Based on Religion

Religion	Frequency	Percentage (%)
Muslim	23	27.71
Christian	54	65.06
Tradition	6	7.23
Total	83	100

Source: Field survey, 2018

Table 5: Distribution of the Respondent Based on Household Size

Household size	Frequency	Percentage (%)
1-5	31	37.35
6-10	30	36.15
11-15	11	13.25
16 above	11	13.25
Total	83	100

Source: Field survey, 2018

Table 6: Distribution of the Respondents by their Educational Qualification

Education background	Frequency	Percentage (%)
Non-formal education	10	12.05
Qur'anic education	13	15.66
Primary education	7	8.43
Secondary education	28	33.74
Tertiary	25	30.12
Total	83	100

Source: Field survey, 2018

Table 7: Distribution of the Respondents Based on Sources of Capital

Sources	Frequency	Percentage (%)
Personal saving	54	65.06
Loan from family	12	14.46
Credit from bank	4	4.82
Asusu	13	15.66
Total	83	100

Sources: Field survey, 2018

Table 8: Distribution of the Respondents Based on Farm Size

Farm size	Frequency	Percentage (%)
Less than one hectare	27	32.53
One hectare	28	33.74
Two hectare	11	13.25
Three hectare	14	16.87
Four and above	3	3.61
Total	83	100

Source: Field survey, 2018

Table 9: Distribution of the Respondents Based on their Years of Experience

Years of experience	Frequency	Percentage (%)
Less than one year	28	33.74
1-5	32	38.55
6-10	5	6.02
11-15	10	12.05
15 above	8	9.64
Total	83	9.64

Source: Field survey, 2018

Table 10: Average costs and return per hectare of groundnut production in the study area

Variable	Value (N/ha)	Percentage (%)
Variable cost		
Seed	5,200.00.	5.63
Labour	20,241.70	21.90
Transportation	3,400.00	3.68
Tractor Hiring/Fuel	25,700.00	27.80
Fertilizer	24,000.00	25.96
Agro-Chemicals	4221.42	4.57
Security	2,000.00	2.16
Empty Bags	2,550.00	2.76
Storage Facilities	2,550.00	2.76
Total Variable Cost (TVC)	89863.12	97.22
Total Fixed Costs (Depreciated value)	2,571.00	2.78
Total Costs {TC)	92434.12	100.00
Return		
Gross Income (GI)	173,952.45	
Gross Margin (GM)	84,089.33	
Net Farm Income (NFI)	81518.33	
Profitability Ratios		
Gross Ratio (TC/GI)	0.53	
Operating Ratio (TVC/GI)	0.52	
Return Per Capital Invested (NFI/GI}	0.47	

Source: Field Survey 2018

D .Constraints Associated with Groundnut Production in the Study Area.

Table 11 presents the constraints faced by farmers in producing groundnut in the study area. The table revealed that (46.99 %) of the respondents identified pest and diseases infestation as a constraint hindering their level of groundnut production, (31.33 %)of the respondents reported they lack capital, poor transportatio (12.05%) while 9.64 % did not have acess to credit facility By rating pests and diseases plus lack of capital were the two constraints identified in the study area to negatively affect groundnut production in the area. Lack of capital may hinders farmers from adequately purchasing all the required inputs. Usman *et.al.*(2011) also identified lack of capital as a problem facing groundnut production in Sabongari local government area of Kaduna State, Nigeria.

Table 11: Constraints associated with Groundnut Production in the Study Area

Constraints	Frequency	Percentage (%)
Pest and disease	39	46.99
Poor transportation	10	12.05
Lack of credit facility	8	9.64
Lack of capital	26	31.33

Source: Field survey 2018

IV. CONCLUSION

The study in conclusion revealed that groundnut farming in Chikun Local Government Area of Kaduna Stare, Nigeria is

dominated by male who are in their active age and the business ia a viable and profitable investment with a net farm income of N81,518.33 and gross income of N173,952.4 obtained per hectare of groundnut cultivated and a return on capital invested of 0.47 implying that for every naira invested, the farmers makes 47 kobo (N0.47). However the business is faced with constraints such asincidence of pests and diseases infestation plus inadequate capital, but despite of these constraints, the farmers made profit. Therefore, it is recommended that credit facilities should be provided so that farmers can have fund to purchase farm inputs such as pesticides and insectices to combat problem of pests and diseases infestation identified, improve varieties of groundnut should be developed and made available to the farmers so that their yield can increase, and farmers should form themselves into cooperative groups so that they can pool their resources together in getting adequate funds to finance groundnut production activities.

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