Constraints to Agricultural Productivity in South East Nigeria: Evidence from Small-Scale Farmers in Abakaliki Metropolis

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ABSTRACT

Being a key component of Ebonyi State economy, revenue from its agricultural sector has been on the decline. Literature search show that issues of constraints to agricultural productivity in the State have not been sufficiently classified. This study fills this gap by ascertaining the impact of economic, social and environmental factors on agricultural productivity in Abakaliki metropolis. Based on structural change theory, primary data were generated with the aid of a well-structured questionnaire. Simple random sampling technique was used to select 20 villages while purposive sampling technique was applied in selecting 10 farmers making it a total of 200 participants. Three null hypotheses were tested using F-test from analysis of variance (ANOVA) and Welch tests. We found that economic, social and environmental factors significantly constrained agricultural productivity in Abakaliki Metropolis. We also found evidences that high cost of mechanised farming relative to manual labour and inadequate capital; land constraint and low level of education of farmers; as well as problem of pest and diseases and climatic changes were, respectively, two major economic, socio-economic and environmental constraints to agricultural productivity. This study therefore recommends government intervention in the area of irrigation, drought-resistant technologies, and floods controls as necessary tools for climate change adaptation as well as improved farm tools, pest control, and access to farm lands.

Key words: Agriculture, Productivity, Socioeconomic Factors, Environmental Factors, Nigeria

INTRODUCTION

The need to feed the growing world population and make agricultural production more efficient is of utmost importance because it is a source of food for all living things and provides raw materials for the industrial sector. Thus, agriculture plays a significant role in the reduction of poverty of most nations (Olayemi et al., 2019). Agriculture is the world's largest economic sector, and on a worldwide basis, more people are involved in agriculture than in all other occupations combined (Food and Agriculture Organization, 2021a). It is noteworthy that countries in Africa is struggling to feed its growing population due to poor agricultural practices (Kemoe et al.,2022; United Nations (na); World Bank, 2022) unlike European countries.

In the 1960s, agriculture accounted for well over 80% of export earnings and employment; about 65% of GDP and about 50% of the government revenue (Federal Republic of Nigeria, 2000). This contribution to the Nigerian economic growth has however declined over the years. As at 2022, agriculture accounts for about 23.78% Nigeria's GDP. Although agriculture no longer serves as the leading contributor to Nigeria's gross national product and leading foreign exchange earner due to phenomenal growth in the petroleum sector of the economy, agriculture is still the dominant economic activity in terms of employment and linkages with the rest of the economy. While accounting for one third of the GDP, it remains the leading

employment sector of the vast majority of the Nigerian population as it employs two-third of the labour force (FAO, 2021b).

Despite the contribution of agriculture to the economy of the African countries, per capita food production has not been able to keep pace with a rapidly expanding demand for food, making the people to depend increasingly on commercial imports and food aid (Aiyedogbon et al., 2022). To reverse this trend, Nigerian government has been designing research programmes and policies aimed at achieving food security one of which is to engage and maximise the potentials of not less than 200,000 prison inmates to boost agricultural production across the six geopolitical zones (PRAWA, 2012).

Increased agricultural productivity can reduce poverty by increasing farmers' income, reducing food prices and enhancing increments in consumption (Amare, et al. 2016; Hemathilake & Gunathilake, 2022). It is of considerable significance that when agricultural production increases through the use of improved varieties of crops in a given area, farmers and their communities derive added socio-economic benefits. Such activities can increase the value of locally produced crops, generate local employment, stimulate local cash flow, and through processing, marketing, and related activities can bring about improvement in socio-economic status and the quality of life.

Agricultural productivity refers to the ratio of the value of total outputs to the value of total inputs used in farm production. Increasing and sustaining agricultural productivity requires one or more of the following: an increase in output and input with output increasing proportionately more than inputs; an increase in output while inputs remain the same; a decrease in both output and input with input decreasing more; or decreasing input while output remains the same (Adewuyi, 2006; Oni et al., 2009). Increasing inputs in order to expand output involves raising both the quality and quantity of inputs, examples of which would include the mechanization of agricultural processes, use of high yield varieties, use of fertilizers, irrigation in areas where rainfall is inadequate, and the use of agrochemicals such as herbicides and pesticides. Though all of the aforementioned activities have the potential for productivity enhancement, smallholder farmers, who account for the vast majority of farmers in developing countries, often cannot afford these investments due to their limited resources and restricted access to credit.

Agriculture is a key component of Ebonyi State economy (Olumba & Okpani, 2022). It provides food for the citizens, raw materials for the agro allied industries and employs about 70% of the state's active population who are directly and indirectly involved in agriculture. Overall agriculture contributed 89.12% to the GDP of Ebonyi State in 2014. Ebonyi State produces several foods like rice, maize, yam, cassava, okra, palm oil, etc. It is noteworthy that in 2004 the sector produced over 80% of the rice eaten in the South-Eastern Nigeria and over 30% of the rice eaten in Nigeria (International Fund for Agricultural Development, IFAD 2006). In 2016, due to the low production rate of foods in certain parts of Ebonyi state, the State received N2bn from the Central Bank of Nigeria which was used to improve productivity (MANR, 2016). The FADAMA III invested over N200m in the production of rice in the 2016 wet season (Nwakpu, 2016). In the quest to improve productivity, IFAD invested over N500m in the 2016 wet season in rice production and over N200mn into cassava production.

