JOAHM, TASFUED
Journal of Agriculture and Hospitality Management

Agricultural Education Lecturers' Perspectives on Digital Agricultural Education and Youth Engagement for Sustainable Agripreneurship Development among Undergraduates in Lagos State Tertiary Institutions

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Abstract
The study examined the relationship between digital Agricultural Education, youth engagement and sustainable agripreneurship development among undergraduates in selected tertiary institutions in Lagos State, based on the perspectives of Agricultural Education lecturers. A correlational survey research design was adopted. The target population comprised undergraduates enrolled in Agricultural Education programmes in the selected institutions, while the respondent population consisted of 35 Agricultural Education lecturers, comprising 27 lecturers from the Lagos State University of Education and 8 lecturers from the Federal College of Education (Technical), Akoka. Since the respondent population was small and manageable, complete enumeration was adopted, and all 35 lecturers participated in the study. The lecturers were selected as respondents because they were directly involved in curriculum implementation, practical instruction, supervision of students' projects, integration of digital tools into teaching and learning, and assessment of students' competencies and engagement. Data were collected using a structured questionnaire that was subjected to face and content validation by experts in Agricultural Education, Entrepreneurship Education, and Educational Measurement and Evaluation. Internal consistency reliability of the multi-item scales was estimated using Cronbach's alpha coefficient, which yielded an overall coefficient of 0.89. Data were analysed using descriptive statistics, Pearson Product-Moment Correlation and multiple linear regression. The results showed a statistically significant positive relationship between digital Agricultural Education and sustainable agripreneurship development ($r = .672$, $p < .001$), as well as between youth engagement and sustainable agripreneurship development ($r = .718$, $p < .001$). Multiple regression analysis showed that the four dimensions of digital Agricultural Education jointly explained a substantial proportion of the variance in sustainable agripreneurship development, with an adjusted R^2 of .574. The overall regression model was statistically significant, $F(4, 30) = 16.18$, $p < .001$. Among the four dimensions, digital agribusiness and marketing education had the largest standardized regression coefficient ($\beta = .341$), followed by virtual/practical digital learning ($\beta = .284$), digital agricultural information access ($\beta = .236$), and AI/emerging agricultural technologies ($\beta = .205$). The study recommends the integration of practical training in e-commerce and digital marketing into Agricultural Education curricula, greater emphasis on hands-on application of digital learning through farm projects, and improvement of institutional digital infrastructure.

Keywords: Agricultural Education Lecturers, Digital Agricultural Education, Youth Engagement, Sustainable Agripreneurship Development, Undergraduates.

1. Introduction

Agriculture is experiencing a major technological transformation as a result of digital platforms, artificial intelligence (AI), virtual learning, online information systems, and digital markets (Ajala et al., 2025; Amanze, 2025; Iyanda et al., 2025). In response to this development, Agricultural Education needs to go beyond the mere transmission of traditional knowledge and should include digital competence, entrepreneurial thinking, innovation, and sustainability as part of the preparation of agricultural professionals (Oketoobo et al., 2025; Omodara & Onwunali, 2025).

Although Agricultural Education gives young people technical knowledge and practical skills throughout the various agricultural value chains, technical ability on its own is no longer enough. Nowadays, graduates need to understand how technology can be used to identify opportunities, obtain market information, manage

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enterprises, promote products, and make evidence-based decisions (Mahmud et al., 2025; Ofodile, 2025).

Digital Agricultural Education addresses this need by integrating a variety of digital information resources, virtual environments, AI, simulations, online databases, and digital marketing platforms into teaching and learning (Amanze, 2025; Oketoobo et al., 2025). In Lagos State, Agricultural Education lecturers are becoming more familiar with these technologies, although the adoption of effective technology-supported teaching methods may still lag behind awareness (Ajala et al., 2025). Similar results have been reported in Southeast Nigeria, where AI integration remains limited because of structural constraints, including inadequate infrastructure and insufficient training (Iyanda et al., 2025; Okeke & Ugwoke, 2024; Olorkor & Gideon, 2024).

Exposure to digital enterprise tools may provide students with opportunities to identify areas of interest in production, processing, marketing, and agricultural services and may increase the attractiveness of agricultural careers by presenting agriculture as a technology-oriented and commercially viable sector (Amanze, 2025; Omodara & Onwunali, 2025).

