European Journal of Agriculture and Forestry Research
Vol.12, No.1, pp.1-11, 2024
Print ISSN: 2054-6319 (Print),
Online ISSN: 2054-6327(online)
Website: https://www.eajournals.org/
Publication of the European Centre for Research Training and Development -UK

Farm Resources Affecting Cocoa Production In Ikom Local Government Area of Cross River State, Nigeria

[1]Oniah, M.O. and [2]Osim, O. O.
Department of Agricultural Economics and Extension, Faculty of Agriculture and Forestry Cross River University of Technology PMB 102 Obubra, Cross River State, Nigeria.

doi: https://doi.org/10.37745/ejafr.2013/vol12n1111 Published January 14 2024

Citation: Oniah, M.O. and Osim, O. O. (2024) Farm Resources Affecting Cocoa Production in Ikom Local Government Area of Cross River State, Nigeria, *European Journal of Agriculture and Forestry Research*, Vol.12, No.1, pp.1-11

ABSTRACT*: This study determined factors affecting resource use efficiency in cocoa production in Ikom local government area of Cross River State, Nigeria. The study described the socioeconomic characteristics of the cocoa farmers in the study area and determined the relationship between farm productive inputs and output of cocoa production. Primary data were collected and analysed using descriptive and inferential statistics such as frequency, percentages, mean, and regression analysis. From the findings of the study, it was revealed that males were dominant in cocoa production with 80.8% as compared to 19.2% in the case of females and a productive age bracket of 21-50 years. The distribution on marital status revealed that 57.5% of respondents were married, 20.0% were single, 9.2% and 13.3 % were widow/widower and divorced respectively. The study also indicated that cocoa farmers in the study area had household sizes ranging between 3 -20 in a household. The findings of the study indicated that most of the farmers had some level of formal educational background. The distribution of farming experience showed that cocoa farming is not just an occupation but a way of life for the people in the study area, hence, it does not require years of experience to be involved in cocoa production. The analysis of the regression results revealed that farm resources such as farm size, labour, capital, herbicides, insecticides and cocoa seedlings positively and significantly influenced cocoa output per hectare. Cocoa farmers are advised to join cooperatives to pool together their financial resources to get loans and enjoy other benefits of cooperative membership such as the availability of market outlets for cocoa sales; marketing information and improved cocoa seedlings for planting.*

KEYWORDS*:* farm resources, cocoa output, Ikom LGA.

European Journal of Agriculture and Forestry Research
Vol.12, No.1, pp.1-11, 2024
Print ISSN: 2054-6319 (Print),
Online ISSN: 2054-6327(online)
Website: https://www.eajournals.org/
Publication of the European Centre for Research Training and Development -UK

INTRODUCTION

Agriculture is one of the largest and oldest industries in the world and is a vital sector of the Nigerian economy, supplying food for the population, providing raw materials for the industry, timber for shelter, employs about two-thirds of the labour force and is considered the main source of livelihood for majority of the citizenry as it provides between 75-80 per cent of the Gross Domestic Product (GDP) in Nigeria (Sampson and Obademi, 2018). Cocoa is one of the major cash crops exported and is an important source of income for most rural farmers in Nigeria as it serves as a backbone for their livelihood, especially in communities where it is produced. Some of the other crops exported include rubber, coffee, palm kernels, cashew nuts, fruits and vegetables. According to Dominican Today (2022), The elements in cocoa, such as fibre, proteins, carbs, and minerals, support the rejuvenation of cells and tissues. It also contains vital vitamins and minerals and has antioxidant capabilities that help lower blood pressure, stress, and cholesterol levels. The production of cocoa-based goods such as cocoa butter, cocoa cake, cocoa powder, and cocoa wine takes place locally. Typically, it is employed in the production of drinks, wine, chocolate, cream, and animal feed.

From the 1950s to the middle of the 1960s, when Nigeria first gained its independence, its economy was heavily dependent on the production and export of cocoa. Nigeria was one of the top exporters of cocoa by the middle of the 1950s, with production volumes of about 280,000mt per year. As a result, cocoa rose to the top spot among foreign exports for the nation, contributing almost 30% of its foreign exchange profits (Kehinde, Adeola and Molatokunbo 2022). This production euphoria gradually declined as a result of the discovery of petroleum in Nigeria after which the agricultural sector was partially neglected (Oniah, 2023).