The State faces many challenges in the area of food production ranging from the incessant and indiscriminate attack by herdsmen, lack or inadequate supply of funds and inputs to farmers, land tenure system, high cost of labour, inadequate technical know-how, inadequate government assistance, lack of concentration by farmers, unpredictable weather condition, lack of access to credit, poor extension services, inadequate information to farmers, inter-personal/communal conflicts, etc (Olumba & Okpani, 2022). This has militated against the increase in food crop production as proposed by IFAD and FADAMA III over the years as well as caused many of its teeming youths to suffer internal displacement and to migrate ultimately.

As an agrarian economy with a great percentage of its population being farmers, the State has ample arable

land, manpower resources and favourable weather conditions, yet it has been unable to achieve food sufficiency as it depends on agricultural produce of nearby states to feed its population. Over the years the government has made effort to have large inflow of resources to the agricultural sector and well-tailored agricultural policies have also been put in place. There also appear to be so many vast land mass and fertile soil for agriculture, and its present governor Rt. Hon. Francis Nwifuru has a goal to make Ebonyi State the number one economy in the area of food production. Despite all these, agricultural productivity has not been impressive.

Previous studies on the subject matter have always been on the effect of credit (finance) on productivity but our paper opines that the issue of constraints to agricultural productivity in Ebonyi State has not been sufficiently investigated. We therefore hope to fill this gap in the literature by investigating the constraints to agricultural productivity in Abakaliki metropolis.

Our study specifically hypothesized that economic factors did not significantly constrain agricultural productivity; social factors did not significantly constrain agricultural productivity; and that environmental factors did not significantly constrain agricultural productivity in the study area. Although the study is limited to the extent that it dwelt mainly on constraints to crop production more than the other aspects of agriculture such as livestock production, fishing and forestry, the findings of this research will not only enlightens farmers but also informs policy makers about the major constraints to agricultural productivity and ways to improve same in order to make the agricultural sector become competitive both locally and globally.

THE LITERATURE

Agricultural Sector Policies and Programmes in Ebonyi State

Several policies have been formulated and implemented both at the national and state levels in Nigeria. At the state levels, one of such is the *one man, one-hectare* programme of Ebonyi State. The State has also benefited from the FADAMA III programme. These programmes are further discussed below.

- **One Man, One Hectare Agricultural Programme**

This policy introduced in Ebonyi State in the year 2015 by Governor David Nweze Umahi and was borne out of the zeal to improve agriculture in the State owing to the then recession experienced in the country (Ebonyi State Ministry of Agriculture and Natural Resources, EBSMANR, 2016). The aim of the programme was to commercialize agriculture in the State through the introduction of innovations like *youths must farm* concept, *agriculture as a business* concept, and *operation feed the whole States in Nigeria* concept. The State took advantage of the vast land mass ready for agriculture as a collateral and borrowed the sum of N2billion from the Central Bank of Nigeria under the agricultural loan scheme. Civil servants were mandated to take soft loans of at least N200,000 for investments in most staple food-items including rice and cassava. Rural farmers were motivated to join cooperatives of 10 members each and were supplied with inputs like fertilizers, pesticides, and seedlings of improved variety (EBSMANR, 2016).

Furthermore, two young graduates of agriculture from each local government areas were selected by the Faculty of Agriculture and Natural Resources Management, Ebonyi State University and were each offered a hectare of land; supplied with rice seedlings, fertilizers, herbicides, and soft loan of N250,000 to ensure that they produce rice in paddy form (Federal Ministry of Agriculture and Rural Development, FARM, 2016). Thirteen bulldozers were bought for each of the 13 local government areas of the state and two tractors were sold to chieftains in each local government area to encourage farm mechanization. FADAMA III and IFAD keyed into the programme by supporting over 5,000 rice farmers in Ebonyi State.

- **FADAMA III**

Under this programme, irrigation facilities were installed at the local government areas of Ebonyi State for the purpose of dry season farming. Under this programme, FADAMA III secured a large area of land at Izzi for irrigation farming and supported the State with over N500million for cassava production (EBSMANR, 2016).

Empirical Literature Review

The trends in agricultural productivity, factors affecting agricultural productivity, and options for improving agricultural productivity through technology adoption in both developed and developing countries have been well researched. However, there is dearth of knowledge on the constraints of agricultural productivity at both regional and state levels in Nigeria. A few of related empirical works have been reviewed. For instance, Adeoti (2002) investigated the impact of the age of farming household heads on agricultural productivity in Nigerian agro-ecological areas. Results show that age had an inverse relationship with productivity of farmers. This was understandable since it is expected that as a farming household head becomes older his or her productivity will decline. On the other hand, age also positively correlated with productivity – older farmers were observed to have higher productivity than the younger ones as a result of increase in years of experience.

