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ASSESSMENT OF SOCIO-ECONOMIC FACTORS AND CONSTRAINTS FACING COOPERATIVE TOMATO FARMERS IN IJEBU-NORTH LOCAL GOVERNMENT AREA OF OGUN-STATE, NIGERIA

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ABSTRACT

The study assessed socio-economic factors affecting tomato production and challenges facing cooperative tomato farmers in Ijebu-North Local Government Area of Ogun-State, Nigeria. Data was gathered through a well-structured questionnaire administered to fifty (50) respondents using a two-stage sampling technique. Both descriptive and inferential statistics were absorbed to analyze collected data. The results showed that majority (90%) of farmers dominated by males involving in agricultural pursuits, with an average of 5 persons per households' size along with a certain level of formal education. The results of constraints revealed that exorbitant high price of inputs (94%) ranked 1st, by inadequate storage facilities (90%) ranked 2nd, inadequate fund (86%) positioned 3rd among others emerged as predominant challenges adversely affecting tomato production. The F-statistic confirms appropriateness of the overall regression equation and significant at 1% level. The adjusted R^2, estimated at 0.78, showing that 78% of the variation explained in the models. Among the eigth (8) models regressed, five (5) were statistically significant, with four (4) variables displayed positive significant at 1%, 10%, 5%, and1% levels respectively. Only one variable demonstrated negative significance at 5% significant level while three (3) of regressed variables displayed no significant. Therefore, the study recommended that farmer should be encouraged and educated by extension agents through effective and efficient passing of useful information to farmers. Agricultural loan facilities should be made easily accessible to the farmers to ensure timely and adequate procurement of tomato production inputs.Tomato farmers should form themselves into cooperative groups and also pool their resources together for easy access of farm inputs.

Keywords: Challenges, Tomato, Farmers, Cooperatives, Assessment

INTRODUCTION

The agricultural production system of rural dwellers in Nigeria is characterized by restricted access to arable land, attributable to the land tenure system, inadequate access to production inputs due to exorbitant costs, an underdeveloped irrigation framework, insufficient market orientation, disease outbreaks, inadequate infrastructure, subpar technological advancements, deficient extension advisory services, and low output (Babalola and Agbola). In Nigeria, approximately 50% of the tomatoes cultivated by farmers are lost due to the absence of appropriate preservation techniques and accessible storage facilities (Ebukiba *et, al.*, 2022). The perishable nature of tomatoes, coupled with their seasonality, bulkiness, and the inadequacy of production and storage infrastructure, exacerbates the existing challenges leading to post-harvest losses due to poor market formation in Nigeria (Kafle and Shrestha, 2017). Furthermore, the farmers' lack of access to loans and credit facilities compels them to resort to traditional and rudimentary farming implements and irrigation methods, operate on small landholdings, and utilize insufficient fertilizers, alongside inadequate government support and inconsistent policies. Tomatoes and tomato derivatives constitute vital components of the human diet globally. Presently, tomatoes are classified among the crops with a high consumption rate in developed nations, often regarded as a luxury crop.

Conversely, in developing countries such as Nigeria, tomato fruit has emerged as an essential element of the food basket. It ranks as one of the most widely consumed vegetables in Nigeria, enjoying acceptance across all households. However, there exists a scarcity of tomato crops during certain seasons, resulting in inflated prices for the available produce, while the levels of production and productivity remain alarmingly low in Nigeria. Vegetable cultivation, particularly tomatoes, has the potential to enhance rural livelihoods and increase farmers' incomes due to the significant added value and high nutritional benefits these products provide. Regrettably, tomatoes are not only seasonal but also highly perishable; they begin to deteriorate shortly after harvest, losing nearly all their nutritional value and required quality attributes, leading to total waste in some cases. In developing countries like Nigeria, the absence of effective storage, packaging, transportation, and handling techniques for perishable crops such as tomatoes results in substantial losses. Additionally, improper post-harvest sanitation, inadequate packaging practices, and mechanical damage incurred during harvesting, handling, and transportation—often exacerbated by vibrations from undulating and irregular road conditions—further contribute to tomato wastage (Idah *et, al.*, 2007). It is disheartening to acknowledge that considerable resources are allocated to crop cultivation, irrigation, fertilizer application, and crop protection management, only to be rendered futile within a few days post-harvest (Ajagbe *et, al.*, 2014). Post-harvest losses have been identified as a significant factor contributing to food insecurity in many developing nations, including Nigeria, particularly concerning tomato crops (Babalola and Agbola, 2008). Consequently, mitigating post-harvest losses is crucial for enhancing food availability and alleviating food insecurity issues (Ume *et, al.*, 2018). Tomato (*Lycopersicum esculentum*) is classified within the Solanaceae family (Ibitoye et al., 2020). Globally, tomatoes are acknowledged as a component of a healthy diet due to their fleshy fruit, which contains essential elements such as calcium and vitamin K, both crucial for maintaining strong bones.

