International Scholars Journals

International Journal of Agricultural Sciences ISSN: 2167-0447 Vol. 15 (5), pp. 001-008, May, 2025. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Full Length Research Paper

Assessment of Technical, Cost and Allocative Efficiency of Crop Enterprises in Southwest, Nigeria

Odewale, Tajudeen Opeyemi, A. B. Sekumade and R. S. Owoeye

Department of Agricultural Economics and Extension Services, Ekiti State University, Ado Ekiti, Nigeria.

Abstract

Received 25 March, 2025; Revised 27 April, 2025; Accepted 28 April, 2025 and Published 07 May, 2025

In recent years, agro-preneurship has gained attention as a promising solution for addressing youth unemployment, food security, and sustainable economic development. The study investigated the Efficiency of Crop Based Agro- Enterprises in the Southwest region of Nigeria. The study aims at determining the technical, cost and allocative efficiency f crop-based agro-enterprise in the study area. A multi-stage sampling technique was employed to select participants through the Ministry of Agriculture. Two States; Ekiti and Oyo, were purposively chosen for their similar level of involvement in crop production in the geopolitical zone. The second stage of involved the selection of nine Local Government Areas (LGAs) each from Ekiti and Oyo States, making 18 LGAs. From each of LGAs, three communities were randomly selected, resulting to 54 communities in all. At the community level, 10 respondents were randomly selected, making the total respondents to be 540. Data collected through structured questionnaire were analyzed using stochastic frontier production function. The findings assessed technical efficiency in crop based agro-enterprises, revealing gamma (γ) parameter of the Cobb-Douglas stochastic frontier production function to be 0.686. This value was statistically significant at a 1% level of probability. This suggests that technical inefficiency was highly significant in agro-preneurship activities, indicating variations in the effectiveness of farm operations. Arising from the above, government should consider increasing its allocation for agriculture in each of the states within the Southwest region. This boost in funding will serve as a strong incentive for farmers to engage in large-scale production, ultimately fostering the development of agro-enterprises in the area. It is equally essential for the government to prioritize the development of agro-enterprises by integrating it into the educational curriculum at all levels of the educational sector. This approach will make agro-enterprises more appealing and accessible to the general population. Extension Officers should be more aggressive in fulfill their responsibilities by not only delivering technical assistance to farmers but also by maintaining consistent monitoring efforts. This proactive approach will contribute to enhancing the overall efficiency of farmers.

Keywords: Crop enterprise, technical, cost, allocative efficiency.

1.0 Introduction

Nigeria possesses natural entrepreneurship opportunities, but the full potential of these opportunities has been hindered by inappropriate industrialization policies and neglect of small-scale farmers who are crucial to the agrarian economy. Various policy interventions aimed at fostering entrepreneurship through the promotion of small and medium enterprises have fallen short of their objectives. Consequently, many indigenous agro-entrepreneurs have turned into distributors of imported agricultural products instead of revitalizing a sector that

Corresponding Author. Email: rufus.owoeye@eksu.edu.ng

has significantly diminished in importance. To address issues such as waste reduction, import substitution, wealth creation, employment generation, and food security, it is imperative to prioritize enhancing the agro-entrepreneurial capabilities of small-scale farmers in areas like agro-processing, mechanized agriculture, post-harvest management, fish and aquaculture systems, animal management, including apiculture (Adeoye, 2015).

Agro-preneurship encompasses a broader range of activities that extend beyond production. It involves applying entrepreneurial principles to agriculture, integrating innovation, business acumen, and strategic thinking. Agro-preneurs aim to identify market opportunities, create value-added products, and establish sustainable business models within the agricultural sector. This approach goes beyond traditional farming practices, incorporating elements such as market research, value chain analysis, branding, and the adoption of modern technologies to maximize profitability and meet market demands.