Ajibefun et al. (2002) analysed the impact of farm size on agricultural productivity using stochastic frontier production approach. The findings showed that large farm size enhanced productivity among farmers in the dry savannah and humid forest agro-ecological zones of Nigeria. More so, the impacts of crop mix, rotational farming practice, and diversification on agricultural productivity were considered by Idumah (2006) and Udoh (2000). Findings show that crop mix, crop rotation, and diversification, if properly adopted, enhanced productivity among crop farmers in the dry and moist savannah agro-ecological zones of Nigeria.

Amaza et al. (2006) examined the determinants of food crop production and technical efficiency in the guinea savannas of Borno State, Nigeria. A stochastic frontier production function, using the maximum likelihood estimation (MLE) technique, was applied in the analysis of data collected from 1086 sample farmers in 2004. The MLE results revealed that farm size; fertilizer and hired labour were major factors associated with changes in the output of food crops. The effect of land area on output was positive and significant. Fertilizer and hired labour also had positive and significant effects on output. Mean farmers' technical efficiency index was found to be 0.68. Farmer-specific efficiency factors, which comprises age, education, credit, extension and crop diversification, were found to be the significant factors that account for the observed variation in efficiency among the farmers.

Ogundele and Okoruwa (2006) investigated the impact of technology adoption on agricultural productivity following the belief that access to fertilizer, agro-chemicals, and improved seeds/planting materials are important drivers of agricultural production and productivity among farmers in Sub-Saharan African. With the use of a stochastic frontier model, the study found that the use of fertilizer promoted agricultural productivity of crop farming in Nigeria. Similarly, Akinseinde (2006) studied the relationship between land ownership and agricultural productivity using descriptive analysis. The results showed that farmers that farmers who owned the land on which they farmed were more productive than others. This was understandable since land owners were ready to make huge investments on such land through the adoption of new technological packages which enhance productivity levels.

Kibaara, et al. (2008) analysed the changes in agricultural productivity using a nationwide household panel survey in Kenya. The study examined productivity changes for maize, tea, coffee, sugarcane, cabbages, Irish potatoes, and dairy. The study used descriptive analysis to show trends in partial productivity as well as the

Cobb-Douglas production function. Results showed an impressive growth in maize and dairy sub-sector productivity, maize growth was due to increased percentage of smallholder households using fertilizer, adoption of improved seeds and the availability of fertilizer retail outlets.

Oni et al. (2009) explored the trends and drivers of agricultural productivity in Nigeria using correlation analysis. The study found that small land-holding farmers had higher productivity and that large land-holding farmers faced constraints (agricultural market imperfections, e.g., labour and input markets, access to credit) which limited them in achieving optimum use of factors inputs. Furthermore, shares of female labour was positively associated with productivity suggesting higher productivity of the female agricultural labour. Fertilizer use positively but insignificantly impacted on productivity.

Olawepo (2010) studied the constraints to increased food productivity in rural areas of Afon District, Ilorin Nigeria. Using step wise regression, the study identified six constraints to increased production: high cost of human labour, high cost of transportation, lack of credit facilities, lack of fertilizer/high yielding seeds, high cost of crop damages/poor storage facilities, and poor sales. Mugenyi (2013) studied the persistent low productivity of the agricultural sector in Sub-Saharan Africa using thematic content methods and found insufficient domestic and foreign investments in agriculture. Again, agricultural policies in relation to technology, markets, prices, and infrastructure were not effective in raising agricultural productivity of Sub-Sahara Africa. Findings also reveal that consistent low productions experienced in many countries could partly be attributed to insufficient markets for produce.

Nnamocha and Eke (2015) studied the impact of bank credit on agricultural output in Nigeria for period 1970 to 2013 using error correction model approach. Findings show that in the long-run, bank credit and industrial output contributed a lot to agricultural output in Nigeria, while only industrial output influenced agricultural output in the short-run.

Both theoretical and empirical literature have pointed to several constraints to agricultural productivity in Nigeria including: poor agricultural pricing policies; low fertilizer usage; poverty and women's limited access to inputs; low access to agricultural credit; low and unstable investment in agricultural research; poor funding and coordination of agricultural extension; land tenure system and land degradation; and poor market access and marketing inefficiency, among others. Our study therefore groups these factors under economic, socio-economic and environmental categories and investigated whether they apply to the study area.

Theoretical Framework

The Theory of Structural Change provides an anchor for this study because of its capacity to capture socioeconomic and environmental issues that constitute inhibiting factors to agricultural production. The theory was first propounded by Nobel Laureate W. Arthur Lewis in the mid 1950's and extended to focus on framework by which developing economies can transform their prevailing domestic economic structures, from heavy reliance on traditional subsistence agricultural practices to modern and advanced agricultural practice through greater access to finance in order to attain industrial breakthrough. The extended theory argues that full benefits from agricultural development cannot be fully realized unless government support systems are made to provide necessary incentives, economic opportunities, and most importantly, access to modern inputs and credit facilities to enable small farmers raise their productivity. Even more, this theory argues that other agricultural reforms and strategies are likely to be ineffective unless there are corresponding structural changes in the factors that constrain productivity such as bank credit facilities, fertilizer distribution, technical and educational extension service, storage facilities and rural transport systems as well as incentives to make agricultural practice attractive to the youth especially the correctional facilities through strategic use of prison farms. This theory, therefore, provides the backbone for the present study.

