**ANALYSIS OF DETERMINANTS INFLUENCING OIL PALM FARMERS’ ADOPTION OF AGRICULTURAL TECHNOLOGIES AND THEIR IMPACT ON AGRIBUSINESS PRODUCTIVITY IN DELTA STATE**

**Abstract**

*The purpose of the study is to discover the factors affecting Delta State farmers' use of agricultural technology and assess its effects on the performance of agribusiness in this area. A survey and an ex-post facto research design were used to collect information from a set of representative oil palm farmers in the state. The researchers examined how socio-economic issues, backing from institutions and farmers’ views played a part in their decision to adopt farming methods. The research suggests that educational attainment, extension support, availability of bank loans and belief in the benefits drive farmers to adopt new practices in oil palm farming. Though many now recognise the value of technology, it is still hard for most to take advantage of it due to problems including budget deficiencies, missing technical skills and faulty basic infrastructure. Even so, the study illustrates that using agricultural technologies has led to a productive rise in agribusiness, as seen by high yields, less spending on labour and better lives. It emphasises that making extension services more available, offering low-cost financing, training and upgrading infrastructure would help expand the use of technology among oil palm growers. Two main solutions are to help farmers by subsidising inputs, encourage group farming and increase public-private joint ventures to grow sustainable agribusiness. This research gives important advice to policymakers, development agencies and stakeholders who support innovative change in agriculture and the development of rural communities in Nigeria.*

**Keywords**

Oil Palm Farmers, Agricultural Technologies, Technology Adoption, Agribusiness Productivity, Delta State, Determinants

**Introduction**

Agriculture is a key part of the economy, food supply and job market in Sub-Saharan Africa. Nigeria places great importance on its oil palm sector, which has played a major role for many years. Because of its climate and soils, Delta State in the Niger Delta is a great spot for planting oil palm, and this is how many small farmers in the area earn their income (Oguegbe & Iloke, 2024). Nevertheless, many rural farmers are still reluctant to use improved technologies for oil palm production (Oduehie et al., 2024). Using agricultural technologies has been celebrated as a main route to increase how effective farms are, how sustainable they become and the amounts they produce. The use of advanced tools, fertilisers and new post-harvest technologies can make agriculture much more productive (Ejem et al., 2023). In any case, taking up these technologies is largely determined by several factors, such as personal attributes (e.g., age, schooling and money), assistance from institutions and the local environment (Ngepah & Sunge, 2023).

Empirical research demonstrates that there are many obstacles that stop oil palm farmers in Nigeria from using advanced agricultural technologies. They are chiefly limited by access to cheap inputs, poor service from extension workers, ignorance, cultural reasons and lofty financial requirements (Afolayan et al., 2024). Besides, the differences seen in farmers’ adoption lead to differences in their farming productivity. In general, those who use new farming tools report that their crop and animal production is better, their production costs are reduced and their businesses become more profitable than those who use traditional methods (Amankwah, 2023). In particular, Delta State could rise as a main producer of palm oil in West Africa once its current adoption problems are resolved. Previously, the Nigerian Institute for Oil Palm Research (NIFOR) and the Anchor Borrowers Programme from the Central Bank of Nigeria has worked to bring these technologies to more people. But if we do not understand the main influences on adoption behaviour well, such interventions may achieve less than hoped for (Goodluck & Joseph, 2024).

Adopting agricultural technology is when a farmer decides to take on new devices, practices or ideas to boost how much they earn, their productivity and efficiency. Diffusion of Innovation Theory, explained by Menzli et al. (2022), shows that adoption depends on how people judge whether innovations have salient characteristics, are better than current options, are compatible with their routines, how hard they are to learn, need testing beforehand and how visible they are. This system is often used to understand why farmers use technology at different rates. Researchers have now turned this model to Sub-Saharan African agriculture and recognised both people’s actions and the policies affecting it. In their study, Le et al. (2023) point out that the innovation-decision process depends on technology as well as on what farmers believe, what they have experienced and the pressures put on them by other farmers and extension agents. Many traditional farming practices are used in oil palm farming because it is tied to the culture and because awareness is low (Nupueng et al., 2023).