Tomatoes represent a vital and widely utilized vegetable crop in Nigeria (Gonna *et, al.,* 2020). Originating from Southern and Central America, tomatoes are native to Brazil. The current scientific nomenclature for tomatoes is Solanum lycopersicum, belonging to the vegetable family Solanaceae. The global production capacity of fresh tomatoes in 2014 was approximately 223.47 million tons, with China emerging as the leading producer, contributing 105.31 tons (Aminu and Sadi, 2020). India ranks as the second-largest tomato-producing nation after China, generating a total of 18,735.91 thousand tons, which accounts for about 8% of global production across nearly 882.03 thousand hectares (FAO, 2014; FAO, 2010). Other leading tomato-producing countries include the United States, Turkey, Egypt, Iran, and Italy. Nigeria has now been identified as the 14th largest producer of tomatoes globally and the second largest in Africa, yielding approximately 1.51 million metric tons valued at ₦87.0 billion, cultivated over an area of 254,430 hectares. The recorded decline in tomato production from 6 million tons to 1.86 million tons and subsequently to 1.51 million metric tons has resulted in scarcity, likely due to low returns on investment in tomato cultivation, high associated risks, unplanned production processes, and distribution network challenges (FAO, 2010a). The broad objective of the study is to assess socio-economic factors influencing tomato production and constraints facing cooperative tomato farmers in Ijebu-North local government area of Ogun-State, Nigeria. Specific objectives of the study are to: describe the socio-economic characteristics of farmers, describe socio-economics factors affecting tomato production and identify the challenges facing tomato production in the study area.

MATERIALS AND METHODS

Area of the Study

The study area is Ijebu North Local Government Area, which is one of the twenty (20) Local Government Areas in Ogun State, Nigeria. Ogun state is bounded in the West by Republic of Benin, in the South by Lagos State and shares boundary with Oyo State in the North and Ondo State in the East. The State has an estimated land of about 16.409.26 square kilometers. The estimated total population of Ogun State is 6,379,500 (NPC, 2022). The study area is located in the lowland, semi deciduous forest belt with undulating topography while the overall altitude ranges between 122m-152m above sea level. The main economic activities are farming, saw milling and transportation services. The wet season is characterized by high annual rainfall between 1,200mm and 1,500mm between March and October of every year. The mean temperature ranges between -23°C - 32°C. These climatic conditions favour production of arable like, permanent crops cocoa, kolanut and pig, fowls, sheep production among other livestock.

Data Collection

Both primary and secondary data were utilized for the analysis of the study. Secondary data was sourced from various online platforms, published journals, textbooks, dissertations, and other pertinent publications. Primary data were acquired through a well-structured questionnaire and oral interviews, gathering insights from the respondents. Descriptive and inferential statistics were employed to analyze the data. Descriptive statistics, including frequency tables, percentages, cumulative frequency, and means, were utilized to examine the socio-economic characteristics of tomato producers and the challenges confronting tomato production. In contrast, inferential statistics, such as multiple regression analysis, were employed to analyzed socio-economic factors influencing tomato production in the study area.