RESEARCH DESIGN AND METHOD OF DATA COLLECTION

This study is a survey research and utilized primary data generated from Abakaliki Metropolis of Ebonyi State through the use of a questionnaire. Survey method is considered the appropriate research design for the study because it is one of the best methods available to the social scientist interested in collecting original data for the purpose of describing a population too large to be observed directly. Our well-detailed structured questionnaire is consistent with World Bank sponsored surveys on agriculture – Living Standard Measurement Study Survey implemented by Nigeria's National Bureau of Statistics (NBS) and to also cover other relevant areas that were not covered by LSMS survey.

Area and Population of the Study

The study area is Abakaliki Metropolis. It is the capital of Ebonyi State which is located at coordinates 6^0 15'N $8^0$05'E. The area has a population of 1,739,136 (NPC, 2006) and a land mass of about 5,533km^2 most of which are fertile and arable. The mean annual temperature is about 80°F and the mean annual rainfall varies between 1700mm to 2500mm (EBSMANR, 2016). Abakaliki is known to have long wet season from April to October which is interrupted by a short dry season usually in the month of August; followed by a long dry season from November to March. The research population consists of all persons engaged in farming within Abakaliki Metropolis. The metropolis comprises three local government areas: Abakalili, Ebonyi and Ohaukwu.

Sampling Technique and Sample Size Determination

We used the cluster sampling technique. First, the purposive sampling technique to select a total of ten most populated agricultural communities in Abakaliki metropolis and they include: Onueke, Iboko, Ndiofia, Nkaliki, Ezzamgbo, Ishieke, Ndiabo, Ezza, Nkwagu and Okpuitumo. The reason for choosing these communities is to make it easier to draw real sample of authentic farmers rather than falling into the risk of sampling unauthentic farmers. Second, two villages were randomly selected from each of the 10 communities making it a total of twenty villages. Third, using the snowball sampling technique, ten farmers were selected from each of the two villages making it a total of 200 participants.

Validity and Reliability of the Research Instrument

Copies of our questionnaire were delivered to experts for face validity while the reliability of the instrument, a re-test method was engaged to determine the reliability of our instrument. Thereafter, all ambiguities noted during the pre-test were eliminated.

PRESENTATION OF RESULTS

We begin by presenting the descriptive statistics of the research survey based on the responses elicited from the sampled population. This is done using tables, charts and graphs. The data obtained were analysed quantitatively after which the findings were discussed. Field survey was conducted between November 2022 and January 2023.

A total of 200 copies of the questionnaire were administered to farmers, resident in Abakaliki Metropolis. Out of this number, 185 questionnaires, representing about 92.5% were returned. The analyses that follow are therefore based on the 185 returned questionnaires. The questionnaire consists of three parts: demographic characteristics of the participants; the sources of agricultural materials/information available to the participants; and responses on constraints to agricultural productivity.

Figure 1 shows the pie chart distribution of the participants according to their community of residence.

Twenty participants were sampled from each community but not all copies of the questionnaire were retrieved. However, there was no significant disparity (9% 10%, 10%11%) in terms of numbers of questionnaires retrieved from.
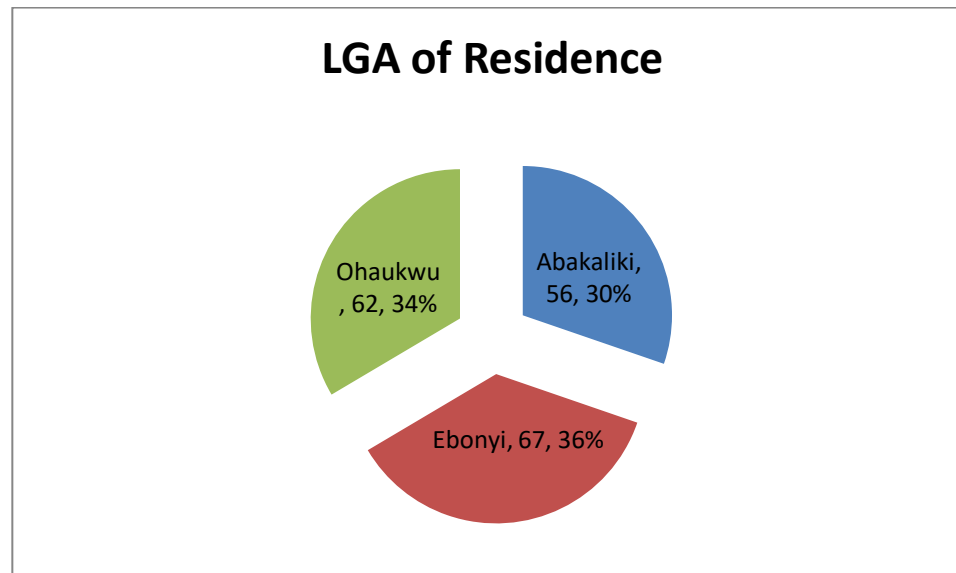
Demographic Features of Participants
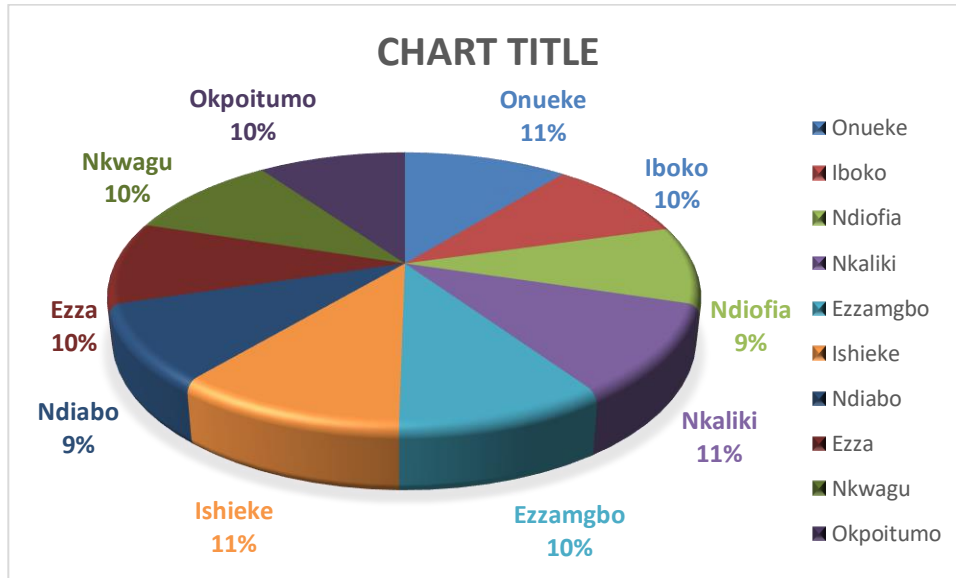
Source: Field Survey, 2017