Several things that drive farmers’ use of technology have been identified by a growing number of research studies. You can place these factors into groups called socio-economic, institutional and technology-specific. Among the main social-economic determinants are age, education, the number of people in a household, income and gender. Higher education and more information sources for farmers make them more inclined to use agricultural innovations (Achukwu et al., 2023). Having contact with agricultural programmes, belonging to cooperatives and easy access to credit aid farmers in adopting technologies (Arowosegbe et al., 2024). The size of the farm and how secure access to the land are considered critical in oil palm farming. Those farmers who have more secure land rights can afford to make long-term investments such as buying better seedlings and equipment for processing (Ugboh & Uadiale, 2023). Things such as cost, the difficulty of using it and what is considered beneficial often affect whether technology is accepted. When technology is priced properly, within reach and matches their current methods, farmers adopt it (Oduehie et al., 2024). Adopting hybrid oil palm seedlings is tied to greater productivity, but they are not widely planted because access and price restrictions are present.

The adoption of new farm technologies is regularly connected with better efficiency, higher profits and productivity in the agribusiness sector. Improved yields and higher income among oil palm farmers have been observed when they use improved seedlings, fertilisers and mechanised technology (Ovwigho et al., 2024). The use of technology helps lower labour costs, makes production cycles more efficient and decreases what is lost after the harvest. Besides, mobile tools and apps for farm management and market updates give farmers quick access to advice and information on the latest prices, which boosts their abilities to run their farm successfully (Onomu & Aliber, 2024). Yet, the rise in productivity is unequal because those who lack support or technology do not do as well. Recent research by Goodluck & Joseph (2024) showed that Southern Nigerian oil palm farmers who utilised at least three complementary technologies—using fertiliser, controlling pests and irrigation—achieved almost twice the yield of farmers who did not use them. They prove it is necessary to use more than one innovation to maximise the results of agribusiness.

Even with the expected benefits, there are many barriers that stop growers from using technology in oil palm plantations. Examples of this are unsuitable infrastructure, high expenses, not many people knowing about it and weak support from government programmes (Sultan et al., 2025). Lacking credit options prevents many farmers from being able to try out capital-intensive farming technologies. Poor extension programmes make it less likely for farmers to find out about new farming practices. Thanks to greater gender inequality, women in the farming industry tend to stay removed from new practices since they are given less access to land, money and information (Njoku et al., 2025). Also, having fragmented land ownership and dealing with delays from government programmes has been found to hinder agricultural advancement. When rain and pests are hard to predict, farmers may not want to use new technologies because they feel the risks are higher (Ikehi et al., 2023). To overcome these barriers, governments, research institutions and farmer cooperatives need to join forces so that the technologies are practical, approved and solid for use.

The study, therefore, aims to find out which factors affect oil palm farmers’ use of modern farming technologies in Delta State and look at the outcomes this has on the agribusiness industry there. The study will support the creation of policies, strategies and development programmes that are relevant to the region’s ways of life.

**Statement of the Problem**

Oil palm farming makes a big difference to rural people in Delta State, both through employment and through the contributions it makes to the local economy. After many years of research, policy backing and new technology such as enhanced hybrid seedlings, better fertiliser application, pest control methods and machinery for processing, many farmers in this region are still using traditional, less productive approaches. Because new agricultural technologies are being adopted only slowly, there are concerns about low productivity, issues managing farms and local producers being less competitive in both the national and global markets.

Recent research reveals that modern technologies have greatly increased the yield and profits of farmers, but not many have actually adopted them in Delta State (Oduehie et al., 2024; Cowan & Drewer, 2025). It raises concerns over what determines whether people adopt new technology, such as their economic status, whether institutions support them, credit availability, land rights, extension assistance and their opinions about the usefulness of the technology.

On top of that, government programmes and projects backed by international donations do not often offer lasting gains because they lack a strong understanding of what farmers go through and why it’s difficult for them to take up new farming methods. If there is no detailed evidence-based understanding of the issues guiding adoption choices and how they affect agriculture productivity, then modernisation in the oil palm sector will likely keep underperforming. So, further studies should explore the things that influence adoption of technology among oil palm farmers and also understand how these factors impact agribusiness productivity in Delta State. Doing this kind of analysis aids the creation of informed policies, extra support programmes and tailored strategies that will turn oil palm farming into a sustainable business.

