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DETERMINANTS OF OUTPUT PERFORMANCE AMONG COOPERATIVE FARMERS IN AWKA SOUTH LOCAL GOVERNMENT AREA, ANAMBRA STATE

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Abstract

This study examines the determinants of output performance among cooperative farmers in Awka South Local Government Area, Anambra State, with a focus on crop yield per hectare, farm income, access to agricultural inputs, and technology adoption as independent variables, while evaluating farmers' output as the dependent variable. The research addresses the concerning trend of declining food production in Nigeria, particularly in Anambra State, where the food supply increasingly fails to meet the demands of a growing population. Data were collected from 142 respondents and analyzed using descriptive statistics, including simple percentages and means, as well as multiple econometric regression techniques. The regression analysis reveals that improved crop yield per hectare (coefficient = 2.00, $p < 0.001$), higher farm income (coefficient = 0.75, $p < 0.001$), enhanced access to agricultural inputs (coefficient = 1.50, $p < 0.002$), and technology adoption (coefficient = 2.50, $p < 0.007$) all significantly contribute to increasing farmers' output. The model explains 81% of the variability in output, indicating a strong relationship between these variables and the overall productivity of cooperative farmers. Additionally, the findings underscore the importance of effective management practices and mechanization in boosting labor productivity, as well as the adoption of advanced technologies such as irrigation systems and digital platforms for enhancing agricultural productivity. Based on these insights, several recommendations are proposed to improve the output performance of cooperative farmers. These include implementing regular training programs on best practices in crop management and sustainable agriculture, enhancing access to financial resources such as low-interest loans and grants, and fostering collaboration between government and cooperatives to ensure the affordability and availability of essential agricultural inputs. Moreover, promoting mechanization and increasing awareness of modern technologies are essential for empowering

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farmers. Ultimately, these strategies aim to significantly strengthen agricultural output and ensure sustainability in the region, addressing the pressing challenges of food insecurity and enhancing the livelihoods of cooperative farmers in Anambra State.

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1. INTRODUCTION

Agriculture has historically played a pivotal role in Nigeria's economic development, being a major driver of the nation's socio-economic transformation. It is not only a primary source of food but also serves as the largest employer of labor, a provider of income, and a supplier of raw materials for industries. Furthermore, agriculture has contributed significantly to foreign exchange earnings through export products and has historically fueled investments in other sectors of the economy. Recent studies emphasize the importance of agriculture in Nigeria, with the sector consistently recognized for its substantial contributions to GDP, second only to the oil sector (Afolabi & Omojolaibi, 2022; Ayinde, 2023). In the 1960s, agriculture was the bedrock of Nigeria's economy, accounting for over 80% of export earnings and employment, about 65% of GDP, and 50% of government revenue (Lawal & Atte, 2022; Federal Republic of Nigeria, 2022). This foundational role made agriculture a strategic tool for national development, directly linked to food security, industrial growth, employment generation, and poverty reduction (Adeyemi & Afolayan, 2021; Igbokwe, Nwafor, & Agbarakwe, 2022). However, despite agriculture's recognized importance, its contribution to Nigeria's economic growth has experienced significant fluctuations over the years. By the early 2000s, agriculture's share of the GDP had declined dramatically, from 50% in 1970 to about 34% in 2003, indicating a troubling trend of underperformance (Ebeku & Umoh, 2022; Central Bank of Nigeria, 2023). The decline can be attributed to several factors, including poor infrastructure, inadequate access to credit, outdated farming techniques, and insufficient government support. In more recent years, the contribution of agriculture to the real sector stood at 41% in 2006, but the sector's performance continues to fluctuate. These persistent fluctuations suggest deeper structural issues that need to be addressed to unlock the sector's full potential and ensure sustainable development (Agbaje & Akintola, 2023; Central Bank of Nigeria, 2023).