Figure 1: Pie Chart of Community of Participants

The distribution of participants according to local government areas of residence is shown on Figure 2.

Source: Field Survey, 2017

Figure 2: Distribution of the Participants According to LGA of Residence

Figure 2 shows that majority (36%) of the participants were drawn from Ebonyi local government areas of Ebonyi State.

Table 1: Gender and Age Distribution of Participants

Age		Gender		
		Females	Males	Total
	< 40 years	40	72	112 (60.5%)
	> 40 years	56	17	73 (39.5%)
	Total	96	89	185 (100%)

Source: Field Survey, 2017

On the age distribution of the survey participants, 60.5% were less than 40 years while 39.5% were above 40 years. There were more females (51.9%) than males. It is surprising to note that younger people do not engage in farming as much as the older adults.

Table 2 contains further demographic features of our survey participants. We observed that there were more married persons (61.1%) that participated in the survey than singles. There were more families (55.7%) with greater than 5 members that participated in the study. The literacy rate for our participants is considered high at 57.3%. Our survey made use of more experienced farmers (65.9%) who were more in number than those who were not experience. Our efforts at getting to the real farmers paid off as 97.8% of the participants had farming as their primary occupation. Ironically, just a few (27.6%) had larger farmlands which translates to only a very few (16.8%) farmers earning more than N100,000 annually while majority earn less. This level of very low earning may be one of the discouraging factors for young people, especially males, engaging in farming. Very few (7.6%) belong to cooperative society which is an indication of their very limited knowledge of the benefits they can derive as farmers for belonging to cooperative societies.

Table 2: Other Demographic Characteristics of the Participants

Characteristics	Frequency	Percentage	Characteristics	Frequency	Percentage
Marital Status			**Primary occupation**		
Single	72	38.9	Farming	181	97.8
Married	113	61.1	Others	4	2.2
Total	185	100	**Total**	**185**	**100**
Household size			**Farm Size**		
< 5	82	44.3	< 3 hectares	51	27.6
> 5	103	55.7	> 3 hectares	134	72.4
Total	**185**	**100**	**Total**	**185**	**100**
Literacy Status			**Annual Income from Farming**		
Literate	106	57.3	< N100,000	154	83.2
Illiterate	79	42.7	> N100,000	31	16.8
Total	**185**	**100**	**Total**	**185**	**100**
Farming Experience			**Membership of Cooperative Society**		
< 5	63	34.1	Yes	14	7.6
> 5	122	65.9	No	171	92.4
Total	**185**	**100**	**Total**	**185**	**100**