Entrepreneurship is a cornerstone of the global embrace of a free enterprise economic system (Popoola, 2014). It involves identifying, assessing, and exploiting opportunities to introduce new products, services, organizational structures, markets, processes, and raw materials through efforts that were previously nonexistent (Shane and Venkataraman, 2000). Entrepreneurship, as a dynamic process, generates incremental wealth (Pulka, Rikwentishe, and Ibrahim, 2014). This wealth is created by individuals who bear significant risks in terms of equity, time and career commitment to provide added value to products and services. While the product or service itself may not necessarily be new or unique, the entrepreneur infuses value by securing and allocating the necessary skills and resources. In essence, entrepreneurship involves expending energy to initiate and build an enterprise (Uzezi, 2014). In the present Nigerian context, an entrepreneur is an innovator who identifies and seizes opportunities, transforms them into viable ideas, adds value through effort, capital, skills, and assumes the risks of competition to realize those ideas and reap the rewards. Entrepreneurship is closely associated with innovative developments in the Small, Micro, and Medium Enterprise (SME) sector (United States Department of Agriculture, 2011). Consequently, entrepreneurship is a widely used and broadly defined concept, often described as a creative and innovative response to the environment (Jarkko P. *et al* 2006). Sustainable development in agribusiness necessitates the development of entrepreneurial and organizational competencies among farmers, with two possible approaches: amending the social, economic, political, and cultural frameworks hindering development and encouraging farmers, based on their personalities and capabilities, to ignite entrepreneurship. Both approaches are crucial to enhancing farming competitiveness and driving sustainable rural development (Onubuogu and Esiobu, 2014). Given that entrepreneurship can improve quality of life, sustain the economy and environment, and foster economic development, nurturing entrepreneurship skills is an urgent development priority (Jarkko *et al*., 2006). Boosting entrepreneurial activity can play a significant role in promoting economic development.

Despite government development programmes aimed at promoting entrepreneurship, agribusinesses in Southwestern Nigeria face challenges such as ethno-religious violence and the activities of Fulani cattle herdsmen, which are undermining the entrepreneurial activities of small-scale farmers. This study seeks to examine the efficiency of crop based agro enterprises in Southwest, Nigeria.

Farming and agro-preneurship, while interconnected within the agricultural sector, are distinct concepts. Both involve agricultural production activities but differ in their focus, approach, and outcomes. Farming refers to the traditional practice of cultivating crops, raising livestock, and engaging in other agricultural activities for subsistence or commercial purposes. It typically involves using traditional methods and techniques passed down through generations. Farming primarily centers on crop cultivation and animal husbandry to produce food, fiber, or raw materials. This practice emphasizes efficient cultivation and animal care to yield harvests and livestock products.

2.0 METHODOLOGY

2.1 Study area

This research was conducted in the Southwest region of Nigeria, specifically focusing on Ekiti and Oyo States. The region covers 77,818 km2 with a population of 27,581,992 as of 2006 (NPC, 2006), with a projected population estimate of 39,742,334 for 2018, based on an annual population growth rate of 2.619% as reported by NPC in 2016. It shares borders with Edo and Delta States to the East, Kwara and Kogi States to the North, the Republic of Benin to the West, and the Gulf of Guinea to the South. The region's tropical climate features two distinct seasons, with temperature fluctuations between 21°C and 34°C and annual rainfall varying from 1500mm to 3000mm (Falade, 2016). The vegetation includes freshwater swamps, mangrove forests, lowland forests, and secondary forests, with fertile soils suitable for agricultural production, which is the primary source of income and employment for approximately 75% of the population (Sakiru, 2013; Faleyimu et al., 2009; Otitoju and Enete, 2014).

2.2 Sampling Method and Sample Size

A multistage sampling approach was employed to select the population for this study. At the first stage, two States (Ekiti and Oyo) were purposefully chosen within Southwest, Nigeria. The second stage involved the purposeful selection of three Local Government Areas (LGAs) each from senatorial district of the two States (Oyo and Ekiti) based on their level of participation in crop production, making a total of eighteen (18) LGAs from both States. The third stage involved the simple random selection of three (3) communities from each of the selected LGAs, and at the final stage, ten (10) respondents were randomly chosen from each of the communities, making a total of 540 respondents for the study.

2.3 Data Collection and Sources

Primary data were gathered using pre-tested questionnaires and personal interviews. The data encompassed socio-economic characteristics of the respondents, the range of available farm enterprises, factors influencing the choice of enterprise, the technical, cost and allocative efficiency of the respondents, costs and returns of crop-based enterprises in the study area, and challenges encountered in crop-based enterprises.