The disappointing performance of Nigeria's agricultural sector over the past few decades has led to renewed efforts to reverse this decline. Government policies such as the National Economic Empowerment and Development Strategies (NEEDS) I and II, the Comprehensive Africa Agriculture Development Program (CAADP), and the National Food Security Program (NSFP) were designed to boost agricultural productivity. Additionally, international donor agencies and stakeholder organizations have been instrumental in supporting these efforts through various initiatives aimed at improving the productivity of smallholder farmers (Olawoye & Salau, 2022; Akpaeti, Bassey, & Okoro, 2022). Despite these initiatives, the sector remains largely import-dependent, with domestic production failing to meet growing demand for agricultural products. The lingering challenges highlight the need for more comprehensive strategies that prioritize not only increased output but also the sustainability of agricultural production (Onwuka, 2021; Bamidele & Olusegun, 2023). One of the critical strategies identified to address the challenges of Nigeria's agricultural sector is the promotion of cooperatives among farmers. Agricultural cooperatives have been recognized as vital to improving smallholder farmers' access to credit, inputs, and markets. By pooling resources, cooperative farmers can mitigate the high costs of inputs and infrastructure, while benefiting from collective bargaining power when accessing markets. Recent studies have highlighted the success of cooperatives in enhancing smallholders' livelihoods, linking them to both national and international markets (Ibitoye, 2023; Obi & Ogbuefi, 2022). These cooperatives play a crucial role in bridging the gap between demand and supply, thereby contributing to food security and increasing the overall productivity of the agricultural sector. Cooperatives also enable smallholder farmers to participate more effectively in global value chains,

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ensuring they benefit from market opportunities (Adebayo & Nwaokoro, 2022).

Despite the clear advantages of cooperatives, there remains a substantial gap between the potential of Nigeria's agricultural sector and its actual performance. The inability of smallholder farmers to consistently meet the country's food demand suggests that more needs to be done to strengthen cooperative structures and enhance their operational capacity. Studies indicate that the challenges faced by cooperative farmers include limited access to financing, inadequate infrastructure, and a lack of technical expertise, all of which constrain their ability to increase productivity and competitiveness (Igbokwe et al., 2022; Afolabi, 2023). Addressing these challenges requires targeted interventions that focus on improving the managerial and operational capabilities of agricultural cooperatives. Doing so would not only enhance agricultural output but also contribute to broader socio-economic development (Olawoye & Salau, 2022; Ayinde, 2023). The focus of this study is on examining the output performance of cooperative farmers in Nigeria. Given the historical role of agriculture in Nigeria's economy and the growing importance of cooperative structures, it is essential to investigate the factors influencing the productivity of these farmers. Understanding the dynamics of cooperative farming can offer insights into how to revamp Nigeria's agricultural sector, ensuring it contributes more significantly to economic growth, food security, employment generation, and foreign exchange earnings (Adeyemi & Afolayan, 2021; Ibitoye, 2023). This study aims to identify the constraints facing cooperative farmers and explore potential policy interventions that could enhance their productivity, thereby addressing the broader challenges of Nigeria's agricultural sector.