Source: Field Survey, 2017

## Sources of Agricultural Materials and Information

Figure 3 presents the responses obtained on the sources of farming information
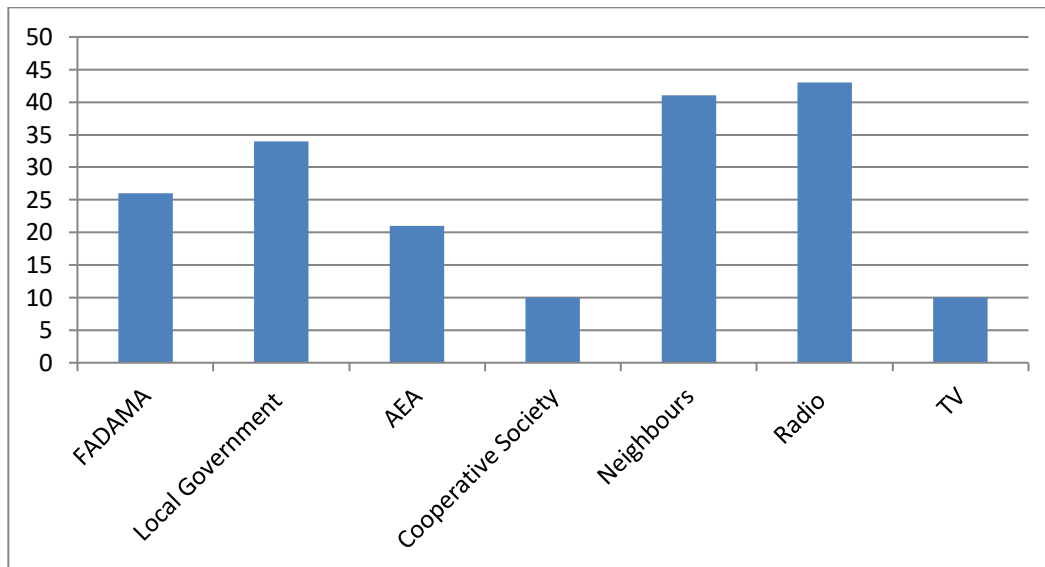
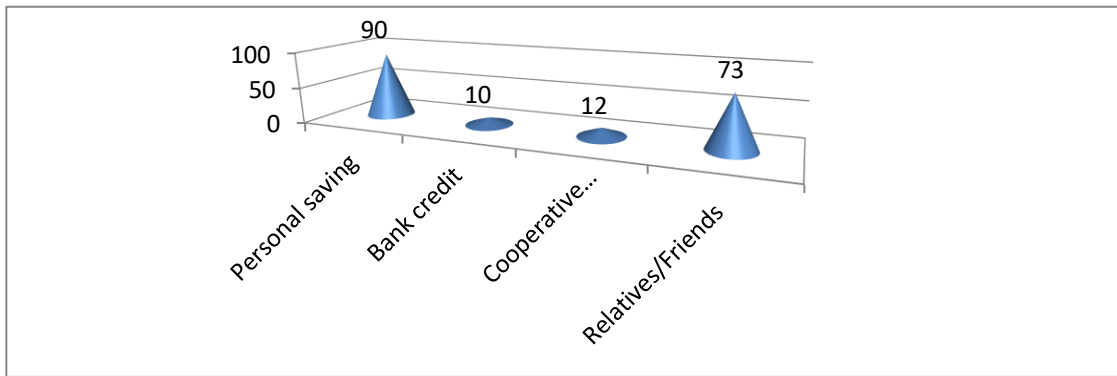Source: Field Survey, 2017

Figure 3: Sources of Information

Results show that the participants obtained more information through radio and neighbours. The local government and agricultural extension agents (AEA) also provided useful information to the participants. Surprisingly, television turned out to be the least source of agricultural information. This may be due to non-ownership of television sets or poor electricity supply thus making television an unreliable source of information as the villages sampled are predominantly rural.
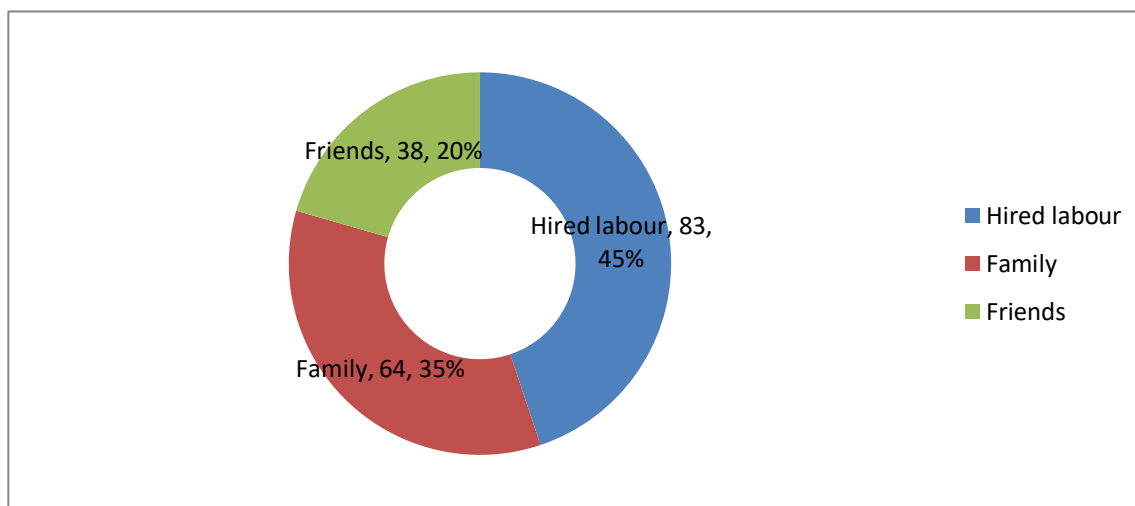
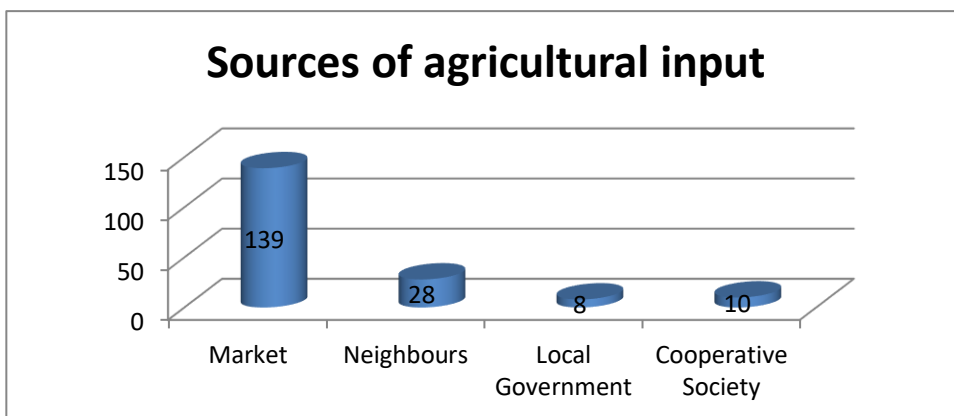Source: Field Survey, 2017