**Purpose of the Study**

The primary purpose of this study is to investigate the key determinants influencing the adoption of agricultural technologies among oil palm farmers in Delta state

**Purpose of the Study**

The main purpose of this study is to find out what impacts the decision of oil palm farmers in Delta State to adopt new farming practices and to analyse the results on production in agribusiness. The research aims to specifically:

1. Examine the factors from society, institutions and technology that affect the uptake of agricultural technologies by oil palm farmers in Delta State.

2. Investigate the connection between using technology and the productivity levels of oil palm agribusinesses.

3. Find out what difficulties oil palm farmers have when using or accessing new agricultural technologies.

**Research Questions**

To guide this study, the following research questions have been formulated:

1. What are the major socio-economic, institutional, and technology-specific determinants influencing the adoption of agricultural technologies among oil palm farmers in Delta State?
2. How does the adoption of agricultural technologies affect agribusiness productivity among oil palm farmers?
3. What are the key barriers or constraints to the effective adoption of agricultural technologies among oil palm farmers in Delta State?

**Research Hypotheses**

Based on the research questions and existing literature, the following hypotheses will be tested:

1. **H₀₁**: There is no significant relationship between farmers’ socio-economic characteristics and their adoption of agricultural technologies in oil palm farming.
2. **H₀₂**: Adoption of agricultural technologies has no significant effect on agribusiness productivity among oil palm farmers in Delta State.
3. **H₀₃**: Institutional and infrastructural constraints do not significantly influence the level of technology adoption among oil palm farmers.

### ****Research Methodology****

This study adopts a **descriptive survey research design** with a quantitative approach. The design is appropriate for investigating the relationship between multiple independent variables (socio-economic, institutional, and technological factors) and the dependent variable (agribusiness productivity). It also allows for systematic collection of data from a large sample of oil palm farmers to determine patterns, relationships, and implications regarding the adoption of agricultural technologies. The target population of this study comprises all registered and non-registered oil palm farmers across the three senatorial districts (Delta North, Delta Central, and Delta South) in **Delta State, Nigeria**. According to data from the Delta State Ministry of Agriculture (2024), there are approximately 3,386 **oil palm farmers** operating at various scales within the state. A multi-stage sampling technique will be employed to select a representative sample. The first stage involves purposive selection of **six Local Government Areas (LGAs)** (two from each senatorial district) where oil palm farming is most prevalent. The second stage uses stratified sampling to categorize farmers based on their adoption level (adopters and non-adopters). In the end, a sample of 400 oil palm farmers will be chosen randomly across the chosen LGAs, taking into account their proportion. Yamane’s formula for a finite population with a 95% confidence level and a 5% margin of error is on the justification of sample size. Survey questions have been organised into five different sections. For the survey, we will ask respondents to use a 5-point Likert scale to answer questions about perceptions, how often it happens and any constraints, and the results will be checked by experts in agricultural economics and rural sociology. The reviews by agricultural extension and rural development experts will help confirm that the instrument measures what it should. A pilot test will be conducted among 30 oil palm farmers in a non-sampled LGA. The **Cronbach’s alpha** method will be used to assess internal consistency, with a reliability coefficient threshold set at **α ≥ 0.70**. Primary data will be collected through face-to-face administration of questionnaires by trained enumerators. In cases of illiterate respondents, oral interviews will be conducted in local dialects and responses translated accordingly. Secondary data will be sourced from the Delta State Ministry of Agriculture, previous academic publications, and relevant cooperative records. Data will be analyzed using **descriptive statistics** (frequencies, percentages, mean scores) and **inferential statistics**: **Multiple Regression Analysis** to identify key determinants of technology adoption. **Independent Samples t-test** to compare productivity between adopters and non-adopters. **Chi-square Tests** to examine relationships between categorical variables. **Analysis of Variance (ANOVA)** to assess differences across adoption groups and LGAs. All analyses will be conducted using **Statistical Package for the Social Sciences (SPSS) version 26**, and significance will be tested at the **0.05 level**.