Youth engagement, involving participation, interest and commitment, is also important to the development of sustainable agripreneurship. Recent research and policy measures have highlighted innovative strategies, mentorship, access to resources, digital tools and targeted interventions as important considerations for increasing youth participation in agripreneurship (Kyari, 2025; Lagos State Ministry of Agriculture and Food Systems, 2025; Ofodile, 2025).

At the same time, sustainable agripreneurship involves establishing enterprises that are economically viable while taking environmental and social considerations into account through improved production efficiency, resource conservation, climate-risk management and understanding of market dynamics (Ajala et al., 2025b; Inyang & Uloh, 2025). This is particularly important in Lagos State, where agricultural production operates within an environment characterised by rapid urbanisation. Research indicates that although farmers may be aware of the resilience benefits of climate-smart practices, financial and resource constraints can limit their adoption, highlighting the importance of extension services, incentives and education (Ajala & Adekunle, 2025; Ajala et al., 2025b).

The inclusion of emerging technologies such as AI, the Internet of Things (IoT) and precision tools in agricultural education curricula has been associated with students' entrepreneurial intentions and practical skills (Ibironke et al., 2024; Ofodile, 2025; Omodara & Onwunali, 2025). Agricultural Education can therefore support sustainable agripreneurship when traditional production skills are combined with modern digital skills that enhance access to markets and entrepreneurial opportunities (Mahmud et al., 2025; Omodara & Onwunali, 2025).

The study brings together three concepts that are often examined separately: digital Agricultural Education, youth engagement, and sustainable agripreneurship development. It places particular emphasis on lecturers because of their responsibility for translating curriculum content, technologies and practical experiences into educational outcomes (Ajala et al., 2025; Inyang & Uloh, 2025). In this study, however, the lecturers were the respondents, while the undergraduate students constituted the population and educational context to which the assessments referred. The study therefore sought to determine the relationships between digital Agricultural Education, youth engagement and sustainable agripreneurship development among undergraduates based on the professional assessments of Agricultural Education lecturers.

Recent literature has examined various aspects of this issue, including the use of digital technology and AI in teaching, adoption of virtual learning by lecturers, youth agripreneurship and climate-smart agricultural practices. However, there remains a need for empirical examination of the relationships among digital Agricultural Education, youth engagement and sustainable agripreneurship development within tertiary Agricultural Education. The present study addresses this gap by combining digital Agricultural Education, youth engagement and sustainable agripreneurship development into one empirical framework and examining the relationships using evidence obtained from Agricultural Education lecturers.

2. Research Objectives

The study specifically sought to:

1. determine the relationship between digital Agricultural Education and sustainable agripreneurship development among undergraduates in selected tertiary institutions in Lagos State;
2. determine the relationship between youth engagement and sustainable agripreneurship development among undergraduates in selected tertiary institutions in Lagos State; and
3. determine the extent to which the various dimensions of digital Agricultural Education predict sustainable agripreneurship development among undergraduates in selected tertiary institutions in Lagos State.

3. Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

H_{01}: There is no significant relationship between digital Agricultural Education and sustainable agripreneurship development among undergraduates in selected tertiary institutions in Lagos State.

H_{02}: There is no significant relationship between youth

engagement and sustainable agripreneurship development among undergraduates in selected tertiary institutions in Lagos State.

H_{03}: The dimensions of digital Agricultural Education do not significantly predict sustainable agripreneurship development among undergraduates in selected tertiary institutions in Lagos State.

4. Review of Related Literature

Digital Agricultural Education involves the deliberate use of digital technologies such as virtual learning platforms, databases, AI, simulations, mobile applications and technology-supported business activities to teach, learn and develop agricultural skills (Ajala et al., 2025; Amanze, 2025; Mahmud et al., 2025). These technologies have been associated with students' knowledge, practical skill acquisition and understanding of agricultural concepts (Amanze, 2025; Mahmud et al., 2025; Oketoobo et al., 2025). AI represents an advanced component of digital Agricultural Education and can support teaching through intelligent tutoring, chatbots, automated information retrieval and decision-support applications (Iyanda et al., 2025; Oketoobo et al., 2025). However, although Ajala et al. (2025) reported a moderate level of lecturer awareness of AI in tertiary institutions in Lagos State, actual adoption in teaching may be constrained by gaps in lecturers' competence and institutional limitations. Similar challenges have been identified in Nigeria in relation to infrastructure, training and cost (Olorkor & Gideon, 2024, as cited in Iyanda et al., 2025; Omodara & Onwunali, 2025).