Figure 4: Sources of Labour

Figure 4 shows the major sources of labour in farming activities in Abakaliki metropolis is from hired labour (45%), and family members (35%).

Source: Field Survey, 2017

Figure 5: Sources of Capital

Figure 5 presents the major sources of capital and shows that about 90 out of the 185 survey participants (48.6%) had their capital sourced from personal savings, while less than 12% assessed capital from bank credit and cooperative societies. This shows very low awareness, and the importance of cooperative societies to farmers.

Source: Field Survey, 2017

Figure 6: Distribution of Sources of Agricultural Inputs

Figure 6 shows that a greater number of the survey participants (75%) bought agricultural inputs from local markets while less than 10% obtained inputs from the local government and cooperative societies.

Responses to Constraints associated with Agricultural Productivity in the study Area

(i)   Economic Constraints

Table 3: Participants' Views on Economic Constraints that Inhibit Agricultural Productivity in Abakaliki Metropolis

Item	Perceived Constraint	SA (4)	A (3)	D (2)	SD (1)	Weighted Mean	Decision	Mean Average
A	Inadequate capital	120	48	10	7	3.2	Accepted	
B	High cost of transportation	101	56	16	12	3.33	Accepted	

C	Limited labour supply	30	10	118	27	2.23	Rejected	
D	High cost of labour	18	121	25	21	2.74	Accepted	
E	Poor market outlets	20	22	87	56	2.03	Rejected	
F	Inadequate supply of farm inputs	92	63	18	12	3.27	Accepted	
G	High cost of agro-chemicals	104	43	29	9	3.31	Accepted	36.82/12 = 3.07
H	High cost of fertilizer	77	81	23	4	3.25	Accepted	
I	Poor storage facilities	96	49	19	21	3.19	Accepted	
j	Low yield	84	37	42	22	2.99	Accepted	
k	Low price of agricultural commodities	107	29	18	31	3.15	Accepted	
l	High cost of mechanised farming relative to manual labour	150	35	–	–	3.81	Accepted	

Source: Researcher's computations from Field Survey, 2017

Table 3 is based on the weighted mean method in line with the 4-point Likert scaling. The decision rule is based on the average of the 4-point Likert hence, weighted means less than 2.5 means rejection of the item while those above 2.5 means acceptance. Our findings therefore imply that, except Items C and E, all other items on Table 3 were economic constraints to agricultural productivity in Abakaliki Metropolis. The average mean shown in the last column of the table is 3.07 – being greater than 2.5 means that the items included are valid.

The study opined that high cost of mechanised farming relative to manual labour and transportation were the outstanding economic constraints to agricultural productivity in the study area. On the other hand, the study did not agree that poor market outlets and limited labour supply are among the economic constraints to agricultural productivity in the study area, perhaps because there are good market outlets and labour is adequately available and affordable in the area. Our findings relate with Tripathi and Prasad (2008) which found that improvements in labour, capital, and land productivity impacted positively on agricultural productivity in India. Similarly, Kibaara, Ariga, Oluwande and Jayne (2008) found that an impressive growth in Maize and dairy sub-sector productivity, maize growth was due to increased percentage of small-holder households using fertilizer, adoption of improved seeds and the availability of fertilizer retail outlets.

(ii)   Social Constraints

Table 4: Participants' Views on Socio-economic Constraints that Inhibit Agricultural Productivity in Abakaliki Metropolis

Item	Perceived Constraint	SA (4)	A (3)	D (2)	SD (1)	Weighted Mean	Decision	Mean Average
A	Land constraint	149	13	18	5	3.65	Accepted	
B	Inadequate government policies	103	36	39	7	3.23	Accepted	
C	Old age of farmers	81	63	20	21	3.10	Accepted	
D	Low level of education of farmers	131	26	28	–	3.56	Accepted	24.72/8 = 3.09
E	Lack of farming experience	28	21	73	63	2.08	Rejected	

f	Low level of knowledge and awareness of improved agricultural practices	85	71	21	8	3.26	Accepted	
g	Lack of interest among youths	68	69	31	17	3.02	Accepted	
h	Alternative land use options	53	64	50	18	2.82	Accepted	

Source: Researcher's computations from Field Survey, 2017

In table 4. High Weighted Mean scores were obtained in most cases leading to the acceptance of the items. However, for items E and F, the decision is to reject meaning that the participants did not opine that lack of farming experience and low level of knowledge and awareness of agricultural practices constitute socio-economic constraints to agricultural productivity in the study area. The mean average of 3.09 shows that the items included as socio-economic constraints are valid.