Sampling Technique

A two-stage sampling technique employed to select fifty (50) tomato farmers within the study area. The initial stage entailed the purposive selection of the Ijebu-North Local Government Area. In the subsequent stage, five (5) villages were chosen, namely Mamu, Idagolu, Agric, Lagan, and Eyin-Etiri, all located in Ago-Iwoye, Ogun State. In the final phase, a simple random sampling technique was utilized to select fifty (50) tomato farmers from the previously identified villages, in proportion to their respective populations in each of the selected farming communities: Mamu (12 respondents), Idagolu (10 respondents), Agric (8 respondents), Lagan (9 respondents), and Eyin-Etiri (11 respondents). Ultimately, a total of fifty (50) tomato farmers were included, constituting the sample size for the study, which served as the basis for analysis.

Analytical Technique

Four functional forms were estimated to obtain the lead equation and the explicit forms of the regression model are as specified below:

Model Specification

The model is specified as

$Y_i = b_o + b_i X_i + \varepsilon_i$

Where:

Y_i = {Amount of tomato produced / basket in Naira}

β = Is the vector of parameters to be estimated?

X's = Is the matrix of the explanatory variables

Simple linear form

$$YY = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + U_{i..} \quad (1)$$

Semi – logarithmic form

$$YY = Ln\beta_0 + \beta_1\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_{13} X_{13} + U_{i..} \quad (2)$$

Exponential form

$$LnYY = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + U_i \quad (3)$$

Double – logarithmic form

$$LnYY = Ln\beta_0 + \beta_1 LnX_1 + \beta_2 LnX_2 + \beta_3 LnX_3 + \beta_4 LnX_4 + \beta_5 LnX_5 + \beta_6 LnX_6 + \beta_7 LnX_7 + \beta_8 LnX_8 + U_{i.} \quad (4)$$

where:

a = Constant

$b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8$ = Regression Coefficients

$X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8$ = as previously defined

where:

Y = Tomato Farmers Outputs (₦)

X_1 = Sex

X_2= Age (years)

X_3= Marital status

X_4= Household size (numbers)

X_5 = Education levels (years)

X_6= Farm experience of tomato farmers (years)

X_7= Annual farm income (₦)

X_8 = Cooperative membership (years)

μ = Error term

RESULTS AND DISCUSSIONS

Socio-economic Characteristics of the Respondents

From Table 1, majority of farmers were males (90%) while only (10%) were females engaged in tomato production within the study area, indicating that males dominated in tomato production. The results also elucidated the age distribution of the farmers, revealed that 30% of respondents were under 30 years, 50% were aged 31-40 years, 16.0% fell within the 41-50 years bracket, and 4.0% were between 51-60 years. The data on respondents' ages suggests that the majority are active, agile, and youthful, positioned in their productive age bracket, with an average age of 36 years. This finding corroborates the assertions of Olusola et al. (2021), who noted that a significant majority (90%) of tomato producers fall within this age range. In additionally, a substantial 90% of the respondents were married, while only 10% remained single. The predominance of married tomato producers indicated that they bear family responsibilities, and married farmers are likely to experience greater pressure to enhance output due to family obligations. This observation aligns with the findings of Olorunfemi and Oladele (2019). The findings further revealed that 44% of respondents had a household size of five or fewer, 26% had a household size ranging from 5 to 8, 22% had between 9 and 12 members, and 8% had 13 or more, yielding an average household size of 6 persons. This suggests a moderate household size that facilitates a balance between production and consumption, thereby providing a foundation for profitable and moderate investment. The findings also revealed that 34% of the respondents had less than five years of experience, 30% possessed 6 to 10 years of experience, 26% had between 11and 15 years, 10% had over 16 years of experience. This shows that the majority of respondents have amassed substantial experience, which is likely to enhance the efficiency of their production endeavors. With regard to educational attainment, 32% of respondents had completed secondary education, 48% had primary education, and 20% had no formal education. This implied that a significant majority (80%) of the producers are educated. This finding is consistent with Yusuf (2018), who asserted that farmers with higher educational levels are inclined to improve the income of the enterprisees. The findings also identified that 10% of respondents had been members of cooperatives for less than 3 years, 30% had joined cooperatives between 3 and 6 years ago, while 44% and 16% had been cooperative members for 7 to 10years and eleven years or more, respectively with an average of 8 years. This indicates that a significant majority (90%) of respondents had been engaged in cooperative societies for more than 3 years.