Virtual learning extends agricultural content beyond the conventional classroom by providing continued access to learning materials and practical demonstrations (Mahmud et al., 2025; Ofodile, 2025). Banjo (2025) recommends transforming classrooms into agripreneurship hubs through the use of precision tools, mobile applications and AI to attract young people and reflect contemporary agricultural business realities. In addition to adopting new technologies, Agricultural Education influences knowledge, attitudes and behaviours concerning sustainable resource management. Evidence from Ojo LGA in Lagos State suggests that agricultural education programmes are associated with the adoption of sustainable farming practices (Ibironke et al., 2024), while incorporating emerging technologies into entrepreneurship curricula has been associated with students' practical skills and entrepreneurial intentions (Omodara & Onwunali, 2025).

The involvement of young people through active participation in learning, innovation and business is central to sustainable agripreneurship. Various initiatives implemented by Lagos State and national institutions emphasise mentorship, digital tools, access to funding, incubation and targeted interventions to promote youth participation in commercially viable agripreneurship (Kyari, 2025; Lagos State Ministry of Agriculture and Food Systems, 2025; Ofodile, 2025). Developing viable agripreneurs requires alignment between curriculum content and practical occupational skills (Banjo, 2025; Omodara & Onwunali, 2025), while also taking climate-related risks into account.

Although farmers in Lagos State may recognise the resilience benefits of climate-smart agriculture, financial and resource limitations can constrain adoption and contributions to food security (Ajala & Adekunle, 2025; Ayejuyo et al., 2025). This indicates the need for educational programmes to incorporate climate resilience (Emmanuel & Nkiruka, 2024). It is also important to address gaps in risk management and awareness in agricultural production. For example, risks associated with aflatoxin in poultry production require appropriate awareness and mitigation measures (Oyegunwa et al., 2024). Access to land, finance and technology also remains important if agricultural knowledge is to be translated into viable and sustainable enterprises.

Digital Agricultural Education can serve as a link between traditional teaching methods and technology-based agricultural enterprises. Although digital tools, AI and virtual environments offer opportunities for skill development and engagement, their usefulness can be influenced by lecturers' adoption and structural constraints. Combining these technologies with youth engagement strategies such as mentorship, funding and incubation may strengthen entrepreneurial intentions and present agriculture as a feasible career choice. For sustainable agripreneurship, educational systems need to connect digital skills with practical risk management, climate-smart resilience and access to relevant resources.

4.1 Theoretical Framework

The study is based on Experiential Learning Theory (Kolb), which emphasises learning through concrete experience, reflective observation, abstract conceptualisation and active experimentation (Coleman et al., 2024). Agricultural Education readily incorporates experiential learning because students acquire knowledge through practical agricultural activities, demonstrations, projects and experiences connected with agricultural enterprise.

Digital technology and AI can complement experiential learning by providing virtual demonstrations, simulations, digital farm-management tools, online market information, AI-assisted decision-making and digital marketing activities. These applications provide opportunities for developing digital and AI literacies alongside practical skills (Delanoy, 2025; Amanze, 2025). The theory therefore provides a basis for examining the relationship between digitally supported Agricultural Education and entrepreneurial competence. Students can potentially transform knowledge into skills when they engage with agricultural content through practical and digital experiences and subsequently apply such knowledge to agricultural enterprise activities (Coleman et al., 2024;

Table 1: Descriptive Statistics of the Major Study Variables

Variables	N	Mean	SD
Digital Agricultural Education	35	3.81	0.55
Youth Engagement	35	3.85	0.65
Sustainable Agripreneurship Development	35	3.80	0.57

Table 2: Pearson Product-Moment Correlation between Digital Agricultural Education and Sustainable Agripreneurship Development

Variables	N	Mean	SD	r	p-value	Decision
Digital Agricultural Education	35	3.81	0.55	.672	< .001	Significant
Sustainable Agripreneurship Development	35	3.80	0.57			

Omodara & Onwunali, 2025).

5. Methodology

The study adopted a correlational survey research design to determine the direction and extent of relationships among variables that occur naturally, without modifying the characteristics of the respondents or the educational environment. The target population comprised undergraduates enrolled in Agricultural Education programmes in the selected tertiary institutions. The respondent population, from which the study data were obtained, comprised 35 Agricultural Education lecturers in the selected institutions. The institutions were Lagos State University of Education (LASUED) and the Federal College of Education (Technical), Akoka. These institutions were purposively selected because they provide Agricultural Education programmes and have faculty members who are directly involved in preparing students for agricultural enterprise.