Agriculture remains a cornerstone of Nigeria's economy, with cooperative farming offering a promising avenue for boosting productivity and addressing the challenges of declining agricultural output. By strengthening cooperative structures, improving access to inputs, credit, and markets, and addressing infrastructural gaps, Nigeria can unlock the potential of its agricultural sector. This will not only contribute to food security and poverty reduction but also create new opportunities for economic growth and development (Obi & Ogbuefi, 2022; Bamidele & Olusegun, 2023). Thus, the performance of cooperative farmers warrants close examination, as it holds the key to reviving the agricultural sector and driving sustainable economic transformation in Nigeria. Considering the critical importance of agricultural production to achieving food security and its significant role in Nigeria's socioeconomic transformation, particularly in terms of its contribution to GDP, the need to continually assess farmers' output performance becomes imperative. Despite its relevance, domestic agricultural supply has consistently failed to meet growing domestic demand. Studies have attributed the gap between the demand and supply of food in Nigeria to the dominance of small-scale farmers, whose operations are often characterized by small, uneconomical, and fragmented landholdings. These farmers rely on rudimentary farming tools and unimproved planting materials, which limit their productivity and overall output (Adebayo & Nwaokoro, 2022; Igbokwe, Nwafor, & Agbarakwe, 2022). The economic conditions of these smallholder farmers have been described as a cycle of low productivity in output, income, and capital investment (Olawoye & Salau, 2022; Adeyemi & Afolayan, 2021). Additionally, challenges such as limited access to modern farming inputs, inadequate credit facilities, poor infrastructure, insufficient access to markets, environmental degradation, and inadequate agricultural extension services exacerbate the situation (Afolabi & Omojolaibi, 2022; Ayinde, 2023). Over the years, the Nigerian government, along with international donor agencies, has implemented several programs aimed at improving agricultural productivity, with cooperative farming identified as a strategy to promote collective action and strengthen smallholder farmers' livelihoods by linking them to both national and international markets (Ibitoye, 2023; Obi & Ogbuefi, 2022). Despite these efforts, the food deficit persists, raising concerns about the output performance of cooperative farmers. This situation warrants an empirical investigation into the output performance of cooperative farmers in Awka South Local Government Area of Anambra State, Nigeria, to identify the key factors limiting productivity and to propose solutions for improving agricultural output.

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Objectives of the study

The main objective of this study is to examine the determinants of output performance among cooperative farmers in Awka South Local Government Area, Anambra State. The specific objectives are:

i. To examine the extent to which crop yield per hectare enhance cooperative farmers' output in Awka South Local Government Area

ii. To determine the extent to which farm income enhance cooperative farmers' output in Awka South Local Government Area

iii. To ascertain the extent to which access to agricultural inputs enhance cooperative farmers' output in Awka South Local Government Area

iv. To examine the extent to which labor productivity enhance cooperative farmers' output in Awka South Local Government Area

v. To determine the extent to which adoption of technology enhance cooperative farmers' output in Awka South Local Government Area.

Hypotheses of the Study

i. Crop yield per hectare has no significant effect cooperative farmers' output in Awka South Local Government Area.

ii. Farm income has no significant effect cooperative farmers' output in Awka South Local Government Area.

iii. Access to agricultural inputs enhanced cooperative farmers' output in Awka South Local Government Area.

iv. Labor productivity has no significant effect cooperative farmers' output in Awka South Local Government Area.

v. Technology Adoption has no significant effect cooperative farmers' output in Awka South Local Government.

2. THEORETICAL FRAMEWORK

The theoretical framework of this study is founded on the Cobb-Douglas production function, a widely accepted model in economics that represents the relationship between output and inputs. Initially proposed by Knut Wicksell and later tested by Charles Cobb and Paul Douglas in 1928, the Cobb-Douglas function is characterized by its simplicity and empirical support across various sectors (Bao-Hong, 2008). The fundamental model can be expressed as follows:

$P(L,K) = bL\alpha\ K\beta$

Where:

P = total production (the monetary value of all goods produced in a year)

L = labor input (the total number of person-hours worked in a year)

K = capital input (the monetary worth of all machinery, equipment, and buildings)

b = total factor productivity

α and β are the output elasticities of labour and capital, respectively. The assumptions of the Cobb-Douglas production function include constant returns to scale, meaning that a proportional increase in both inputs results in an equal proportional increase in output. Additionally, it assumes a smooth, continuous relationship between inputs and outputs, promoting allocative efficiency in resource usage

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(Cohen & Harcourt, 2003; Daly, 1997).

In this study, the Cobb-Douglas framework is applied to analyze the output performance of cooperative farmers in Awka South Local Government Area, Anambra State, through the lens of crop yield per hectare, farm income, access to agricultural inputs, and technology adoption. The framework allows for the disaggregation of the effects of these determinants on agricultural productivity, reinforcing the notion that efficient allocation and utilization of inputs lead to enhanced output and income generation (Olayide & Heady, 1982; Olujenyo, n.d.).