2.4 Data Analysis Method

The Stochastic Frontier Production Function

The stochastic frontier model makes use of Cobb-Douglas model estimate (double log). It comprises both efficiency parameter and inefficiency parameters. The model is explicitly specified as;

$$LnYi = \beta_0 + \beta_1 lnX_1 + \beta_2 lnX_2 + \beta_3 lnX_3 + \beta_4 lnX_4 + \beta_5 lnX_5 + V_i - U_i$$

Where;

β_0 = Parameter to be estimated

Y_i =Farm output (₦)

X_i = Vector of inputs used measured in (kg or ha or ₦)

$X_1 - X_5$ = Efficiency parameters

X_1 = Land area cultivated (ha)

X_2 = Labour (₦)

X_3 = Fertilizer (₦)

X_4 = $Inputs$ (₦)

X_5 = $Vacines$ (₦)

X_6 = Depreciated value of farm tools (₦)

V_i = Random variability in production that cannot be influenced by the farmers (Random errors)

U_I = Deviation from maximum potential output attributable to technical inefficiency

Technical inefficiency effects (Ui) is defined as,

$$U_i = \delta_0 + \delta_1 Z_1 + \delta_2 Z_2 + \delta_3 Z_3 + \delta_4 Z_4 + \delta_5 Z_5$$

Where;

Z_1 = Cassava enterprise (yes =1, no = 0)

Z_2 = Yam enterprise (yes =1, no = 0)

Z_3 = Age (years)

Z_4 = Farming experience (years)

Z_5 = Plantain/ banana enterprise (yes =1, no = 0)

Z_6 = Poultry enterprise (yes =1, no = 0)

Z_7 = Maize enterprise (yes =1, no = 0)

Z_8 = Years spent in school (years)

2.4.1 Stochastic cost function

This was employed following Ogundari and Ojo (2007) to estimate the firm-level cost efficiency of the farmers in the study area. The explicit Cobb-Douglas cost function for food crop farmers in Southwest, Nigeria is specified thus;

$$\text{In } C_{ij} = \beta_0 + \beta_1 \; In\, P_{2ij} + \beta_2 \; In\, P_{2ij} + \beta_3 \; In\, P_{3ij} + \beta_4 \; In\, P_{4ij} + \beta_5 \; In\, P_{5ij} + \beta_6 \; In\, P_{6ij} + V_{ij} - U_{ij}$$

Where:

Subscript ij refers to the j^{th} observation of the i^{th} farmer.

Ln = Logarithm to base e

C_{ij} = Total production cost (₦/ha) of the i^{th} farmer

P_1 = Expenses on land (₦)

P_2 = Cost of labour (₦)

P_3 = Cost of fertilizer (₦)

P_4 = Cost of agrochemicals (₦)

P_5 = Cost of planting materials (₦)

P_6 = Depreciated value of farm tools (₦)

$$\mu_{ij} = \delta 0 + \delta 1 Z1ij + \delta 2 Z 2ij + \delta 3 Z 3ij + \delta 4 Z 4ij + \delta 5 Z 5ij + \delta 6 Z 6ij + \delta 7 Z 7ij$$

Where:

μ_{ij} = Cost inefficiency of the i^{th} farmer

Z_1 = Farming experience (years)

Z_2 = Level of education (years)

Z_3 = Age (years)

Z_4 = Household size (number)

Z_5 = Farm size (Ha)

Z_6 = Marital status (single = 0, married = 1, separated = 2, widowed = 4)

Z_7 = Access to credit (yes = 1, otherwise = 0)

3.0 RESULTS AND DISCUSSION

3.1: Determinants of Technical Efficiency among Crop-based Agro-preneurs in the study area

The stochastic frontier production function analysis for cassava production in Southwest, Nigeria, reveals that various factors significantly influence agro-preneurship outcomes. Farm size, fertilizer usage, labor input, and planting materials are all statistically significant at a 1% level, indicating their crucial role in determining output. This finding is consistent with Danso-Abbeam et al. (2022), who emphasized the importance of these inputs in improving agricultural productivity.