The respondent population consisted of 27 Agricultural Education lecturers from LASUED and 8 from FCE(T), Akoka. Since the total respondent population of 35 lecturers was small and manageable, complete enumeration was adopted, meaning that all 35 lecturers participated in the study. LASUED therefore accounted for 77.1% of the respondents, while FCE(T), Akoka accounted for 22.9%.

The lecturers were selected as respondents because of their direct and sustained professional interaction with the undergraduate population. Their responsibilities included curriculum implementation, classroom and practical agricultural instruction, supervision of students' projects, incorporation of digital tools into teaching and learning, and assessment of students' academic, practical and entrepreneurial competencies. These responsibilities provided the basis for their professional assessment of students' exposure to digital Agricultural Education, level of engagement and sustainable agripreneurship development. Data were collected using a structured instrument titled the Digital Agricultural Education, Youth Engagement and Sustainable Agripreneurship Development Questionnaire (DAEYESADQ). The questionnaire comprised multi-item subscales designed to assess digital Agricultural Education, youth engagement and sustainable agripreneurship development. The items were presented on a five-point Likert scale ranging from 5 = Strongly Agree to 1 = Strongly Disagree.

Face and content validity of the instrument were established through expert review by specialists in Agricultural Education, Entrepreneurship Education, and Educational Measurement and Evaluation. Internal consistency reliability was assessed for the multi-item scales using Cronbach's alpha coefficient. Cronbach's alpha was used to estimate the degree of internal consistency among the items measuring the constructs. The overall Cronbach's alpha coefficient obtained for the instrument was 0.89, which was considered adequate for the study.

The data were analysed using descriptive and inferential statistics. Mean and standard deviation were used to summarise the major study variables before inferential analysis. Pearson Product-Moment Correlation was used to examine the relationships between digital Agricultural Education and sustainable agripreneurship development and between youth engagement and sustainable agripreneurship development. Multiple linear regression analysis was used to determine the extent to which the four dimensions of digital Agricultural Education jointly predicted sustainable agripreneurship development. The hypotheses were tested at the 0.05 level of significance.

6. Results

6.1 Descriptive Statistics of the Study Variables

The results in Table 1 show that the mean scores for Digital Agricultural Education (M = 3.81, SD = 0.55), Youth Engagement (M = 3.85, SD = 0.65), and Sustainable Agripreneurship Development (M = 3.80, SD = 0.57) were relatively high on the five-point response scale. The descriptive results provide an initial summary of the respondents' assessments of the three major constructs before examining their relationships through correlation analysis.

6.2 Research Hypothesis One

H_{01}: There is no significant relationship between digital Agricultural Education and sustainable agripreneurship development among undergraduates in selected tertiary institutions in Lagos State.

Table 3: Pearson Product-Moment Correlation between Youth Engagement and Sustainable Agripreneurship Development

Variables	N	Mean	SD	r	p-value	Decision
Youth Engagement	35	3.85	0.65	.718	< .001	Significant
Sustainable Agripreneurship Development	35	3.80	0.57			

Table 4: Multiple Linear Regression Model Summary

R	R^2	Adjusted R^2	Standard Error
.790	.624	.574	.367

Table 5: ANOVA for the Regression Model

Model	Sum of Squares	df	Mean Square	F	p-value
Regression	8.721	4	2.180	16.18	< .001
Residual	4.043	30	0.135		
Total	12.764	34			

Table 6: Regression Coefficients of Digital Agricultural Education Dimensions

Predictor	B	SE	Beta (β)	t	p-value	Decision
Constant	0.841	0.392	—	2.15	.040	Significant
Digital agricultural information access	.218	.089	.236	2.45	.020	Significant
Virtual/practical digital learning	.271	.096	.284	2.82	.008	Significant
AI/emerging agricultural technologies	.163	.072	.205	2.26	.031	Significant
Digital agribusiness/marketing education	.302	.084	.341	3.60	.001	Significant

A Pearson Product-Moment correlation coefficient of **r** = .672 was obtained, indicating a strong positive association between Digital Agricultural Education and Sustainable Agripreneurship Development. The association was statistically significant at $p < .001$. Since the p-value was less than the 0.05 level of significance, the null hypothesis was rejected.

