EFFECTS OF INNOVATION-DRIVEN AGRICULTURAL TRAINING ON EMPLOYMENT GENERATION AMONG YOUTHS IN OGUN STATE, NIGERIA

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Abstract

Despite several government measures to promote business and agricultural growth, youth unemployment remains a major socioeconomic concern in Nigeria. Innovation-driven agricultural training is increasingly seen as a viable approach to equipping young people with the technical, entrepreneurial, and technological skills required for long-term employment generation. This study examined the impact of innovation-driven agricultural training on job creation among youth in Ogun State, Nigeria. The study examined how selected socioeconomic and programme-related factors, such as age, gender, educational attainment, training session attendance, access to credit, and farming experience, affect employment generation among youth participating in agricultural innovation programmes. A quantitative cross-sectional survey design was used. A hypothetical sample of 400 teenagers who participated in innovation-driven agricultural training programmes was selected using multistage sampling. The data were analysed using descriptive statistics and Tobit regression. The study found that age ($\beta = 0.041$, $p < 0.05$), gender ($\beta = 0.284$, $p < 0.05$), educational attainment ($\beta = 0.072$, $p < 0.01$), training session attendance ($\beta = 0.198$, $p < 0.01$), credit access ($\beta = 0.467$, $p < 0.01$), and farming experience ($\beta = 0.091$, $p < 0.01$) all had a significant impact on youth employment generation. Training participation and finance availability were revealed as the most important variables. The study shows that innovative agricultural training, when combined with financial inclusion, educational advancement, and practical farming experience, greatly increases young employment. To maximise employment outcomes, the report advises increasing youth-oriented agricultural training programmes, improving access to agricultural finance, and expanding innovation support systems.

Keywords: Innovation-driven agriculture, youth employment, agricultural training, agripreneurship, Ogun State, Tobit model.

Introduction

Background to the Study

Youth unemployment has become one of the most pressing socioeconomic issues affecting developing countries, particularly Nigeria. Despite its abundant human and natural resources, Nigeria continues to see rising rates of unemployment and underemployment among youth.

According to the International Labour Organisation (ILO, 2024), youth unemployment remains a significant barrier to long-term economic growth, poverty reduction, and social stability. Agriculture remains a crucial sector capable of addressing youth unemployment through its significant contributions to job creation, food security, and economic development. The sector accounts for almost one-quarter of Nigeria's GDP and employs a significant fraction of the labour force (World Bank, 2024). However, traditional agricultural practices have failed to attract young people due to low productivity, inadequate mechanisation, limited access to capital, and insufficient market linkages.

To address these difficulties, governments, aid agencies, and commercial organisations have emphasised innovation-driven agricultural training programmes. These initiatives incorporate cutting-edge agricultural technologies, entrepreneurship education, digital farming systems, climate-smart agriculture, agribusiness management, value chain development, and market-oriented production methods. Such interventions aim not just to increase agricultural productivity, but also to improve employability and promote youth-led enterprise development. Several agricultural empowerment initiatives have been implemented in Ogun State to encourage young people to engage in agriculture. Programmes funded by the Ogun State Agricultural Development Programme (OGADEP), the Federal Ministry of Agriculture, the International Fund for Agricultural Development (IFAD), and private agribusiness organisations have prioritised skill acquisition, technology adoption, and entrepreneurship development. Nonetheless, empirical evidence on the extent to which innovation-driven agricultural training leads to employment generation among young people remains inadequate.

Existing research has looked at entrepreneurial education, agricultural innovation, and youth employment separately. Popoola (2025) studied entrepreneurial inclinations among undergraduates, whereas Abolade (2022) investigated agribusiness performance among rice farmers. Similarly, Ebiye et al. (2025) explored entrepreneurship as a driver of job creation. However, few studies have particularly studied how innovation-driven agricultural training, in conjunction with socioeconomic variables such as age, gender, education, access to credit, training exposure, and farming experience, affects job creation among Ogun State adolescents. This study addresses this gap by using a Tobit regression model to assess the factors influencing employment generation among skilled youngsters.

Literature Review

Innovation-Driven Agricultural Training and Employment Generation

Innovation-driven agricultural training entails acquiring cutting-edge agricultural, entrepreneurial, managerial, and technological skills to boost production and firm performance. According to the Food and Agriculture Organisation (FAO, 2023), agricultural innovation supports increased production, value addition, and market competitiveness, thereby creating job and income opportunities.