Since the discovery of crude oil in commercial quantities in Nigeria, cocoa production has been declining gradually relative to the percentage of the population engaged in agriculture, despite the quick expansion in production and favourable effects on the country's economy (Afolayan 2020). Nigeria has lost an estimated 10 billion USD from annual export opportunities of cocoa, palm oil, cotton, and groundnut due to a continuous decline in the production of these commodities. (Suleiman Innocent, and Sanni, 2021).

Cocoa production plays an important role in the economy of Nigeria in general and in Ikom Local Government Area in Cross River State in particular, as it acts as a source of income and employment for most of the teeming youth and the rural farmers. Ikom Local Government Area has favourable ecological and environmental conditions suitable for cocoa production but has the the production of cocoa been cultivated on a large scale for greater output of cocoa in the area? Thus, effective use of farm resources is necessary to achieve these goals. Although the government and non-governmental organizations have been making attempts to increase cocoa output for the past years through the Cocoa Research Institute of Nigeria (CRIN), the results are yet to be noticed.

Practically, cocoa farmers are yet to identify the appropriate factors that affect the high level of cocoa output per hectare in the study area which may be a lack of knowledge on the best use of available technology and agricultural resources. This is because the output of cocoa depends on several input factors, both internal and exogenous environmental conditions. If the factors affecting the farmers' production level per hectare can be identified, then cocoa farmers can increase cocoa output per hectare from production season to season.

According to Justina, Ramatu and Edward (2013), efficient use of resources is needed for cocoa producers to achieve their full productivity potential to bridge the imbalances of global demand and supply. This study therefore examined farm resources affecting cocoa production in Ikom Local Government area, Cross River State, Nigeria as this will help draw attention to those farm resources that could be better managed for greater cocoa farm output per hectare in the area**.**

METHODOLOGY

Area of Study

The study was conducted in Ikom Local Government Area (LGA) of Cross River State. It is situated in the Ikom agricultural zone alongside Abi, Yakurr, Obubra, Etung and Boki with its headquarters in the town of Ikom. It lies between latitudes 5°58′0″N of the Equator and between longitudes 8°42′0″E of the Greenwich Meridian. It has eleven (11) council wards, namely: Ikom Urban, Akparabong, Yala-Nkum, Olulumo, Ofutop I, Ofutop II, Nta/Nselle, Nde, Ajijinkpor, Abanyum, and Nnam. It has an area of 1,961 km² and a population of 162,383 as of the 2006 census. It is bounded to the North by the Ogoja Local Government Area, to the North-East by Boki, to the East by Etung Local Government and South by Obubra Local Government Area.

The people of Ikom are mainly farmers and are also involved in trading and lumbering. The major languages of the people include Ofutop, Bakor, Yala, Mbembe and Ejagham. The Local Government is endowed with soils that not only favour the growth of cocoa but crops like plantain, banana, yam, maize and coco-yam as well as fruits and vegetables.

Data collection

Data for this study were collected from primary sources obtained with the use of a well-structured questionnaire. Data were collected on the socio-economic characteristics of the cocoa farmers such as age, gender, household size, farming experience, and level of education. Also, data were collected on farm productive inputs and output variables as well as problems encountered by cocoa farmers in the study area. Personal interviews and field observation were used to validate the information supplied by the respondents. A direct contact approach and the farmer's focus group discussions were equally used to help validate the percentage of authenticity of the answers supplied by the respondents.

Analytical technique

The statistical tools employed to achieve the stated objectives are descriptive statistics and the ordinary least square regression analysis. Descriptive statistics was used to discuss the socioeconomic characteristics of cocoa farmers, the Ordinary Least Square regression analysis was used to determine the relationship between farm productive inputs and output of cocoa production in the study area.