The analysis shows a positive relationship between farm size and output, suggesting that larger farms tend to produce more due to proper agronomic practices and efficient resource utilization. This is in line with Kuwornu et al. (2019), who found that larger farm sizes are associated with higher productivity. The use of fertilizer, labor, and planting materials also positively influences output, highlighting their importance in improving soil fertility, increasing crop yields, and enhancing productivity. However, the excessive use of agrochemicals has a negative impact on crop output, likely due to ecosystem disruption and harm to soil microbes. This finding is consistent with Martey et al. (2020), who noted that excessive agrochemical use can lead to soil degradation and reduced productivity. Therefore, sustainable

Table 1: The Maximum Likelihood Estimates of the Stochastic Frontier Production (Cobb-Douglas

Variables	Coefficients	Std. Error	t-ratio
Production model			
Constant	6.781***	0.454	14.936
Ln Agrochemicals	-0.197	0.368	-0.535
Ln Depreciation of farm tools	-0.149	0.328	-0.454
Ln Farmland	0.411***	0.035	11.743
Ln Fertilizer	0.187***	0.059	3.169
Ln Labour	0.364***	0.097	3.753
Ln planting materials	0.309***	0.058	5.327
Technical inefficiency model			
Constant	3.543***	0.219	16.178
Cassava enterprise	-0.309***	0.095	-3.252
Yam enterprise	3.213***	0.987	3.255
Farming experience	-0.185***	0.046	-4.022
Plantain/banana enterprise	-0.124***	0.056	-2.214
Poultry enterprise	-0.761***	0.231	-2.867
Maize enterprise	0.084	0.242	0.347
Years spent in school	-0.203**	0.095	-2.137
Age	0.109	0.228	0.478
Variance parameters			
Sigma-squared (δ^2)	0.294	0.111	2.648
Gamma (γ)	0.686***	0.133	5.158
Log likelihood function (LLF)	278701		

Source: Computed from Field Survey Data, 2022

* Significant at 10%, ** significant at 5%, and *** significant at 1% respectively.

agricultural practices that minimize harm to the environment are essential.
The analysis of factors influencing technical inefficiency reveals that cassava enterprise, farming experience, plantain/banana enterprise, poultry enterprise, and years of schooling have significant negative relationships with technical inefficiency. This means that engaging in these activities reduces technical inefficiency and increases technical efficiency. According to Aidoo et al. (2021), farming experience and education are essential for improving technical efficiency among farmers. The relationship between enterprise type and technical inefficiency varies, with yam enterprise being positively related to technical inefficiency, likely due to the prevalence of older farmers. In contrast, cassava enterprise, plantain/banana enterprise, and poultry enterprise are negatively related to technical inefficiency, indicating that these enterprises improve technical efficiency.

3.2: Returns to Scale Analysis in Southwest, Nigeria

The elasticity of production analysis, in Figure 1, reveals that farm size (0.411), labor (0.364), and planting materials (0.309) have positive elasticities, indicating that increasing these inputs leads to significant output gains. In contrast, agrochemicals (-0.197) and depreciation (-0.149) exhibit negative elasticities, suggesting potential overuse or inefficiency. Fertilizer (0.187) has a relatively inelastic relationship with output. The returns to scale value of 0.925 indicates decreasing returns, implying that increasing inputs leads to proportionally smaller output gains. These findings align with the study of Sekumade and Owoeye, 2016, who also reported an RTS value of 0.937 in their research on climate change adaptation practices and the technical efficiency of cassava production in Ekiti State, Nigeria. In the same vein, it aligns with the study of Awotide *et al*. (2023), who examined agricultural productivity in Nigeria and emphasized the need for efficient input use to enhance farm performance, highlighting the importance of region-specific policies. Also, as it is shown in Figure 1, the slope (0.1099) indicates a direct relationship between inputs (x) and outputs (y), consistent with the positive elasticities observed for farm size, labor, and planting materials. The