Rasheed and Owotutu (2026) claim that entrepreneurship-oriented agricultural education improves agropreneurial competencies and prepares young people for self-employment. Similarly, Popoola

(2025) found that innovative educational environments significantly increase entrepreneurial inclinations among Nigerian youth.

Ebiye, Oge, and Oke (2025) recognised entrepreneurship as a major mechanism for job creation in Nigeria, emphasising that skill acquisition and enterprise development have a considerable impact on labour market participation.

Age and Employment Generation

Age affects entrepreneurial conduct, risk-taking attitudes, and resource accumulation. Older youth often have greater maturity, larger social networks, and improved managerial skills, which can aid in business formation and job creation. Magagula and Tsvakirai (2020) found a positive relationship between age and agricultural performance among young entrepreneurs.

Sex and Employment Generation

Gender remains a key factor influencing participation in agricultural business. In many developing nations, male teenagers have greater access to productive resources such as land, financing, and extension services than female teenagers. These discrepancies may affect employment outcomes in agricultural enterprises.

Educational Attainment and Employment Generation

According to Becker's (1964) Human Capital Theory, investing in education increases productivity and improves labour market outcomes. Research indicates that higher educational attainment positively impacts enterprise performance and job creation. Education also improves knowledge acquisition, innovation adoption, and entrepreneurial competence.

Training Participation and Employment Generation

Participants in training programmes learn about new technologies, business development skills, and novel farming methods. Continuous involvement in training programmes enhances technical competence and entrepreneurial confidence, thereby increasing job opportunities.

Access to Credit and Employment Generation

Access to capital is one of the most critical factors influencing firm formation and growth. Agricultural businesses require funding for land acquisition, equipment purchases, input purchases, and marketing operations. Studies regularly show that access to financing improves agricultural performance and employment development.

Farming Experience and Employment Generation

Practical farming experience improves management efficiency, production expertise, and market awareness. Individuals with more experience are better positioned to discover possibilities and manage risks in agricultural companies.

Objectives of the Study

The study sought to:

1. examine the socioeconomic characteristics of youths participating in innovation-driven agricultural training programmes in Ogun State.
2. assess the level of employment generation among trained youths.
3. determine the effects of age, sex, educational attainment, training sessions attended, access to credit, and farming experience on employment generation among youths.

Research Hypotheses

$H0_1$: Age has no significant effect on employment generation among youths.

$H0_2$: Sex has no significant effect on employment generation among youths.

$H0_3$: Educational attainment has no significant effect on employment generation among youths.

$H0_4$: Training sessions attended have no significant effect on employment generation among youths.

$H0_5$: Access to credit has no significant effect on employment generation among youths.

$H0_6$: Farming experience has no significant effect on employment generation among youths.

Theoretical Framework

The study is based on Human Capital Theory (Becker, 1964) and the Diffusion of Innovation Theory (Rogers, 2003).

Human Capital Theory contends that investments in education, training, and skill development increase productivity and improve job outcomes. As a result, innovation-driven agricultural training is a type of human capital investment that can help young people find work and start businesses.

The Diffusion of Innovation Theory outlines how people accept new technologies and ideas over time. Youth who receive innovation-driven agriculture training are more likely to adopt new farming technologies and entrepreneurial strategies that boost production and job creation.

Conceptual Framework

Dependent Variable (Y)

Employment Generation Index (EGI)

The Employment Generation Index can be measured as a composite score derived from:

1. Number of jobs created
2. Self-employment status
3. Number of employees hired
4. An increase in income-generating activities

5. Participation in agricultural value chains

Because the index is censored at zero (many youngsters may not have found work), the Tobit model is applicable.

Age, educational status, training session attendance, and farming experience were all measured at the ratio level. Table 4 shows that sex and access to credit were measured at the nominal level. Simple descriptive statistics such as percentages, means, frequencies, and standard deviations were used to analyse socioeconomic characteristics and the level of employment creation, and Tobit was used to estimate the effect of socioeconomic characteristics on employment generation.

Table 1: Independent Variables

Variable	Measurement
Age (X_1)	Years
Sex (X_2)	Male = 1, Female = 0
Educational Status (X_3)	Years of formal schooling
Training Sessions Attended (X_4)	Number of innovation-driven agricultural training sessions attended
Access to Credit (X_5)	Yes = 1, No = 0
Farming Experience (X_6)	Years

Methodology

Research Design

The study used a quantitative cross-sectional survey design.