Table 1: Distribution of Socio-economic Characteristics of the Respondents

Variable	Value	Frequency	Percentage	Cumulative Frequency	Average
Sex	Male	45	90.0	90.0	
	Female	05	10.0	100.0	
Age (years)	≤30	15	30.0.	30.0	
	31-40	25	50.0	80.0	
	41-50	8	16.0	96.0	
	51-60	2	4.0	100.0	35.5 years
Marital status	Single	5	10.0	10.0	
	Married	45	90.0	100.0	
Household size	<5	22	44.0	44.0	
	5-8	13	26.0	70.0	
	9-12	11	22.0	92.0	
	13 & above	4	8.0	100.0	6 persons
Farming experience (years)	≤5	1 7	34.0	34.0	
	6-10	15	30.0	64.0	
	11-15	13	26.0	90.0	
	16 & above	5	10.0	100.0	8 years
Educational level (years)	No formal education	10	20.0	20.0	
	Primary education	24	48.0	68.0	
	Secondary education	16	32.0	100.0	
Cooperative membership	< 3	5	10.0	10.0	
	3-6	15	30.0	40.0	
	7-10	22	44.0	84.0	
	11 & above	13	26.0	100.0	8 years
Total		50	**100**		

Source: Field Survey, 2025

Socio-economic Factors Influencing Respondents' Tomato Production

Four functional multiple regression models were used to analyze the impact of socio-economic factors on tomato output among cooperative tomato farmers. Based on the R^2, F-value, t-statistic, and theoretical expectations of the variables, the linear function was selected as the principal equation. Table 2 reveals that R is 67.9%, R^2 is 70.0%, and adjusted R2 is 78.8% respectively, which is elucidated by the independent variables included in the models. The results of this analysis are detailed and presented in Table 2. R (0.67), R^2 (0.70), adjusted R^2 (0.78), F-statistic (71.115***), Df_1 (18), and Df_2 (342). The F-statistic confirms the appropriateness of the overall regression equation and is significant at the 1% level, indicating that the model is statistically robust in relation to the data analyzed. The

adjusted R^2, estimated at 0.78, this showed that 78% of the variation in the model was explained. Among the eigth (8) models regressed, five (5) were statistically significant, with four (4) variables demonstrating positive significance while only one (1) demonstrated negative significance. The positively significant variables included sex, household size, years of cooperative memberships and annual farm income, significant at 1%, 10%, 5%, and 1%, respectively. The variable with negative coefficients was education attainment significant at 5%. while three (3) of the regressed variables displayed no significance; these included age, farming experience and marital status. The positive significance of households size suggests farmers had moderate household size for labour work to reduce hire labour cost. Farm income was still manageable to maintain in their farming business enhances the livelihoods of farmers and increase their farm outputs. The negative significance of education attainment suggests that low level of education may affect their income generated by cooperative tomato farmers, consequently resulting in adverse effects on tomato outputs within the study area.

Table 2: Distribution of Socio-economic Factors Affecting Tomatoe Production

VARIABLE	SEMI – LOG					LINEAR				
Variables	**B**	**Standard Error**	**Beta**	**T – value**	**Sig.**	**B**	**Standard Error**	**Beta**	**T – value**	**Sig.**
Sex	9.6605	0.0001	0.0611	0.5697	0.6104	484.559	6492.0012	0.4413	8.200***	0.020
Age	-0.0.333	0.1881	0.9906	-0.5612	0.6682	284.100	4467.1555	0.056	2.211	0.321
Farming experience	0.0061	0.0552	0.2110	1.9170*	0.1994	-246.441	6313.0011	0.1778	0.5137	0.6534
Marital status	-0.0321	0.0108	-0.0668	-0.3512	0.794	-49331.730	3444.1238	-0.0655	-1.3543	0.2226
Household size	-0.1001	0.1331	-0.0073	-1.5524	2.444	8774.555	7113.7890	0.0676	1.6622*	0.2331
Education attainment	-8.2211 E -007	0.000	-0.0994	-0.0835	0.0771	-247.7781	5475.546	-0.1781	-1.9994**	0.0554
Years of Cooperative membership	13.379 E-008	0.100	0.0822	0.9111	0.7632	540.3455	0.0768	0.0737	2.2160**	0.6110
Farm Income	9.2112 6	0.016	0.0443	1.3569	0.2244	7771566.1 113	666586.622	0.1119	4.1143***	0.1173