Model specification

The multiple regression models were used to estimate the farm resources that influenced the output of the cocoa farmers in the study area. The functional forms of the model was expressed implicitly thus;

$Y = f(x_1, x_2, x_3, x_4, x_5, x_6) + \cup$

where:

Y = Cocoa output (kg/ha)
X_1 = farm size (hectare)
X_2 = labour (man-days)
X_3 = capital(₦/farmer)
X_4= cocoa seedling(number per hectare)
X_5= herbicides (₦/litre)
X_6 =insecticides(₦/litre)
$\cup$ = stochastic error term

Explicitly, it is expressed in the linear, semi-log and double-log functional forms as follows;

a. Linear functional form:
$Y = b_o + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + \cup$
b. Semi-log functional form:
$Y = b_o + b_1 \log x_1 + b_2 \log x_2 + \ldots + b_6 \log x_6 + \cup$
c. Double-log functional form:
$\text{Log } Y = b_o + b_1 \log x_1 + b_2 \log x_2 + \ldots + b_6 \log x_6 + \cup$
b_o = intercept, b_1-b_6 are the coefficients

RESULTS AND DISCUSSION

Variables	Frequency (120)	Percentages	Mean (x)
Gender			
Male	97	80.8	
Female	23	19.2	
Age (years)			
21-30	9	7.5	
31-40	38	31.7	46 years

41-50	48	40.0	
51 and above	25	20.8	
Marital status			
Married	69	57.5	
Single	24	20.0	
Widow/Widower	11	9.2	
Divorced	16	13.3	
Household size			
1-3 members	60	50.0	
4-7 members	57	47.5	5members
8-11 members	3	2.5	
15-19 years	12	10.0	
20 years and above	10	8.3	
Educational level			
Never attended school	8	6.7	
Primary education	42	35.0	
Secondary education	51	42.5	
Tertiary education	19	15.8	

Source: Field survey, 2023

As shown in Table 1 above, the majority (80.8%) of the respondents were males, while 19.2% were females. This implies that males dominate the cocoa sector in the study area; this is because of the nature of operations involved in cocoa production. Fasoranti, 2006; Otitoju and Arene, 2010 in their findings also asserted that Men have more access to land and other resources than their female counterparts. The finding is in line with that of Popoola, Ogonsola and Salman (2015) who reported that the majority (91.7%) of cocoa farmers in Southwest Nigeria are males. Similarly, Oluyole, Taiwo, Shittu and Yahaya (2016) and Tiku, Galadima and Iyala (2016) also reported that 86.9% and 96.1% of cocoa farmers in Taraba and Cross River State respectively are males.

On age distribution, the study reveals that 40% of the cocoa farmers are within the age range of 41-50 years while 7.5% are aged 21-30 years. This implies that cocoa farmers in the study area are still active in the aspect of farming and are likely to suit the labour needs in cocoa farming. The average age of cocoa farmers was 46 years which is in line with the findings of Oluyole and Sanusi (2009), who found that the majority of cocoa farmers in Cross River State are mostly at their prime age. This result is also in conformity with the findings of Popoola *et al* (2015) who reported that about (41.9%) of cocoa farmers in Southwest Nigeria are in the age range of 41-60 years. According to Tiku *et al* (2016), more cocoa can be produced to meet the world's demand since young and young people are actively involved in cocoa production.

Regarding the marital status of the respondents, the study shows that (57.5%) of the respondents were married while about 20% were single. The high proportion of married respondents could imply a large family size, and therefore, availability of family labour for cocoa production activities. This result follows that of Oluyole *et al* (2016) and Ayodele, Fasina and Awoyemi (2016) who reported that 67.4% and 64.1% of the cocoa farmers in Osun and Ekiti States respectively were married.

On household size, (50%) of the cocoa farmers in the study area had household sizes ranging from 1-3 members, 47.5% had 4-7 members while only 2.5% had 8-11 members per family. The cumulative statistics depict that 97.5% had between 1-7 members per family. The average household size was 5 members per family. Having large households involving adult children reduces the cost of hiring labour. The result is in congruence with the findings of Balogun and Obi-Egbedi (2012) in Ondo State who reported an average of 6 members per cocoa household.

The distribution on educational level shows that 35% of cocoa farmers had only primary education; those with secondary education were 42.5%; while those who had tertiary education represented 15.8%. Farmers with some level of education would appreciate improved technologies in the production process and even use them appropriately in other to enhance their farm output. This finding agrees with those of Agom, Susan, Kingsley and Nyambi (2012) and Tiku *et al* (2016) who reported that the majority 76.5% and 85% of the cocoa farmers respectively in Cross River State had attained one level of formal education or the other.