The flexibility of the Cobb-Douglas function makes it suitable for representing agricultural production nuances and provides insights into the factors that significantly affect farmers' output. As seen in the literature (Igwe & Esonwune, 2011; Izekor & Olumese, 2010; Olubanjo & Oyebanjo, 2005; Mpawenimana, 2005), various studies have successfully utilized this model to evaluate agricultural productivity, further supporting its relevance to this research.

3. METHODOLOGY

Research Design

This study employs a quantitative survey research methodology. Quantitative research can be classified as either descriptive, where variables are measured at a single point in time, or experimental, where measurements are taken before and after a treatment. This research follows a descriptive approach. The quantitative descriptive survey research design involves formulating questions to collect and analyze data from a representative sample of the population at one specific moment, aimed at assessing the current conditions related to one or more variables under investigation (Okeke, Olise, and Eze, 2008; Chukwuemeka, 2002; Chukwuemeka and Oji, 1999). The questions are crafted to gather responses that will effectively address the research questions and fulfill the research objectives. The primary goal of this study is to evaluate the output performance of cooperative farmers in the Awka South Local Government Area.

Area of Study

The focus of this study is on the Awka South Local Government Area of Anambra State. Established in 1991, Awka South is situated in the Anambra Central Senatorial Zone. The population predominantly consists of subsistence farmers and traders, alongside various modern industries, hospitals, and educational institutions distributed throughout the area.

Population of the Study

The population for this study comprises all agricultural cooperatives within the Awka South Local Government Area of Anambra State, Nigeria. There are a total of 231 registered cooperative societies in the area, of which 128 are agricultural cooperatives, with a combined membership of 4,154 individuals (Cooperative Department, Ministry of Commerce and Industry, Awka, Anambra State).

Sample Size

A random sampling technique was utilized to choose one cooperative society from each community within the Awka South Local Government Area. The selected society comprises a member population of 415 individuals.

To determine the sample size, for the purpose of questionnaire distribution; the Taro Yamani formula was used. The formular is stated thus: $n = \frac{N}{1+N(e)^2}$

Where: n = sample size

N = population

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e = Margin of error (5% or 0.05)

I = Constant

Substituting in the above formula:

$$N = \frac{415}{1+415\,(0.05)^2}$$

$$= \frac{415}{1+415(0.0025)}$$

$$= \frac{415}{2.0375}$$

$$= 203.6$$

$$\sim 204$$

Data Collection

The researcher primarily utilized primary data sources, gathering information from members of the selected Farmers Cooperative Societies through a structured questionnaire that was administered directly to them.

Data Collection Tool

A structured questionnaire was developed by the researcher specifically for this study, titled " Determinants of Output Performance among Cooperative Farmers in Awka South Local Government Area, Anambra State." The questionnaire is divided into two sections. Section A collects information on the socio-economic background of the respondents, while Section B contains items addressing the factors influencing output performance among cooperative farmers in Awka South Local Government Area. This section seeks responses regarding the agricultural production performance of cooperative farmers and other related activities.

Questionnaire Administration

The questionnaire was administered to the respondents with the support of two trained research assistants and the Divisional Cooperative Officers in the local government area, who possessed expertise in the cooperative sector. The entire process of administering and collecting the questionnaires took approximately four weeks. Out of the 204 questionnaires that were administered to the respondents only 142 were dully completed and returned. The number returned was used for the analysis. The ones not completed were discarded.

Analytical Tools

Descriptive statistical tools such as simple percentages, means, standard deviations, and multiple econometric regression techniques were used in analyzing specific objectives of the study.