Analysis showed that land constraint and low level of education were the major socio-economic constraints to agricultural productivity in the study area. This finding is similar to Akinseinde (2006) which found that farmers that owned parcels of land on which they farmed were more productive than non-land-owning farming households.

(iii)   Environmental Constraints

Table 5: Participants' Views on Environmental Constraints that Inhibit Agricultural Productivity in Abakaliki Metropolis

Item	Perceived Constraint	SA (4)	A (3)	D (2)	SD (1)	Weighted Mean	Decision	Mean Average
a	Lack of irrigation facilities	64	82	21	18	3.04	Accepted	
b	Problem of pest and diseases	124	49	7	5	3.58	Accepted	
c	Wind constraints	24	29	38	94	1.91	Rejected	
d	Difficult terrains	81	48	44	12	3.07	Accepted	22.62/8 = 2.83
e	Hard land surface	94	31	27	33	3.01	Accepted	
f	Desertification	14	49	35	87	1.95	Rejected	
g	Climatic changes	79	65	18	23	3.08	Accepted	
h	Drought	61	72	39	13	2.98	Accepted	

Source: Researcher's computations from Field Survey, 2017

Table 5 captures the opinions of the survey participants on environmental constraints to agricultural productivity in the study area. The Items scored high weighted means leading to their acceptance. However, items C and F recorded low weighted means and so were rejected implying that the survey did not agree that wind and desertification constitute environmental constraints to agricultural productivity in the study area. The mean average score of 2.83 shows that the environmental factors included in the measurement are valid.

From the analysis, the study opined that problem of pest and diseases constitute the greatest environmental constraint to agricultural productivity in the area. Besides this, desertification and wind constraints scored points lower than 2.5 which means that these were not part of the environmental factors limiting agricultural productivity in the area.

Test of Hypothesis

We tested three null hypotheses using F-test from the ANOVA and Welch tests. The later allows for unequal cell variances as we have in this study. The computations were done using Eviews version 9. Relevant results were abstracted for the tests as summarised on Table 6.

Table 6: Test of Hypothesis

S/N	Hull Hypothesis (H_0)	d.f.	Value	Probability	d.f.	Value	Probability	Decision
		ANOVA F-Test			Welch F-Test			
i	Economic factors do not constrain agricultural productivity in Abakaliki Metropolis	3,44	9.344	0.0001	3,23	10.24	0.0002	Reject H_0
ii	Social factors do not constrain agricultural productivity in Abakaliki Metropolis	3,28	5.714	0.0035	3,15	4.477	0.0194	Reject H_0
iii	Environmental factors do not constrain agricultural productivity in Abakaliki Metropolis	3,28	3.28	0.036	3,14	4.604	0.0186	Reject H_0

Source: Researcher's computations from Field Survey, 2017

Result on Table 6 shows that the p-values in all the tests are less than 0.05. This implies that the results are significant at the 5% level. On this basis, we reject our null hypothesis in each of the three cases. This further supports the above findings that there are economic, socio-economic, and environmental factors that constrain agricultural productivity in Abakaliki Metropolis.

CONCLUSION AND RECOMMENDATIONS

This study therefore concludes that economic, social and environmental factors significantly constrained agricultural productivity in Abakaliki Metropolis, Ebonyi State. Specifically, the study finds that the participants feel that high cost of mechanised farming relative to manual labour and inadequate capital; land constraint and low level of education of farmers; and problem of pest and diseases and climatic changes were the three major economic, social and environmental constraints respectively to agricultural productivity in the study area.

Based on the findings, the study recommends that, the government should provide agricultural finance to farmers through specially created agricultural funds. This will empower poor farmers to increase their wealth and food production. Long-term agricultural financing is needed for longer-term investments such as better storage facilities, food/commodity processing facilities and equipment/mechanization. Most of the current longer-term financing goes to trade and working capital. Financing agriculture-related infrastructure, such as rural roads, port facilities, loading terminals, etc., is needed in most of the communities. Currently, transportation costs are often too high, particularly for landlocked areas where moving food in and out becomes almost impossible because of poor logistics and high costs.

Focus on youth and women. The government needs to make agriculture more attractive to young people and empower women so they can contribute more. The average age of farmers around the world is rising as

agriculture isn't appealing to young people. Women in agriculture don't have the same access to technology, finance and extension as men do, which results in lower yields and income. Even though the study's sample comprised of younger ones and more females, these mostly do not own farms. Reversal of this trend is therefore vital.

Climate change poses the biggest risk for agriculture and food security in the study area. Investment in agriculture (such as irrigation, drought-resistant technologies, controlling floods, etc.) is necessary to be able to adapt to climate change. The local and state governments especially need to intervene financially and otherwise to mitigate the effects when climate events cause losses in agricultural production and assets.

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