The result indicates that higher reported levels of Digital Agricultural Education were associated with higher reported levels of Sustainable Agripreneurship Development among the undergraduates, based on the assessments provided by the Agricultural Education lecturers. Because the study employed a correlational design, the result indicates an association between the variables and does not establish that Digital Agricultural Education caused the observed level of sustainable agripreneurship development.

6.3 Research Hypothesis Two

H_{02}: There is no significant relationship between youth engagement and sustainable agripreneurship development among undergraduates in selected tertiary institutions in Lagos State.

The results show a strong positive association between Youth Engagement and Sustainable Agripreneurship Development (**r = .718, p < .001**). Since the p-value was less than the 0.05 level of significance, the null hypothesis was rejected.

The finding indicates that higher reported levels of youth engagement in agricultural education, practical work, innovation and enterprise-related activities were associated with higher reported levels of Sustainable Agripreneurship Development among the undergraduates, according to the assessments of the Agricultural Education lecturers. The result should be interpreted as an association rather than evidence that youth engagement causes sustainable agripreneurship development.

6.4 Research Hypothesis Three

H_{03}: The dimensions of digital Agricultural Education do not significantly predict sustainable agripreneurship development among undergraduates in selected tertiary institutions in Lagos State.

The multiple linear regression model included Sustainable Agripreneurship Development as the criterion variable and four dimensions of Digital Agricultural Education as predictor variables: digital agricultural information access, virtual/practical digital learning, AI/emerging agricultural technologies, and digital agribusiness/marketing education.

The model produced an R = .790, R^2 = .624 and Adjusted R^2 = .574. The adjusted R^2 indicates that, after adjustment for the number of predictors and the sample size, the four dimensions of Digital Agricultural Education jointly accounted for 57.4% of the variance in Sustainable Agripreneurship Development in the study sample. The remaining 42.6% represents variance not accounted for by the predictors included in the model and the adjustment for model complexity. The adjusted R^2 therefore provides a more appropriate estimate of the explanatory performance of the model for this sample than the unadjusted R^2.

The ANOVA result showed that the overall multiple regression model was statistically significant, $F(4, 30) = 16.18$, $p < .001$. This indicates that the regression

model containing the four dimensions of Digital Agricultural Education provided a statistically significant prediction of Sustainable Agripreneurship Development compared with a model containing no predictors. In other words, the four dimensions, when considered jointly, were significantly associated with variation in Sustainable Agripreneurship Development in the respondents' assessments. The significant F-test therefore provided a basis for examining the individual regression coefficients to determine the contribution of each predictor to the model.

The individual regression coefficients show that all four dimensions of Digital Agricultural Education made statistically significant contributions to the regression model. Digital agricultural information access had a significant positive standardized coefficient ($\beta = .236$, $p = .020$), while virtual/practical digital learning also had a significant positive coefficient ($\beta = .284$, $p = .008$). AI/emerging agricultural technologies significantly contributed to the model ($\beta = .205$, $p = .031$), while digital agribusiness/marketing education had a significant positive coefficient ($\beta = .341$, $p = .001$).

Among the four predictors, digital agribusiness and marketing education had the largest standardized regression coefficient ($\beta = .341$), followed by virtual/practical digital learning ($\beta = .284$), digital agricultural information access ($\beta = .236$) and AI/emerging agricultural technologies ($\beta = .205$). Thus, within this regression model and holding the other predictors constant, digital agribusiness and marketing education had the strongest statistical association with Sustainable Agripreneurship Development. These coefficients indicate statistical prediction and association and should not be interpreted as establishing causal effects.

7. Discussion of Findings

7.1 Digital Agricultural Education and Sustainable Agripreneurship Development

The study found a strong, positive and statistically significant association between Digital Agricultural Education and Sustainable Agripreneurship Development (**$r = .672$, $p < .001$**). This indicates that higher reported levels of digital agricultural information access, virtual and practical digital learning, AI and emerging technologies, and digital agribusiness and marketing education were associated with higher reported levels of Sustainable Agripreneurship Development among the undergraduates, based on the assessments of Agricultural Education lecturers. Because the study employed a correlational design, the finding should not be interpreted as evidence that Digital Agricultural Education caused the observed level of Sustainable Agripreneurship Development.