Study Area

This study was carried out in Ogun State, Nigeria, in the country's South-West geopolitical region. Ogun State was founded on February 3, 1976, from the former Western State, and its capital is Abeokuta. The state is situated between latitudes 6°15′N and 7°60′N, and longitudes 2°45′E and 4°45′E. It is bordered by Oyo and Osun States to the north, Lagos State to the south, Ondo State to the east, and the Republic of Benin to the west.

Ogun State has a primarily agrarian economy and is largely regarded as one of Nigeria's leading agricultural states. Crops such as cassava, maize, rice, cocoa, oil palm, vegetables, and fruits can be grown here due to favourable climatic conditions, fertile soils, and vast arable land. Livestock farming, poultry production, fishing, and agro-processing are all significant economic activities in the state.

According to the National Population Commission, Ogun State's population is growing rapidly, with a large proportion of youths constituting a significant labour force for agricultural and entrepreneurial development. The Ogun State Agricultural Development Programme (OGADEP) divides the state into four agricultural zones: Abeokuta, Ijebu-Ode, Ilaro, and Ikenne. Agricultural extension and youth empowerment activities are carried out through these zones.

In recent years, Ogun State has seen considerable government and private-sector investment in agricultural innovation, youth agribusiness development, and entrepreneurship training. Several initiatives, such as youth agricultural empowerment schemes, agribusiness incubation programmes, and agricultural extension services, have been implemented to increase youth participation in modern agriculture and boost job creation. These factors make Ogun State an ideal location for studying the effects of innovative agriculture training on youth employment.

Population and Sample Size

This study's target group consisted of individuals aged 18 to 35 who participated in innovation-driven agricultural training initiatives throughout Ogun State, Nigeria. These young people came from a variety of government-backed agricultural empowerment efforts in the state, supported by the business sector and development partners.

The sample size was calculated using Cochran's (1977) sample size formula for large populations.**:**

$$n = \frac{Z^2 pq}{e^2}$$

Where:

- ✓ (n) = required sample size
- ✓ (Z) = standard normal deviation at 95% confidence level (1.96)
- ✓ (p) = estimated proportion of the population possessing the attribute of interest (0.50)
- ✓ (q) = 1 − p (0.50)
- ✓ (e) = margin of error (0.05)

Substituting the values:

$$n = \frac{(1.96)^2(0.50)(0.50)}{(0.05)^2}$$

$$n = \frac{3.8416 \times 0.25}{0.0025}$$

$$n = 384.16$$

The computed sample size was around 384 responses. To account for potential nonresponse, incomplete questionnaires, and data-entry problems, an additional 4% was added, yielding a final

sample size of 400 people. This sample size was deemed appropriate to ensure representativeness and increase the reliability of the study's findings.

Data Collection

A standardised questionnaire was used to collect primary data from youths in Ogun State about their socioeconomic characteristics, training participation, access to resources, and employment results.

Validity and Reliability of the Instrument

The study instrument's validity and reliability were established to ensure that the obtained data were accurate and consistent. Validity relates to how well an instrument measures what it is designed to measure, whereas reliability refers to the consistency of measurement results across time (Creswell & Creswell, 2018)

Experts in agricultural economics, entrepreneurship, and measurement and evaluation reviewed the questionnaire to ensure its face and content validity. They evaluated the relevance, clarity, comprehensiveness, and appropriateness of the questionnaire items in relation to the study objectives. The experts' suggestions were incorporated into the final edition of the instrument. The Content Validity Index (CVI) was 0.89, showing that the instrument accurately represented the constructs under inquiry.

Construct validity was determined using Exploratory Factor Analysis (EFA). The Kaiser-Meyer-Olkin (KMO) measure of sample adequacy was 0.842, exceeding the recommended threshold of 0.60. Bartlett's Test of Sphericity was significant ($\chi^2 = 1856.47$, $p < 0.001$). The factor analysis verified that the items were correctly loaded on their respective constructs and explained 71.3% of the total variance, indicating satisfactory construct validity.

The instrument's reliability was tested in a pilot study with 40 youths enrolled in agricultural training programmes outside of the study area. The Cronbach Alpha coefficient was used to determine internal consistency reliability. The reliability values for the individual scales ranged from 0.786 to 0.874, with an overall reliability coefficient of 0.847. These scores exceed the acceptable benchmark of 0.70, indicating the instrument's strong internal consistency and dependability (Nunnally & Bernstein, 1994).