Source: Field Survey, 2025, ***, **, * Significant at 1%, 5% and 10% Level of Significant Respectively

Model Fit Test

R	**0.679**
R^2	0.7001
Adjusted R^2	0.7881
Standard Error of the Estimate	2000085.113
R^2 = change	0.220
F – Statistics	71.115***
Mean square	2.2215E+11
Durbin Watson	2.003
DF_1	18
DF_2	342
Sig	0.000

Source: Field Survey, 2025

Problems Militating Against Tomato Farmers' Production

Results of constraints hindering tomato cooperative production showed in the Table 3. An analysis of these constraints revealed that exorbitant high price of inputs (94%), inadequate storage facilities (90%), inadequate fund (86%), price fluctuations (76%) and inadequate improved seeds (68%) and lack of access to good road (66%) emerged as predominant challenges adversely affecting the tomato production which were ranked 1st, 2nd, 3rd, 4th, 5th and 6threspectively. This was followed by suspicious transportation problem positioned 7th (50%) within the study area. Other notable impediments included inadequate extension services (46%) was ranked 8th, pests and diseases (44%) ranked 9th and insufficient labour supply (40%) which was positioned 10th has been the least. By facilitating adequate financial assistance, farmers can procure superior inputs thereby enhancing the tomato production and overall business profitability. Table 3, illustrate the results of the predicament analysis. The data indicated that the exorbitant high price of inputs emerged as the most pressing concern confronting tomato producers, with a staggering (94%). This phenomenon can be attributed to the escalating scarcity and high costs of essential raw materials to produce farm inputs for tomato cultivation. The substantial issue of inadequate storage facilities was closely trailed by high cost of inputs which ranked second in the table, likely arising from the limited income generated by producers with small farm tools.

Table 3: Problems Militating Against Tomatoes Farmers Production

Constraints to tomato production	Yes		No		Rank
	Frequency	(%)	Frequency	(%)	
High price of inputs	47	94.0	3	6.0	1st
Inadequate storage facilities	45	90.0	5	10.0	2nd
Price fluctuation	38	76.0	12	24.0	4th
Lack of access to good road	33	66.0	17	34.0	6th
Inadequate improved seeds	34	68.0	16	32.0	5th
Transportation problem	25	50.0	25	50.0	7th
Pests and diseases	22	44.0	28	56.0	9th
Lack of extension services	23	46.0	27	54.0	8th
Inadequate labour supply	20	40.0	30	60.0	10th
Lack of adequate credit	43	86.0	7	14.0	3rd

Source: Field Survey, 2025

CONCLUSION

The results showed that majority (90%) of farmers dominated by males involving in agricultural pursuits, with an average of 5 persons per households size along with a certain level of formal education. The result also indicated that majority (90%) of them were married with an average of 8 years farming experience. The F-statistic confirms the appropriateness of the overall regression equation and is significant at 1% level. The adjusted R^2, estimated at 0.78, this showed that 78% of the variation in the model was explained. Among the eigth (8) models regressed, five (5) were statistically significant, with four (4) variables demonstrating positive significance significant at 1%, 10%, 5%, and 1%, respectively. Only one variable one (1) demonstrated negative significance at 5% significant level while three (3) of the regressed variables displayed no significance.

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REFERENCES

Ajagbe B. O., Oyediran W. O., Omoare A. M. (2014). Sofowora OO. Assessment of Post-Harvest Practices Among Tomato (Solanum Lycopersicum) Farmers/Processors in Abeokuta North Local Government Area of Ogun State, Nigeria. International *Journal of Education and Research.* 2(3) 1-12.

Aminu Y. U, Sadi M. (2020). Analysis of Profitability of Dry Season Tomato Production in Ikara Local Government Area of Kaduna State, Nigeria. *The Nigeria Journal of Energy & Environmental Economics*; 2(1) 1-11.

Anonymous, (2010). Tomato en. wikipedia.org/wiki/tomato

Anonymous, (2011). Petomech li. www.southafrica.net.