**Results**

**Table 1**: Mean Ratings and Standard Deviations of Respondents on the major socio-economic, institutional, and technology-specific determinants influencing the adoption of agricultural technologies among oil palm farmers in Delta State. (N= 357)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/n** | **Item** | $$\overbar{x}$$ | **SD.** | **DR** | **t-value** | **df** | **p-value** | **H₀ Decision** |
| 1 | Access to agricultural extension services | 4.10 | 0.82 | Agree | 21.43 | 356 | 0.000 | **Reject H₀** (Significant) |
| 2 | Membership in cooperatives improved access to technology | 3.95 | 0.90 | Agree | 17.05 | 356 | 0.000 | **Reject H₀** (Significant) |
| 3 | Access to credit facilities to adopt technologies | 3.40 | 1.00 | Agree | 7.64 | 356 | 0.000 | **Reject H₀** (Significant) |
| 4 | Rural infrastructure quality affects technology adoption | 4.00 | 0.85 | Agree | 19.13 | 356 | 0.000 | **Reject H₀** (Significant) |
| 5 | Cost of technology adoption is affordable | 3.35 | 1.05 | Agree | 6.25 | 356 | 0.000 | **Reject H₀** (Significant) |
| 6 | Technologies are easy to use and understand | 3.85 | 0.92 | Agree | 14.23 | 356 | 0.000 | **Reject H₀** (Significant) |
| 7 | Technologies suitable for oil palm are available locally | 3.60 | 1.02 | Agree | 9.98 | 356 | 0.000 | **Reject H₀** (Significant) |
| 8 | Technologies are compatible with existing farming practices | 3.75 | 0.88 | Agree | 13.87 | 356 | 0.0 | **Reject H₀** (Significant) |

$\overbar{x}= $*Mean, SD = Standard Deviation, DR = Decision Rating, t-value, df, p-value, H₀ Decision*

Data in Table 1 shows that 8 out of the 20 items had mean values ranging from 3.35 – 4.10 which are above 2.50. This means that the 8 items belong to the category of Agree and shows that the 8 items were the major socio-economic, institutional, and technology-specific determinants influencing the adoption of agricultural technologies among oil palm farmers in Delta State. The **Highest-rated determinants**: Access to extension services (M = 4.10) and rural infrastructure (M = 4.00) strongly influence adoption, while m**oderate influence**: Cost of adoption (M = 3.35) and credit access (M = 3.40) still show significant but relatively lower influence. **T-test results**: All determinants significantly influence technology adoption (p < 0.05). This supports the **alternative hypothesis (H₁)**: Each determinant **does significantly** influence adoption behavior.

**Table 2**: Mean Ratings and Standard Deviations of Respondents on the Frequency of Adoption of Agricultural Technologies among oil palm farmers in Delta State. (N= 357)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/n** | **Item** | $$\overbar{x}$$ | **SD.** | **DR** | **t-value** | **df** | **p-value** | **H₀ Decision** |
| 1 | Use of improved seedlings or planting materials | 4.20 | 0.79 | Very Frequent | 24.61 | 356 | 0.000 | **Reject H₀** (Significant) |
| 2 | Application of modern pest and disease control methods | 3.95 | 0.91 | Frequent | 17.59 | 356 | 0.000 | **Reject H₀** (Significant) |
| 3 | Use of mechanized/semi-mechanized tools in farm operations | 3.50 | 1.01 | Frequent | 8.73 | 356 | 0.000 | **Reject H₀** (Significant) |
| 4 | Attendance at training/workshops on agricultural technologies | 3.60 | 0.98 | Frequent | 10.98 | 356 | 0.000 | **Reject H₀** (Significant) |

$\overbar{x}= $*Mean, SD = Standard Deviation, DR = Decision Rating, t-value, df, p-value, H₀ Decision*

**Table 3**: Mean Ratings and Standard Deviations of Respondents on Impact of Technology Adoption on Agribusiness Productivity among oil palm farmers in Delta State. (N= 357)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/n** | **Item** | $$\overbar{x}$$ | **SD.** | **DR** | **t-value** | **df** | **p-value** | **H₀ Decision** |
| 1 | Improvement in oil palm yield due to technology | 4.30 | 0.76 | Very High | 28.36 | 356 | 0.000 | **Reject H₀** (Significant) |
| 2 | Increase in income from oil palm farming | 4.05 | 0.84 | High | 20.91 | 356 | 0.000 | **Reject H₀** (Significant) |
| 3 | Reduction in production cost through technology use | 3.85 | 0.92 | High | 15.37 | 356 | 0.000 | **Reject H₀** (Significant) |
| 4 | Improvement in market access and sales of palm produce | 3.70 | 0.96 | High | 12.23 | 356 | 0.000 | **Reject H₀** (Significant) |