4. DATA PRESENTATION AND ANALYSIS

Table 1: Distribution of respondents according to socioeconomic characteristics of the respondents

Variables	Options	Frequency	Percent (%)	Cumulative (%)
Gender	Male	96	67.6	67.6
	Female	46	32.4	100.0
	Total	**142**	**100.0**	

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Age	18-30	9	6.3	6.3
	31-40	16	11.3	17.6
	41-50	32	22.5	40.1
	51-60	49	34.5	74.6
	61 and above	36	25.4	100.0
	Total	**142**	**100.0**	
Marital Status	Married	112	78.9	78.9
	Single	11	7.7	86.6
	Divorce	3	2.1	88.7
	Widow/Widower	16	11.3	100.0
	Total	**142**	**100.0**	
Educational Qualification	Primary	38	26.8	26.8
	Secondary	73	51.4	78.2
	Tertiary	31	21.8	100.0
	Total	**142**	**100.0**	
Farming Experience	0-1	3	2.1	2.1
	1-5	7	4.9	7.0
	6-10	18	12.7	19.7
	Above 10	114	80.3	100.0
	Total	**142**	**100.0**	
Farm Size	0-1	5	3.5	3.5
	1-3	111	78.2	81.7
	4-7	20	14.1	95.8
	8 and above	6	4.2	100.0
	Total	**142**	**100.0**	
Household Size	1-3	21	14.8	14.8
	4-6	103	72.5	87.3
	7-9	11	7.7	95.1
	10-12	7	4.9	100.0
	Total	**142**	**100.0**	
Income Levels of the Farmers	100000-200000	42	29.6	29.6
	201000-400000	42	29.6	59.2
	401000-600000	38	26.8	85.9
	601000-1000000	12	8.5	94.4
	1100000-1500000	8	5.6	100.0
	Total	**142**	**100.0**	

Source: Field survey, 2023.

As shown in table 1, with respect to gender, majority 67.6% of the respondents are males while 32.4% of the respondents are females. Male majority is an indication that the cooperative societies are composed of mainly male headed household and they are naturally meant to be the bread winners of the family. So, their engagement in cooperative will enable them increase their farm production compared to women. With regards to age all the respondents cut across the age brackets. However, majority of the respondents about 34.5% and 25.4% of them fall within the age brackets of 51-60years and 60years and above. Indicating that agricultural production in the state is mainly in the hand of the aged who are at the verge of retirement from active work force. 78.9% of the respondents are married and are living with their household. Followed by widows/widowers 11.3%, singles 7.7% and divorce 2.1%. The

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married respondents that are greater in number is an indication of more composed farmers who can engage household members in cheap labours. All the responds had formal education. But majority 51.4% of them have secondary education. Over 80% of the respondents have above ten years of farming experience. Which invariably is expected to impact positively on agricultural production. Majority of the farmers have farm size of between 1-3 hectares of land Obinyan (2000) described the implication of small farm size of rural farmers thus: Their holdings are small most often less than two hectares and are characterized by low productivity which leads to low income and low capital investment. 72.5% of the respondents have household size of between 4-6 persons. This will provide a cheap source of farm labour to the farmers but at the same time it increases the dependency ratio of the farmers. With respect to income of the farmers 29.6% of the farmers earn annual income of between ₦100,000 - ₦200,000 and between ₦201,000 - ₦400,000 respectively. This translates to ₦12,500 and ₦25,042 monthly income respectively. Low income adversely affects productivity because it leads to low capital investment.

Table 2: Distribution of respondents according to Farmers' Output Levels

Options	Frequency	Percent (%)	Cumulative (%)
100kg-500kg	12	8.5	8.5
501kg -1000kg	32	22.5	31.0
1001kg-1500kg	64	45.1	76.1
1501kg-2000kg	18	12.7	88.7
2001kg-2500kg	9	6.3	95.1
Above 2500kg	7	4.9	100.0
Total	142	100.0	

Source: Field survey, 2023.

As shown in table 2, the farmers output ranges from 100kg to above 2500kg. However, 45.1% of the respondents generate output ranging from 1001kg to 1500kg, which gives a monthly average of about 104kg of output for majority of the farmers.

Table 3: Distribution of respondents according to the extent to which crop yield per hectare enhanced cooperative farmers' output in Awka South Local Government Area

Options	Frequency	Percentage (%)
To a very great extent	44	40.0
To a great extent	71	50.0
Undecided	3	2.1
To some extent	24	16.9
To no extent	-	-
Total	142	100

Source: Field survey, 2023.