Babalola D. A, Agbola P. O. (2008). Impact of Malaria on Poverty Level: Evidence from Rural Farming Households in Ogun State, Nigeria. *Babcock Journal of Economics and Finance,* 1(1): 108-118.

Dolapo B. A., Luka A. O. O., Victor O. N., Christiana A. U. and Oladayo D. O. (2022). Resource Use Efficiency and Profitability Analysis of Tomato Production (Lycopersicum Esculetum Species) in Federal Capital Territory, Nigeria. *Nigeria European Journal of Agriculture and Food Sciences* Vol 4 | Issue 5 Pp 75-82. DOI: http://dx.doi.org/10.24018/ejfood.2022.4.5..539 .

Ebukiba, E. S, Akpeji G. D., Anthony L. A . (2022). Technical efficiency analysis of melon (Coloncynthis citrullus l) production among smallscale farmers in federal capital territory, Nigeria. *International Journal of Agriculture for Life Sciences* 6(1):18- 23.

Edward E. R. (2018). Food and Resource Economics Department; UF/IFAS Tropical Research and Education Center, Homestead, FL 33031

Ewulo, B. S, Ojeniyi, S. O. and Akanni, D. A. (2008). Effect of Poultry Manure on Selected Soil Physical and Chemical Properties, Growth, Yield and Nutrient Status of Tomato. African Journal of Agricultural Research. 3(9): 612-616.

Food and Agriculture Organisation (2010). Food and Agriculture Organization Bulletin of Statistics htt/fao.org.

Food and Agricultural Organization STAT. Available from: [4 January 2014.

FAO (Food and Agriculture Organization). (2010a). Food and Agriculture Organization Ethiopia Country Programming Framework. Office of the FAO Representative in to AU and ECA-Addis Ababa 2010. www.fao.org/3/an490e/an490e00.pdf.

Gona A, Maikasuwa MA, Tomo IK. Profit Efficiency Among Small Holder Irrigated Tomato Farmers in Kebbi State, Nigeria. IJRDO *Journal of Business Management*, 2020; 6(6): 41-63.

Ibitoye SJ, Shaibu UM, Omole B. Analysis of Resource Use Efficiency in Tomato (Solanum lycopersicum) Production in Kogi State, Nigeria. *Asian Journal of Agricultural Extension*, 2020; 6(4): 220-229.

Idah P. A, Ajisegiri E. S. & Yisa M. G. (2007). An Assessment of Impact Damage to Fresh Tomato Fruits. A U. J.T. 10(4): 271-272.

Jaliya, M. M, Sani, B. M, Lawal, A. O. and Murtala, G. B. (2007). Effect of Irrigation Frequency on Productivity of Heat Tolerant Tomato Varieties at Samaru, Zaria, Agricultural Engineering and Irrigation Programme, NAERLS/ABU, Zaria.

Kafle .A. Shrestha L. K. & Hemja V.C. (2017). Economics of Tomato Cultivation Using Plastic House: A Case of International Journal of Agriculture, Environment and Bio - research, Kaski, Nepal. 2(1):10-20.

Kushwaha R. K, Sharma N. P, Baldodiya V K. Profitability of Tomato Production in some Selected Areas in Panna District of Madhya *Pradesh. International Journal of Current Microbiology and Applied Sciences, 2*018; (6):2117-2124.

Okello D. M, Bonabana W. J, & Mugonola B. A (2019). Farm Level Allocative Efficiency of Rice Production in Gulu and Amuru Districts, Northern Uganda Agricultural and Food Economics, 2019.

Oishimaya SN. The World's Leading Producers of Tomatoes 2017. https://www.worlddata.com/artiles/which-are-theworld-sleadingtomato-producing-countries.

Sekunade A. B, & Toluwase S. O.(2014). Profitability and Production Efficiency of Indigenous Tomato Cultivation Among Farmers in Osun State, Nigeria. IORS *Journal of Agriculture and Veterinary Science*, 7 (11); 13-23.

Ume S. I., Ezeano C. I., & Edeh, O. N. (2018). Resource Use Efficiency of Upland Rice Farmers in Ivo Local Government Area of Ebonyi State, Nigeria. *Asian Journal of Arts & Social Sciences*, 7(2) 1-10.