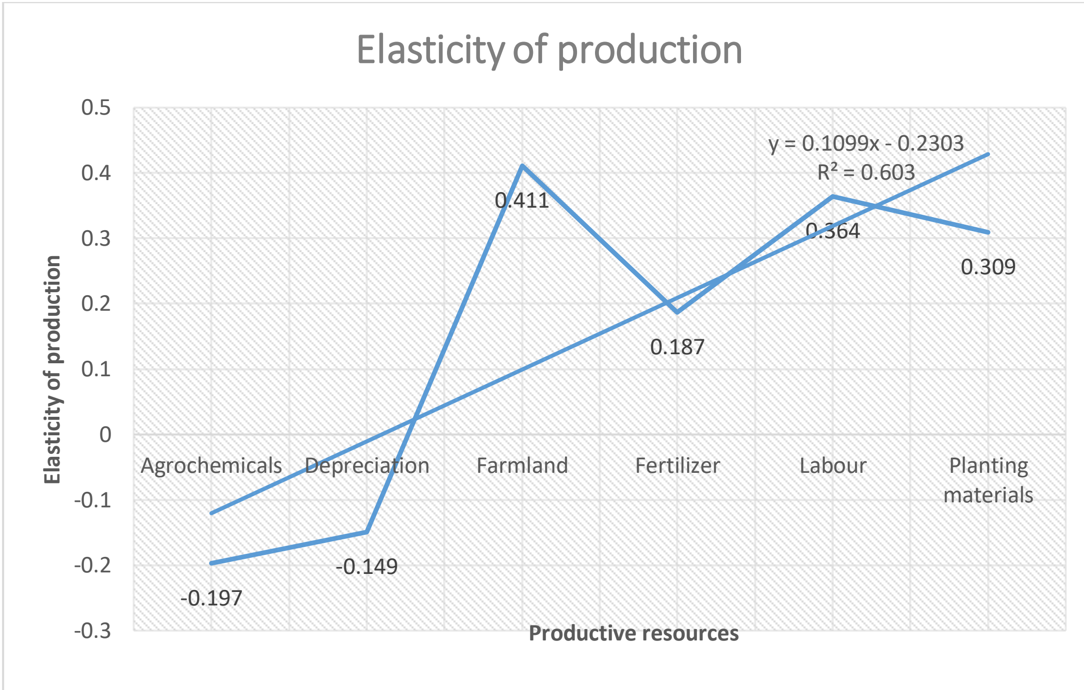
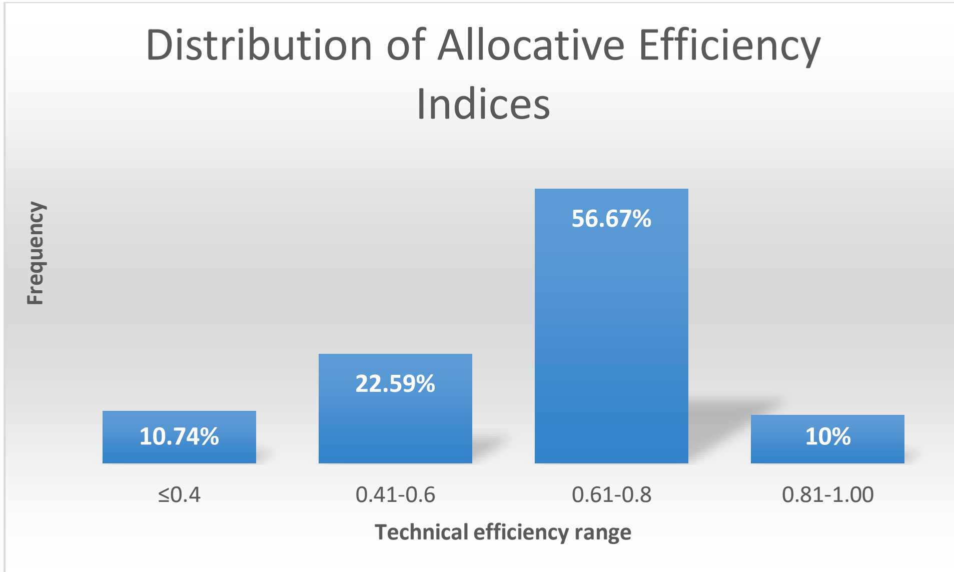


Figure 1: Elasticity of Production and Returns to Scale
Returns to scale 0.925
Source: Computed from Field Survey Data, 2022

Table 2: Maximum likelihood estimates of parameters of stochastic cost function.

Variable	Coefficients	Std. Error	t-ratio
Cost factors			
Constant	2.415***	0.714	3.382
Cost of land	0.462***	0.104	4.442
Cost of labour	2.056**	0.913	2.252
Cost of fertilizer	0.963**	0.398	2.419
Cost of agrochemicals	1.082*	0.551	1.964
Cost of planting materials	2.564	2.067	1.240
Depreciated value of farm tools	-8.675	8.203	-1.057
Returns to scale ($\sum$ of β_1-β_6) = 0.867			
Inefficiency effects			
Farming experience	-0.673***	0.241	-4.534
Level of education	-0.892***	0.321	-2.779
Age	1.472	1.621	0.9080
Household size	-2.415	2.044	-1.182
Farm size	0.084	0.242	0.217
Marital status	0.642	0.488	1.316
Access to credit	-3.886	1.091	3.562***
Diagnostic statistics			
Likelihood ratio	3.343		
Sigma-squared	0.735		
Gamma	0.640		

Source: Computed from Field Survey Data, 2022
* Significant at 10%, ** significant at 5%, and *** significant at 1% respectively.