Consequently, 34.2% of cocoa farmers had between 6-9 years of farming experience while 26.7% had between 10-14 years of experience in farming. However, 20.8% had 1-5 years of farming experience and 18.3% had 15 years and above. The average years of experience in cocoa production in the study area was 8 years. This result depicts that cocoa production has been an aged-long tradition in the study area. Thus, farmers in the study area had acquired much experience which is expected to influence cocoa production efficiencies because accumulated skills would enable the farmer to perform better in his cocoa business. According to Amos (2013), farmers with more experience would be more efficient, have better knowledge of climatic conditions, better knowledge of efficient allocation of resources and market situation and are thus, expected to run a more efficient and profitable enterprise. The result confirms the findings of Agom *et al* (2012) that 99% of cocoa farmers in Cross River State have between 5-30 years of experience in cocoa farming.

On land acquisition, 49.2% of the lands used for cocoa farming were inherited while 20% were rented. However,15.8% were family land, 9.2% purchased land and 5.8% claimed they were gifted. This implies that cocoa farmers cultivate cocoa on inherited lands. Fadipe, Adenuga and Ilori (2012) reported that 55% of cocoa farms in Oyo State were inherited. Balogun and Obi-Egbedi (2012) also obtained similar results in Ondo State.

Table 2: Regression results of the farm resources on cocoa output in the study area

Production variables	Linear	Semi-log	Double log
(Constant)	12.262 (10.938)*	1.855 (1.079)^{NS}	0.337 (0.550)^{NS}
Farm size	0.469 (3.275)*	0.343 (1.365)^{NS}	0.051 (0.567)^{NS}
Labour	0.141 (0.851)***	-0.738 (-1.963)**	-0.296 (-2.211)**
Capital	0.003 (1.530)^{NS}	0.932 (9.424)*	0.427 (12.123)*
Cocoa Seedlings	0.008 (6.176)**	-0.202 (-1.337)^{NS}	-0.059 (-1.092)^{NS}
Herbicides	0.117 (14.212)*	-0.310 (-3.028)*	-0.106 (-2.916)*
Insecticides	0.009 (1.555)**	-1.085 (-3.451)*	-0.431 (-3.855)*
R	0.934	0.842	0.906
R^2	0.872	0.709	0.821
F-value	127.818*	45.987*	86.377*
Durbin Watson	0.879	0.630	0.787

Hint:

*, ** and *** represents 10%, 5% and 1% respectively
NS: Not Significant
T-value in parentheses

The Linear functional form was chosen as the lead equation because it best fits the model in terms of the magnitude of the R^2, F-statistics, and number of significant variables. The R^2 value of 0.872 indicated that 87.2% of the variation in cocoa output was explained by the explanatory variables in the stated regression model. The F-value was 127.818 and significant at a 10% level of probability. This implies that all the variables included in the model were important in explaining the variations that occurred in the output of cocoa in the study area. The result further showed that farm size, labour, farm capital, seedlings, herbicides and insecticides were found to positively influence cocoa output in the study area.

From Table 2 above, farm size has a positive coefficient of 0.469 and is statistically significant at a 10% level. This means that farm size has a positive relationship with the output. The positive sign of the coefficient further revealed that farm size influences the output of cocoa in the area. In other words, the output of cocoa depends on the size of the farmland cultivated in the area. This result further suggests that a unit increase in the size of cocoa farms will culminate in a 0.469 tons increase in the output of cocoa per hectare and vice versa. The result conforms with the findings of Adeniyi and Ogunsola (2014) and Balogun and Obi-Egbedi (2012) that farm size has a positive relationship with cocoa output in Osun and Ondo States respectively.

Labour has a positive coefficient of 0.141 and is significant at 1%. This means that there is a direct relationship between labour used in production and cocoa output. In addition, this means that labour is significant in this study and can be used in making predictions on the output of cocoa production. This further implies that efficient use of labour could result in the expansion of cocoa

farms which would in turn lead to an increase in total output. The coefficient shows that an efficient unit increase in the use of labour could lead to an increase in total cocoa output by 14.1 tons in the study area. This result agrees with the findings of Ngoong and Forgha (2013) and Danso-Abbeam (2010) who reported that labour has a positive relationship with cocoa output in Cameroon and Ghana respectively.