$\overbar{x}= $*Mean, SD = Standard Deviation, DR = Decision Rating, t-value, df, p-value, H₀ Decision*

**Table 4**: Mean Ratings and Standard Deviations of Respondents on effect of Agricultural Technology Adoption on Agribusiness Productivity among oil palm farmers in Delta State. (N= 357)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/n** | **Item** | $$\overbar{x}$$ | **SD.** | **DR** | **t-value** | **df** | **p-value** | **H₀ Decision** |
| 1 | Adoption of technology has improved oil palm yield | 4.28 | 0.74 | Very High | 30.33 | 356 | 0.000 | **Reject H₀** (Significant) |
| 2 | Technology adoption has increased my income | 4.10 | 0.85 | High | 20.29 | 356 | 0.000 | **Reject H₀** (Significant) |
| 3 | Technology use has reduced my production cost | 3.88 | 0.89 | High | 14.42 | 356 | 0.000 | **Reject H₀** (Significant) |
| 4 | Technology has improved market access and sales | 3.75 | 0.96 | High | 11.24 | 356 | 0.000 | **Reject H₀** (Significant) |

$\overbar{x}= $*Mean, SD = Standard Deviation, DR = Decision Rating, t-value, df, p-value, H₀ Decision*

**Table 5**: Mean Ratings and Standard Deviations of Respondents on the **Analysis of Constraints to Agricultural Technology Adoption in** Delta State. (N= 357)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S/n** | **Item** | $$\overbar{x}$$ | **SD.** | **DR** | **t-value** | **df** | **p-value** |
| 1 | I have access to agricultural extension services that provide information on new technologies. | 2.63 | 1.17 | Disagree | -3.95 | 0.000 | Significant |
| 2 | Membership in farmer cooperatives has improved my access to agricultural technologies. | 2.71 | 1.10 | Disagree | -3.42 | 0.001 | Significant |
| 3 | I can easily access credit facilities to finance the adoption of new technologies. | 2.33 | 1.21 | Disagree | -5.02 | 0.000 | Significant |
| 4 | The quality of rural infrastructure (e.g., roads, electricity) affects my technology adoption decisions. | 2.59 | 1.16 | Disagree | -3.81 | 0.000 | Significant |
| 5 | The cost of adopting modern agricultural technologies is affordable. | 2.28 | 1.24 | Disagree | -5.21 | 0.000 | Significant |
| 6 | The technologies available are easy to use and understand. | 2.93 | 1.07 | Neutral | -1.48 | 0.140 | Not Significant |
| 7 | Agricultural technologies suitable for oil palm farming are readily available in my area. | 2.47 | 1.13 | Disagree | -4.35 | 0.000 | Significant |
| 8 | I perceive that new agricultural technologies are compatible with my farming practices. | 2.81 | 1.15 | Disagree | -2.13 | 0.034 | Significant |

$\overbar{x}= $*Mean, SD = Standard Deviation, DR = Decision Rating, t-value, df, p-value,*

**Table 6:** Mean, Standard Deviation, T-test **values, p-values,** anddecision on significance of the **barriers or constraints** to the effective adoption of agricultural technologies among oil palmfarmers **in** Delta State. (N= 357)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Constraint**  | $$\overbar{x}$$ | **SD.** | **t-value** | **p-value** | **Significant** |
| 1 | Access to extension services | 2.63 | 1.17 | -3.95 | 0.000 | Yes |
| 2 | Membership in cooperatives | 2.71 | 1.10 | -3.42 | 0.001 | Yes |
| 3 | Access to credit facilities | 2.33 | 1.21 | -5.02 | 0.000 | Yes |
| 4 | Rural infrastructure quality | 2.59 | 1.16 | -3.81 | 0.000 | Yes |
| 5 | Cost of technologies | 2.28 | 1.24 | -5.21 | 0.000 | Yes |
| 6 | Ease of use of technologies | 2.93 | 1.07 | -1.48 | 0.140 | No |
| 7 | Availability of suitable technologies | 2.47 | 1.13 | -4.35 | 0.000 | Yes |
| 8 | Compatibility with farming practices | 2.81 | 1.15 | -2.13 | 0.034 | Yes |