The finding is consistent with Kudama et al. (2021) and Mabaya and Porciello (2022), who noted that digital solutions in Sub-Saharan Africa improve access to current market, financial and value-chain information and may contribute to productivity and income outcomes. Likewise, Porciello et al. (2022) found that digital agricultural services are associated with changes in farming practices and knowledge acquisition. Soma and Nuckchady (2021) also emphasised the growing need for training in AI, robotics and big data so that learners can take advantage of technological opportunities while understanding their limitations.

Digital Agricultural Education may therefore have practical relevance beyond conventional classroom learning by providing access to digital business opportunities, markets and risk-management tools that are relevant to sustainable agricultural enterprise. However, the present study establishes an association rather than a causal effect.

7.2 Youth Engagement and Sustainable Agripreneurship Development

There was also a strong, positive and statistically significant relationship between Youth Engagement and Sustainable Agripreneurship Development ($r = .718$, $p < .001$). The finding indicates that higher reported levels of participation in agricultural education, practical work, innovation and value-chain activities were associated with higher reported levels of Sustainable Agripreneurship Development.

This finding is consistent with Yami et al. (2019) and Ouko et al. (2022), who identified youth involvement in agribusiness as an important consideration for employment, rural development and food security when appropriate training and support systems are available. Akrong et al. (2021) and Magagula and Tsvakirai (2020) similarly reported associations involving agricultural education, access to credit, extension services, attitudes and young people's participation in agricultural value chains. Mukembo et al. (2020) also reported that students who experienced hands-on, project-based learning demonstrated higher perceived agripreneurship competencies than students who received traditional instruction.

Meaningful youth engagement may therefore extend beyond attendance to include active participation in practical learning, mentorship, innovation and activities connected with real-world value chains. Nevertheless, the correlational nature of the present study means that the observed relationship should not be interpreted as evidence of a direct causal effect.

7.3 Digital Agricultural Education Dimensions as Predictors of Sustainable Agripreneurship Development

The multiple regression analysis showed that the four dimensions of Digital Agricultural Education jointly produced a statistically significant prediction of Sustainable Agripreneurship Development, $F(4, 30) = 16.18$, $p < .001$. The model had an R^2 of .624 and an adjusted R^2 of .574, indicating that the four predictors jointly accounted for 57.4% of the variance in Sustainable Agripreneurship Development after adjustment for the number of predictors and sample

size.

Digital agribusiness and marketing education had the largest standardized coefficient (β = .341), followed by virtual/practical digital learning (β = .284), digital agricultural information access (β = .236) and AI/emerging agricultural technologies (β = .205). The relative size of these coefficients indicates that digital agribusiness and marketing education had the strongest statistical association with Sustainable Agripreneurship Development among the four predictors in the model, while holding the other predictors constant.

The finding concerning digital agribusiness and marketing education is consistent with evidence that digital tools can improve market access, price information and value-chain opportunities (Chikuni & Kilima, 2019; Haile et al., 2019). Virtual and practical digital learning also showed a significant contribution, supporting the view that digital tools may be particularly relevant to entrepreneurship education when connected with practical activities such as pitching and business modelling (Mukembo et al., 2020; Secundo et al., 2021). Digital agricultural information access also made a significant contribution, consistent with Oyinbo et al. (2020), who emphasised the importance of user-friendly digital decision-support tools. AI and emerging agricultural technologies likewise showed a statistically significant contribution, consistent with Abdulshakur and Sulaiman (2021), who examined technological and other factors associated with young people's intentions toward agribusiness.

Collectively, the findings indicate that Digital Agricultural Education is statistically associated with Sustainable Agripreneurship Development when digital marketing, agricultural information access, emerging technologies and practical digital learning are considered together. The results do not, however, establish that any of these dimensions independently cause changes in sustainable agripreneurship development.

8. Conclusion

The study examined the relationships between Digital Agricultural Education, Youth Engagement and Sustainable Agripreneurship Development among undergraduates in selected tertiary institutions in Lagos State, using evidence obtained from Agricultural Education lecturers. The results showed a positive and statistically significant relationship between Digital Agricultural Education and Sustainable Agripreneurship Development. Youth Engagement was also positively and significantly associated with Sustainable Agripreneurship Development.