The results on farm capital show that capital has a coefficient of 0.003 and is not significant at 10%. This shows a positive relationship between farm capital and cocoa output. This means that capital in this model positively influences the output of cocoa, implying that an increase in the magnitude of capital input used leads to increase in cocoa output. In other words, the coefficient of capital shows that proper use of farm capital will lead to a 0.3 tons per hectare increase in the annual output of cocoa and vice versa. The result is in accordance with the findings of Ngoong and Forgha (2013) who in their research reveal that capital investment has a positive relationship with cocoa output in Cameroon.

The coefficient of cocoa seedlings was 0.008 and is statistically significant at 10%. This means that cocoa seedlings positively influence cocoa output. It means that cocoa seedlings have a significant effect on cocoa output per hectare. The result further implies that a unit increase in the number of seedlings leads to a 0.8 tons increase in the farmer's output per hectare. In addition, the type or variety of cocoa seedlings per hectare used in production will determine the level of output in the study area. The result agrees with those of Akinniran and Taiwo (2019) that cocoa seedlings planted per hectare positively and significantly influence cocoa output in Osun State.

Herbicides had a positive coefficient of 0.117 and are significant at 10%. This means that herbicides have a positive relationship with the output. It should be emphasized also that the purpose of weed control is basically to reduce competition for nutrients with the main plant, allow easy access to the plots and therefore, make the tasks of spraying and harvesting easier. In other words, an increase in herbicide application on the farm will lead to an overall increase in the yield of cocoa. The result conforms with the findings of Terwase (2013) in Benue State, who found a positive relationship between the use of herbicides and farm output.

The variable of insecticides had a positive coefficient of 0.009 and is significant at 5%. This means that insecticides have a positive relationship with the output. This means that increasing insecticide application by 1% increases output by a margin of 0.9%. The positive sign could be attributed to the fact that a larger proportion of cocoa farmers in the study area (92.5%) used it in controlling pests and diseases in their farms. Therefore, controlling pests and diseases with insecticides has a significant improvement in cocoa output in the area. This result agrees with the findings of Danso-Abbeam (2010) in Ghana that insecticides have a positive relationship with cocoa output per hectare.

CONCLUSION AND RECOMMENDATIONS

According to the findings of the study, it was concluded that males were dominant in cocoa production taking the lead with 80.8% as compared to 19.2% in the case of females while the productive age bracket is between 21-50 years. The distribution on marital status revealed that 57.5% of respondents were married, 20.0% were single, 9.2% and 13.3 % were widow/widower and divorced respectively. The study also shows that cocoa farmers in the study area had family sizes ranging between 1 and 11 in a household. The findings of the study indicate that most of the farmers had some level of formal educational background. The distribution of farming experience shows that cocoa farming is not just an occupation but a way of life for the people in the study area, hence, it has no required years of experience to be involved in cocoa production. The study revealed that cocoa output is positively and significantly influenced by farm size, labour, capital, herbicides, insecticides and cocoa seedlings. Cocoa farmers are advised to use improved cocoa seedlings for planting per hectare as this was found to increase output.

REFERENCES

Adeniyi, O. R. and Ogunsola, G.O. (2014). Cocoa Production and Related Social-Economic and Climate Factors: A Case Study of Ayedire Local Government Area of Osun State, Nigeria. Agricultural Science Volume 2, Issue 4 (2014), 01-13. ISSN 2291-4471

Afolayan, O.S, (2020) COCOA Production Pattern in Nigeria: The Missing Link in Regional Agro-Economic Development, Analele Universităţii din Oradea Seria Geografie. 30(1); 88-96

Agom, D. I., Susan, B. O., Kingsley, O. I., and Nyambi, N. I. (2012). Analysis of Technical Efficiency of Smallholder Cocoa Farmers in Cross River State, Nigeria. International Journal of Agricultural Management & Development, 2(3): 177-185.

Akinniran, T. N and Taiwo, K. B. (2019). Economic Analysis of Cocoa Production in the Metropolis of Osun State. IOSR Journal of Agriculture and Veterinary Science (*IOSR-JAVS*) Vol. 9, Issue 10 Ver. 1. Pp. 82-88

Amos, A. P. (2013). Allocative Efficiency of Resource Use by Cassava Farmers in Wamba Local Government Area, Nasarawa State, Nigeria; Int. J. Econ. Develop. Res. and Investment. 4(3):12.