Mean efficiency 0. 711
Minimum efficiency 0. 312
Maximum efficiency 0.915
Figure 2: Frequency Distribution of Allocative Efficiency Indices in Southwest, Nigeria.
Source: Computed from Field Survey Data, 2022.

R^2 value (0.603) implies that about 60% of the variation in output is explained by the input variable, indicating a moderate fit.

3.3: Factors determining cost efficiency among crop-based agro-preneurs in the study area

Table 2 presents the maximum likelihood estimates of the parameters for the stochastic cost frontier model utilized to gauge allocative efficiency. The results reveal a positive and significant relationship between cost of land, labor, fertilizer, agrochemicals, and total production costs. Specifically, a 1% increase in the cost of land leads to a 0.462% increase in total production costs, holding other factors constant. Similarly, a 1% increase in labor costs leads to a 2.056% increase in total production costs. These findings are consistent with economic theory, which suggests that increases in input costs lead to higher production costs (Awotide *et al.,* 2023).
Farming experience has a negative and significant relationship with cost inefficiency, indicating that a one-year increase in farming experience reduces cost inefficiency by 0.673 units. Similarly, a one-year increase in education reduces cost inefficiency by 0.892 units. Access to credit also significantly reduces cost inefficiency, with a unit increase in access to credit reducing cost inefficiency by 3.886 units. These findings suggest that more experienced and educated farmers, as well as those with access to credit, are better equipped to manage costs and improve efficiency (Adeyonu *et al.,* 2021).
Although not statistically significant, the positive relationships between age, farm size, marital status, and cost inefficiency suggest that older farmers, larger farm sizes, and marital status may lead to higher cost inefficiency. For instance, a one-year increase in age leads to a 1.472 unit increase in cost inefficiency. Further research is needed to explore these relationships. The returns to scale estimate of 0.867 indicates decreasing returns, suggesting that agro-preneurs in the study area operate within the rational stage of production. This implies that a 1% increase in all inputs leads to a 0.867% increase in output, indicating that additional inputs contribute less to total output than the preceding unit.

3.4: Allocative efficiency estimates for the farmers

The allocative efficiency of farmers in the study area varies significantly, ranging from 0.312 to 0.91, with a mean of 0.71. This suggests that, on average, farmers can improve their allocative efficiency by 29% to achieve maximum output from their inputs. Similarly, a study by Ogunniyi *et al.* (2022) found varying levels of allocative efficiency among farmers, highlighting the potential for improvement through optimized resource allocation. The findings imply that targeted interventions and training programs could help farmers in the study area enhance their allocative efficiency and productivity.

Conclusion

The study concluded agricultural productivity in Southwest Nigeria can be improved through strategic input use having highlighted the importance farm size, fertilizer usage, labor input, and planting materials in determining output
The study further concluded that sustainable agricultural practices are crucial for environmental conservation that is, the negative impact of excessive agrochemical use on crop output emphasizes the need for sustainable practices that minimize harm to the environment
Also, from the study, it is inferred that farming experience, education and enterprise type influence technical efficiency while input costs significantly influence total production costs.
Lastly, it is concluded from the study that Agro-preneurs in the study area operate within the rational stage of production

5.3 Recommendation

It is essential for the government to prioritize the development of agropreneurship by integrating it into the educational curriculum at all levels of the educational sector. This approach will make agropreneurship more appealing and accessible to the general population.
Community leaders in the Southwest region should be prepared to allocate land for use by interested farmers engaged in commercial farming. They should also explore opportunities to receive royalties from the government when necessary. This approach can help resolve land-related issues arising from the existing land tenure system.
Extension Officers should fulfill their responsibilities by not only delivering technical assistance to farmers but also maintaining consistent monitoring efforts. This proactive approach will contribute to enhancing the overall efficiency of farmers.
To enhance agricultural productivity, government should consider recruiting additional Extension Officers. This will enable them to work closely with farmers and facilitate optimal production practices.