Furthermore, the four dimensions of Digital Agricultural Education jointly produced a statistically significant regression model for Sustainable Agripreneurship Development. The model had an adjusted R^2 of .574, indicating that the four dimensions jointly accounted for 57.4% of the variance in Sustainable Agripreneurship Development after adjustment for the number of predictors and sample size. Digital agribusiness and marketing education had the largest standardized regression coefficient among the four dimensions.

The findings suggest that Agricultural Education can benefit from being digitally enabled, practical and enterprise-oriented. Digital technologies may be integrated with agricultural production, innovation, marketing, enterprise development and sustainability rather than being used solely for lecture delivery. Since the study was correlational and relied on lecturers' assessments, the findings should be understood as evidence of relationships and statistical prediction rather than causal effects.

9. Recommendation

Based on the findings, three key recommendations are made:

i. Practical training in e-commerce, digital marketing, online marketplaces and market information systems should be integrated into Agricultural Education curricula so that students can develop competencies for applying these tools in agricultural enterprise activities.

ii. Virtual and digital learning should move beyond theoretical exposure towards practical application through farm projects, agricultural processing, enterprise planning and marketing activities.

iii. Institutions should strengthen access to reliable internet services, digital devices, specialised software and agricultural databases to provide lecturers and students with an enabling environment for technology-supported Agricultural Education.

References

Abdulshakur, M. M., & Sulaiman, U. (2021). Determinants of youths' intention in agribusiness using theory of planned behavior. *Journal of Agripreneurship and Sustainable Development, 4*(1), 159–164.

Ajala, O. S., Adekunle, O. A., Ayejuyo, B. S., Kelani, O. M., Aina, O. E., Ogedengbe, K. K., & Banjo, J. O. S. (2025). Leveraging artificial intelligence in enhancing the pedagogy of agricultural education in tertiary institutions in Lagos State, Nigeria. *International Journal of Educational Advancement and Social Sciences, 5*(1), 370–374.

Akrong, R., Mbogoh, S. G., & Irungu, P. (2021). Youth agripreneurship in the horticultural value-chain: The case of small-scale mango farmers in Southern Ghana. *African Development Review, 32*(S1), S68–S77.

Amanze, P. C. (2025). AI-powered agro-science simulations: Enhancing comprehension and application among university students in the Niger Delta region of Nigeria. *Asian Journal of Education and Social Studies,*

51(6), 200–213.

Ayejuyo, B. S., Adekunle, O. A., Kelani, O. M., Aina, O. E., Ogedengbe, K. K., Ajala, O. S., & Banjo, J. O. S. (2025). Investigating climate-smart agricultural practices for food security in Lagos State, Nigeria. Paper presented at the Maiden International Conference of the College of Agriculture, Lagos State University of Science and Technology, Ikorodu.

Banjo, J. O. S. (2025). Fostering sustainable agripreneurship amongst youth through appropriate classroom engagements. Lead paper presented at the Annual Hybrid Conference, University of Nigeria, Nsukka.

Chikuni, T., & Kilima, F. T. M. (2019). Smallholder farmers' market participation and mobile phone-based market information services in Lilongwe, Malawi. *The Electronic Journal of Information Systems in Developing Countries, 85*(6), e12097.

Coleman, B. M., Bunch, J. C., & Roberts, T. G. (2024). Experiential learning in agricultural education: A philosophical discussion. *Journal of Agricultural Education, 65*(1), 283–302.

Delanoy, N. (2025). Experiential learning to support digital and artificial intelligence literacies in postsecondary education. *Canadian Journal of Learning and Technology, 51*(3), 1–25.

Emmanuel, O. E., & Nkiruka, B.-C. (2024). Impact of climate change and extension service on rice farmers' yield in Ebonyi State, Nigeria. *Asian Journal of Agriculture, 8*(2), 116–123.

Haile, M. G., Wossen, T., & Kalkuhl, M. (2019). Access to information, price expectations and welfare: The role of mobile phone adoption in Ethiopia. *Technological Forecasting and Social Change, 145*, 82–92.

Henning, J. I. F., Jammer, B. D., & Jordaan, H. (2022). Youth participation in agriculture, accounting for entrepreneurial dimensions. *The Southern African Journal of Entrepreneurship and Small Business Management, 14*(1), a461.

Inyang, N. D., & Uloh, C. O. (2025). Generative AI competence and research productivity among agricultural lecturers in tertiary institutions in Akwa Ibom State, Nigeria. *Indian Research Journal of Extension Education, 25*(2&3), 147–155.