Ayodele, O. V., Fasina, O. O. and Awoyemi, A. O. (2016). Gender Analysis of Cocoa Farmers' Access to Production Resources in Ekiti State, Nigeria. *Applied Tropical Agriculture. Volume 21, No. 3, 131-137*

Balogun, O. L. and Obi-Egbedi, O. (2012). Resource Use Efficiency and Productivity of Cocoa Farmers in Idanre LGA of Ondo State, Nigeria American Journal of Social and Management Sciences.

Danso-Abbeam, G. (2010). Empirical Analysis of Productivity and Resource-Use-Efficiency in Ghana's Cocoa Industry: Evidence from Bibiani-Anhiawso-Bekwai District. A thesis submitted to the School of Graduate Studies, Department of Agricultural Economics, Agribusiness and Extension, Faculty of Agriculture, College of Agriculture and Natural Resources, Kwame Nkrumah University of Science and Technology, Kumasi.

Dominican Today (2022), Cocoa is a complete food of the gods. *https://do minicantoday.com* accessed March 4, 2023.

Fadipe A. E. A., Adenuga A. H. and Ilori, T. E. (2012). Economic analysis of cocoa production in Oyo State, Nigeria. Nigerian Journal of Agriculture, Food and Environment. 8(4):58-63.

Fasoranti, M. M. (2006), "A Stochastic Frontier Analysis of Effectiveness of Cassava-Based Cropping Systems in Ondo State, Nigeria." A PhD Thesis submitted to the Department of Agricultural Economics and Extension, FUTA, Akure.

Innocent-Ene, E. O., Suleiman, A. D. and Sanni, J. (2021), Implication of Agricultural Science Education on the Development of the Nigerian Economy. Kashere Journal of Education, 2(2): 152-157

Justina, A. O., Ramatu, M. A., and Edward, E. O. (2013). Productivity and Technical Efficiency of Cocoa Production in Eastern Ghana. Journal of Economics and Sustainable Development, *www.iiste.org*. Vol.4, No.4, 2013.

Kehinde, A., T., Adeola, O and Molatokunbo O. O., (2022), Cocoa Commercialization in Nigeria: Issues and prospects. Working paper 079.

Ngoong, J. T. and Forgha, N. G. (2013). An Analysis of the Socio-economic Determinants of Cocoa Production in Meme Division, Cameroon. Greener Journal of Business and Management Studies. ISSN: 2276-7827. Vol. 3 (6), pp. 298-308,

Oluyole, K. A. and Sanusi, R. A. (2009). Socio-economic Variables and Cocoa Production in Cross River State, Nigeria. Journal of Human Ecology. 2009;25(1):5-8.

Oluyole, K. A., Taiwo, O., Shittu, T. R. and Yahaya, A. T. (2016). Economic Analysis of the Input Use Efficiency among cocoa farmers in Taraba State, Nigeria. Asian Journal of Agricultural Extension, Economics and Sociology 8(4): 1-7.

Oniah, M.O. (2023) Effects of Climate Variables on Cocoa Production in Central Agricultural Zone of Cross River State, Nigeria. European Journal of agriculture and forestry research. Vol 11(1) 43-55

Otitoju, M. A. and Arene, C. J. (2010) "Constraints and Determinants of Technical Efficiency in Medium-Scale Soybean Production in Benue State, Nigeria" African Journal of agricultural research 5(17), 2276–2280

Popoola O. A., Ogunsola, G. O., and Salman, K. K. (2015). Technical Efficiency of Cocoa Production in Southwest Nigeria. Journal of Agricultural and Food Research [IJAFR] ISSN 1929-0969 Vol. 4 No. 4, pp. 1-14.

Sampson, A., and Obafemi, O. (2018). The Determinants and Impact of Credit to Agricultural credit on productivity by farmers in Nigeria; Evidence from Oyo State, Nigeria. Advances in Social Sciences Research Journal, 5(3) 252-265.

Terwase, S. (2013). Determination of Resource Use Efficiency of Rice Farmers in Kaambe District of Guma Local Government Area of Benue State, Nigeria. World Journal of Agricultural Research, Vol. 1, No. 6, 143-148.

Tiku, N. E., Galadima, M. and Iyala, D. (2016). Scale Efficiency of Cocoa Production in Cross River State, Nigeria. FUW Trends in Science and Technology Journal, *www.ftstjournal.com* Vol. 1 No. 2 PP 417 – 422.