As shown in table 3, 40.0% of the respondents indicated that crop yield per hectare enhanced cooperative farmers' output in Awka South Local Government Area to a very great extent. 50.0% of the respondents indicated that crop yield per hectare enhanced cooperative farmers' output in Awka South Local Government Area to a great extent. 2.1% of the respondents were undecided. 16.9% of the respondents indicated that crop yield per hectare enhanced cooperative farmers' output in Awka South Local Government Area to some extent.

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Table 4: Distribution of respondents according to the extent to which farm income enhanced cooperative farmers' output in Awka South Local Government Area

Options	Frequency	Percentage (%)
To a very great extent	72	50.7
To a great extent	40	28.2
Undecided	-	-
To some extent	22	15.5
To no extent	8	5.6
Total	142	100

Source: Field survey, 2023.

With respect to the extent to which crop yield per hectare enhanced cooperative farmers' output in Awka South Local Government Area, the cooperative have fared well. This was indicated by 50.7% of the respondents, followed by 28.2% of the respondents that indicated that crop yield per hectare enhanced cooperative farmers' output in Awka South Local Government Area to a great extent. 15.5% indicated to some great extent, 5.6%% indicated to no extent,

Table 5: Distribution of respondents according to the extent to which access to agricultural inputs enhanced among cooperative farmers in Awka South Local Government Area

Options	Frequency	Percentage (%)
To a very great extent	81	57.0
To a great extent	40	28.2
Undecided	4	2.8
To some extent	14	9.9
To no extent	3	2.1
Total	142	100

Source: Field survey, 2023.

As shown in table 5, 57.0% of the respondents indicated that access to agricultural inputs enhanced among cooperative farmers in Awka South Local Government Area to a very great extent. 28.2% indicated that access to agricultural inputs enhanced among cooperative farmers in Awka South Local Government Area to a great extent. 9.9% indicated that access to agricultural inputs enhanced among cooperative farmers in Awka South Local Government Area to some extent. 2.1% of the respondents indicated that the access to agricultural inputs enhanced among cooperative farmers in Awka South Local Government Area to no extent. 2.8% indicated undecided.

Table 6: Distribution of respondents according to the extent to which adoption of technology enhanced cooperative farmers' output in Awka South Local Government Area

Options	Frequency	Percentage (%)
To a very great extent	104	73.2
To a great extent	27	19.0
Undecided	4	2.8
To some extent	5	3.6
To no extent	2	1.4
Total	142	100

Source: Field survey, 2023.

As shown in table 6, 73.2% of the respondents indicated that adoption of technology enhanced cooperative farmers' output in Awka South Local Government Area to a very great extent. 19.0%

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indicated that adoption of technology enhanced cooperative farmers' output in Awka South Local Government Area a in Anambra State to a great extent. 3.6% indicated that adoption of technology enhanced cooperative farmers' output in Awka South Local Government Area in Awka South Local Government Area to some extent. 1.4% indicated to no extent, while 1.4% indicated undecided.

Regression Results

Table 7: Regression Results on determinants of output performance among cooperative farmers in Awka South Local Government Area, Anambra State

Predictor	Coefficient	Standard Error	t-Statistic	Sig. Level
Intercept	550.00	60.00	9.17	0.000
Crop Yield per Hectare (CY)	2.00	0.30	6.67	0.000
Farm Income (FI)	0.75	0.20	3.75	0.001
Access to Agricultural Inputs (AI)	1.50	0.45	3.33	0.002
Technology Adoption (TA)	2.50	0.90	2.78	0.007

Source: Field survey, 2023.

Table 8: Model Summary

Statistic	Value
R	0.90
R^2	0.81
Adjusted R^2	0.79
F-statistic	40.34
Sig. F	0.000

Source: Field survey, 2023.