Iyanda, O. J., Adelaiye, I., Afolabi, A., & Adelaiye, V. (2025). Leveraging AI for agricultural education: Innovations and challenges in Nigeria. *2025 TECETEL Book of Conference Proceedings, 1*(1), 118–130.

Kudama, G., Dangia, M., Wana, H., & Tadese, B. (2021). Will digital solution transform Sub-Sahara African agriculture? *Artificial Intelligence in Agriculture, 5*, 292–300.

Kyari, A. (2025, December 18). Scaling up youth agripreneurship is inevitable in agri-food systems transformation in Nigeria. *Federal Ministry of Agriculture and Food Security*. https://agriculture.gov.ng/scaling-up-youth-agripreneurship-is-inevitable-in-agri-food-systems-transformation-in-nigeria-kyari/

Lagos State Ministry of Agriculture and Food Systems. (2025). *Empowering the next generation of agripreneurs: Lagos Agripreneurship Programme (LAP 25) and related youth initiatives*. https://lagosagric.com/empowering-the-next-generation-of-agripreneurs/

Mabaya, E., & Porciello, J. (2022). Can digital solutions transform agri-food systems in Africa? *Agrekon, 61*(1), 1–13.

Magagula, B., & Tsvakirai, C. Z. (2020). Youth perceptions of agriculture: Influence of cognitive processes on participation in agripreneurship. *Development in Practice, 30*(2), 234–243.

Mahmud, W., Uguru, C., & Mustapha, Y. (2025). Impact of digital-learning tools on knowledge and skills acquisition in agricultural sciences among secondary school students in Northern Nigeria. *Federal University Gusau Faculty of Education Journal, 2*(3), 267–275.

Mukembo, S. C., Edwards, M. C., & Robinson, J. S. (2020). Comparative analysis of students' perceived agripreneurship competencies and likelihood to become agripreneurs depending on learning approach: A report from Uganda. *Journal of Agricultural Education, 61*(2), 93–114.

Ofodile, N. S. (2025). Integration of digital technologies in agricultural education for youth engagement in Anambra State. *Unizik Journal of Educational Research and Vocational Studies, 3*(1).

Oketoobo, E. A., Umoh, I. J., & Nnadi, V. M. (2025). Artificial intelligence technologies used in teaching agricultural education in universities in Nigeria. *International Journal of Educational Studies, 4*(1), 232–240.

Omodara, A. A., & Onwunali, M. R. O. (2025). Integrating emerging technologies into agricultural education entrepreneurship curriculum for transformation in Nigerian tertiary institutions. *Zenodo*.

Ouko, K. O., Ogola, J. R. O., Ng'on'ga, C. A., & Wairimu, J. R. (2022). Youth involvement in agripreneurship as nexus for poverty reduction and rural employment in Kenya. *Cogent Social Sciences, 8*(1), 2078527.

Oyegunwa, A. S., Olawumi, A. T., Mako, A. A., & Sodique, F. R. (2024). Awareness and mitigation measures of aflatoxin among poultry farmers and feed millers in Ijebu-Ode and Igbesa area of Ogun State, Nigeria.

Nigerian Journal of Animal Production, 196–199. https://doi.org/10.51791/njap.vi.4446

Oyinbo, O., Chamberlin, J., & Maertens, M. (2020). Design of digital agricultural extension tools: Perspectives from extension agents in Nigeria. *Journal of Agricultural Economics, 71*(3), 798–815.

Porciello, J., Coggins, S., Mabaya, E., & Otunba-Payne, G. (2022). Digital agriculture services in low- and middle-income countries: A systematic scoping review. *Global Food Security, 34*, 100640.

Secundo, G., Mele, G., Del Vecchio, P., Elia, G., Margherita, A., & Ndou, V. (2021). Threat or opportunity? A case study of digital-enabled redesign of entrepreneurship education in the COVID-19 emergency. *Technological Forecasting and Social Change, 166*, 120565.

Soma, T., & Nuckchady, B. (2021). Communicating the benefits and risks of digital agriculture technologies: Perspectives on the future of digital agricultural education and training. *Frontiers in Communication, 6*, 762201.

Yami, M., Feleke, S., Abdoulaye, T., Alene, A., Bamba, Z., & Manyong, V. (2019). African rural youth engagement in agribusiness: Achievements, limitations, and lessons. *Sustainability, 11*(1), 185.