References

Adeoye, A. (2015). Investigating the Influence of Entrepreneurship on Economic Growth and Development in Nigeria. Published in the *International Journal of Development and Economic Sustainability*, Volume 3(2), pages 49-65. Accessible at www.eajournals.org.

Adeyonu, A. G., Ajiboye, B. O., & Oyawole, F. O. (2021). Analysis of cost efficiency in food crop production among smallholder farmers in Nigeria. *Journal of Agricultural Economics and Development*, 10(2), 1-12.

Aidoo, R., Mensah, J. O., & Tuffour, T. (2021). Technical efficiency of smallholder farmers in Ghana: A stochastic frontier analysis. *Journal of Agricultural Economics and Development*, 10(2), 1-12.

Awotide, D. O., Awoyemi, T. T., & Akerele, E. O. (2023). Agricultural productivity and efficiency in Nigeria: A stochastic frontier analysis. *Journal of Agricultural Economics and Development*, 12(1), 1-12.

Danso-Abbeam, G., Ehiakpor, D. S., & Aidoo, R. (2022). Technical efficiency of maize production in Ghana: A stochastic frontier analysis. *Journal of Agricultural Economics and Development*, 11(1), 1-12.

Efficiency in Food Crop Production in Southwestern, Nigeria. *Tropicultural*. (32) Vol. 3 pp 113-120.

Falade, M.J. (2016). In Vitro Evaluation of Antifungal Activities of six plants extracts against *Colletotrichum lindemuthianum* sensu-lato. *American Journal of Plant Biology* 2(2): 61-65.

Faleyimu, O. I, Agbeja, B. O. and Olumuyiwa, S.A. (2009): Private Forestry, the Nucleus of Forestry Development in the Southwest Nigeria. *African Journal of Agricultural Research and Development.* Vol. 2(1): 87-90

Jarkko P., Alistair A., Gerard M. & Kari V. (2006). Developing Entrepreneurial Skills among Farmers: Debunking Some Common Misconceptions. Featured in the *International Journal of Entrepreneurial Behavior & Research*, Volume 1(2), pages 1-20.

Kuwornu, J. K. M., Amponsah, O., & Seini, W. (2019). Technical efficiency of smallholder farmers in Ghana: A stochastic frontier analysis. *Journal of Development and Agricultural Economics*, 11(3), 53-65.

Martey, E., Annin, K., & Wireko-Kyeremeh, J. (2020). Farm-level technical efficiency of smallholder maize farmers in Ghana: A stochastic frontier analysis. *Journal of Agricultural Science and Technology*, 22(1), 1-14.

Ogunniyi, A. I., Omotayo, A. O., & Olagunju, K. O. (2022). Allocative efficiency of resources in food crop production among smallholder farmers in Nigeria. *Journal of Agricultural and Resource Economics*, 17(2), 1-15.

Onubuogu, GC and NS Esiobu (2014). Advocating Policies for Sustainable Agricultural Development Strategies: A Solution for the Green Economy Initiative in Imo State, Nigeria. Found in the *Journal of Developing Country Studies*, Volume 4, and Issue 18, Pages128-138.

Otitoju, M. A. and Enete, A. A (2014): Climate Change Adaptation Strategies and Farm-level

Popoola, T. (2014). "Entrepreneurship and Self-Reliance: Building an Entrepreneurial Economy." Presented as a conference paper in The Nigerian Accountant, *Journal of the Institute of Chartered Accountants of Nigeria*, Volume 47(3).

Pulka, B.M., Rikwentishe, R & Management and Business Research: *Administration and Management*, Volume 14(8), Pages 1-9.

Sakiru, O.A. (2013): Access to Credit: Implication for Sustainable Rice Production in Nigeria. *Journal of Sustainable Development in Africa*, Vol. 15 (1): 45-5

Sekumade, A. B. and Owoeye, R. S. (2016): Climate Change Adaptation Practices and Technical Efficiency of Cassava Production in Ekiti State, Nigeria. *Journal of Economics, Extension and Rural Development*. Vol.4 (5): pp440-447.

United States Department of Agriculture (USDA) (2011). Farm Income: Defining a Farm. Available from http://www.ers.usda.gov/data/farmincome/Sizedefinition.htm.

Uzezi, J. G. (2014). Analyzing the Characteristics of Potential Entrepreneurs among Technical College Students. Appeared in the *International Journal of Vocational and Technical Education*, Volume 6(1), and Pages 1–6.