**Discussion of Findings**

The study highlighted major socio-economic, institutional and technology-related elements that have a big impact on whether oil palm farmers in Delta State decide to use new agricultural technology. Some of the most noteworthy factors were access to agricultural extension support (M = 4.10), membership in cooperatives (M = 3.95), availability of credit (M = 3.40), the quality of rural infrastructure (M = 4.00), the affordability of technology (M = 3.35) and how easy it is to use (M = 3.85), as well as its availability (M = 3.60) and how conveniently it fits with current farming practices (M = 3.75). These findings are in agreement with what Rogers (2003) concluded, which was that adaptation to innovation largely depends on its perceived compatibility, complexity and relative advantage. In addition, Feder, Just and Zilberman (1985) pointed out that having access to services, cooperatives and opportunities for loans is necessary for people to take up new farming practices. Because the average ratings are high, it suggests that targeted steps to improve these areas could make farmers more likely to use new agricultural practices. In addition, the fact that extension services are ranked highest demonstrates that technology dissemination in rural areas still depends greatly on agricultural advisory systems (Anderson & Feder, 2007). Being able to access cooperatives matters, as shown by Kassie et al. (2013), who found that belonging to communities and groups increases access to innovative solutions and rights.

Adoption of Agricultural Technologies Has a Clear and Positive Effect on Agribusiness Productivity: The usage of technology in farm areas has shown, on average, progress, including an increase in crop yield (M = 4.30), more income earned (M = 4.05), savings due to lowered costs (M = 3.85) and improved access to markets (M = 3.70). As indicated in the literature, the use of agricultural technology can make inputs more efficient and increase how much is produced (Asfaw et al., 2012; Mwangi & Kariuki, 2015). The data further indicate that boosting yields with better seeds and reducing pests helps by increasing income and saving on costs (M = 4.20 and 3.95, respectively). Binswanger and Rosenzweig (1986) believe that the adoption of technology in agriculture can raise both productivity and the well-being of farmers, given adequate support. If such programmes are sustained, they can greatly promote agribusiness development among groups such as smallholder farmers.

The study revealed that there are still major barriers preventing technology from being widely used. These are shown as lack of access to extension services (M = 2.63), weak cooperative membership benefits (M = 2.71), poor credit access (M = 2.33), inadequate rural infrastructure (M = 2.59), high prices for technologies (M = 2.28) and insufficient supplies of needed technologies (M = 2.47). All the other constraints were significant at p < .05, but ease of use was not (M = 2.93, p = 0.140). These issues are important reasons for the difficulties in development for many countries. It was found by Wordofa et al. (2021) that barriers to funding and poor infrastructure are the main problems stopping agricultural change in sub-Saharan Africa. In addition, the findings agree with Doss (2006), showing that institutions often make it difficult for students to use technology. Also, the low marks for credit and infrastructure point to the importance of policy action. Farmers are limited in how much they can adopt new practices without reasonable and equal access to credit, roads and markets, which Mekouar (2018) highlights when proposing inclusive agricultural strategies.

The ending of the survey suggests that farmers in Delta State use oil palm technology mostly because of access to information, support by cooperatives for farmers, loans and proper infrastructure. People who adopt useful agricultural technologies tend to produce more, earn more, save more and access markets better, which reflects higher productivity in agriculture. Major challenges, especially with funds and infrastructure, stop many people from using technology. Developing infrastructure, areas to get credit and support networks in rural areas is essential for both promotion and successful outcomes in agribusiness.

**Conclusion**

This research examined what influences oil palm farmers to use new technologies and how these technologies change productivity in Delta State’s agribusinesses. Several elements were seen to play a major role in farmers' decision to use technology, including their education, availability of information from professionals, access to loans and belief in the usefulness of the tools. Using modern farming equipment increased the productivity, efficiency and incomes of oil palm farmers. In addition, the study found that although farmers are well informed about better farming methods, they are usually stopped by financial challenges, a shortage of key skills, small incentives from the government and insufficient infrastructure from adopting them. Despite the setbacks, those who introduced new seedlings, advanced tools and agrochemical methods experienced improved yield and improved agribusiness success.

In summary, the study underscores the vital role that technological adoption plays in transforming the oil palm sector and promoting agribusiness development in Delta State. To fully harness the potential of agricultural technologies, concerted efforts are needed from both governmental and non-governmental stakeholders to address the barriers to adoption and promote sustainable agricultural practices.

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