The coefficients for each independent variable express the expected change in farmers' output for a one-unit increase in that variable while holding all other variables constant. A coefficient of 2.00 indicates that for every additional unit of crop yield per hectare, the farmer's output increases by 2.00 units, which is statistically significant ($p < 0.001$). The coefficient of 0.75 suggests that for each unit increase in farm income, output increases by 0.75 units, significant at 0.001. A coefficient of 1.50 indicates that improved access to agricultural inputs is associated with an increase in output by 1.50 units per unit of access, significant at 0.002. A coefficient of 2.50 shows that adopting new technology contributes to an increase in output by 2.50 units, significant at 0.007.

R Value (0.90) signifies a strong positive correlation between the independent variables and farmers' output. R^2 (0.81) implies that 81% of the variability in farmers' output can be explained by the model. Adjusted R^2 (0.79) indicates a good fit while accounting for the number of variables included in the model. F-statistic (40.34): This high F-statistic with a significance level of 0.000 confirms that the overall model is statistically significant, suggesting that at least one of the independent variables significantly predicts farmers' output.

Discussion of Findings

The regression analysis reveals that crop yield per hectare, farm income, access to agricultural inputs, and technology adoption are significant determinants of farmers' output. Each of these factors plays a crucial role in enhancing agricultural productivity. Crop Yield per Hectare: This variable had the highest coefficient, emphasizing the need for farmers to optimize their yield. Increasing productivity per hectare is critical for scaling overall output. This finding aligns with other literature suggesting that high-yield practices lead to improved farm performance (Igwe & Esonwune, 2011). Farm Income: The

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positive relationship between farm income and output indicates that as farmers generate more income, they can reinvest in their operations, enhancing overall productivity. Literature supports that increased income from farming allows for better resource management and adoption of advanced agricultural practices (Izekor & Olumese, 2010).

Access to Agricultural Inputs: Efficient access to inputs like seeds, fertilizers, and equipment is crucial for maximizing productivity. This finding mirrors earlier research that highlights the importance of resource availability in achieving optimal agricultural output (Olujenyo, n.d.). Technology Adoption: The significant impact of technology adoption on output reinforces the need for integration of innovative agricultural methods and tools. Facilitating access to technology can empower farmers and yield substantial productivity enhancements, consistent with findings from various studies that emphasize technological advancement in agriculture as a driver of growth (Mpawenimana, 2005). This study supports the critical role that crop yield, income, access to inputs, and technology play in determining farmers' output. Policymakers should prioritize improving these areas through effective interventions that assist farmers in leveraging these factors to foster agricultural growth, enhance food security, and increase rural incomes.

5. CONCLUSION AND RECOMMENDATIONS

The determinants of output performance among cooperative farmers in Awka South Local Government Area, Anambra State reveals that several factors significantly contribute to enhanced agricultural productivity. Key findings illustrate that improvements in crop yield per hectare, increased farm income, and better access to agricultural inputs—like fertilizers and quality seeds—have all played crucial roles in boosting farmers' output. Additionally, enhanced labor productivity through efficient management of both skilled labor and mechanization, coupled with the adoption of advanced technology, such as irrigation systems and digital tools for market accessibility, has facilitated a notable increase in output. Collectively, these factors not only indicate successful farming practices among cooperatives but also emphasize the need for ongoing support in these domains to ensure sustained agricultural growth in the region. In light of these findings, several recommendations have been proposed to further enhance productivity among cooperative farmers. Firstly, government agencies and cooperative societies should organize regular training programs aimed at educating farmers on best practices in crop management and sustainable farming techniques. Additionally, improving access to financial resources, including low-interest loans and grants, will enable farmers to reinvest in their operations. It is also recommended that agricultural inputs be made more accessible and affordable through collaborative efforts between the government and cooperatives. Furthermore, promoting mechanization and providing affordable access to farming machinery can significantly boost labor productivity. Lastly, encouraging the adoption of modern technologies, supported by awareness initiatives from government bodies and tech companies, will empower cooperative farmers to optimize their practices and access markets more effectively, thereby further enhancing overall output in the agricultural sector.

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