Based on the findings of the validity and reliability assessments, the instrument was deemed appropriate for data collection and capable of producing valid and reliable information for investigating the effects of innovation-driven agricultural training on job creation among youths in Ogun State, Nigeria.

Model Specification

The Tobit model was specified as follows:

$EGI_i=\beta_0 + \beta_1X_1+\beta_2X_2+\beta_3X_3 + \beta_4X_4 + \beta_5X_5+ \beta_6X_6 + \varepsilon_i$

$$EGI_i = \begin{cases} EGI_i^* & \text{if } EGI_i^* > 0 \\ 0 & \text{if } EGI_i^* \leq 0 \end{cases}$$

Where:

EGI = Employment Generation Index

X_1 = Age (years)

X_2.= Sex (Male = 1, Female = 0)

X_3= Educational attainment (years of schooling)

X_4 = Training sessions attended

X_5 = Access to credit (Yes = 1, No = 0)

X_6 = Farming experience (years)

ε= Random error

Results and Discussion

Socioeconomic Characteristics of Respondents

The results showed that 62.0% of respondents were male, while 38.0% were female. The average age was 28.74 years, indicating that respondents were within the economically active youth category. The mean years of schooling was 14.21 years, suggesting relatively high educational attainment among participants. Respondents attended an average of 5.82 innovation-driven agricultural training sessions and had an average farming experience of 4.36 years. However, only 43.5% had access to formal credit facilities as contained in Tables 2 and 3.

Table 2: Distribution of Respondents by Socioeconomic Characteristics (n= 400)

Variable	Category	Frequency	Percentage	Mean	Std. Dev
Sex	Male	248	62.0		
	Female	152	38.0		
Age	18–24 years	104	26.0		
	25–29 years	168	42.0		
	30–35 years	128	32.0		
				28.74	4.62
Educational Level	Secondary	86	21.5		
	Diploma/NCE	96	24.0		
	Bachelor's Degree	182	45.5		
	Postgraduate	36	9.0		
				14.21	2.87
Access to Credit	Yes	174	43.5		
	No	226	56.5		

Source: Field Survey, 2026

Table 3: Descriptive Statistics

Variable	Mean	Standard Deviation
Age (Years)	28.74	4.72
Education (Years)	14.21	2.87
Training Sessions attended	5.82	2.74
Farming Experience	4.36	3.18
Employment Generation Index	3.27	2.12

Source: Field Survey, 2026

Tobit's Regression Results

The Tobit Regression results (Table 4) demonstrated that age significantly influences employment generation ($\beta = 0.041$, $p = 0.016$), indicating that older teenagers were more likely to launch job-generating initiatives. There were substantial gender disparities in access to productive resources ($\beta = 0.284$, $p = 0.032$).

Educational attainment has a positive and significant effect on employment generation ($\beta = 0.072$, $p = 0.001$), validating the Human Capital Theory. Attending training sessions was a significant predictor ($\beta = 0.198$, $p < 0.001$), emphasising the necessity of ongoing exposure to innovative agricultural training.

Access to finance had the greatest positive effect ($\beta = 0.467$, $p = 0.002$), highlighting the significance of financial inclusion in translating acquired abilities into viable firms. Farming expertise is associated with higher employment rates ($\beta = 0.091$, $p = 0.001$), underscoring the importance of practical knowledge for business sustainability and growth.

The likelihood ratio statistic was significant ($\chi^2 = 118.64$, $p < 0.001$), indicating good model fit.

Table 4: Determinants of Employment Generation among Youths

Dependent Variable: Employment Generation Index

Variable	Coefficient	Std. Error	z-value	p-value
Constant	-1.854	0.692	-2.68	0.007
Age	0.041	0.017	2.41	0.016**
Sex	0.284	0.132	2.15	0.032**
Education Years	0.072	0.021	3.43	0.001***
Training Sessions Attended	0.198	0.029	6.83	0.000***
Access to Credit	0.467	0.148	3.16	0.002***
Farming Experience	0.091	0.027	3.37	0.001***
Log Likelihood	-432.71			
LR Chi²	118.64			
Prob > Chi²	0.000			
Pseudo R²	0.324			

Source: Field survey, 2026

***Significant at 1%

**Significant at 5%

* Significant at 10 %

Discussion of Findings

In a Tobit regression, the researchers investigated the effects of innovation-driven agricultural training on job creation among youths in Ogun State, Nigeria. The data show that age, gender, educational attainment, training session attendance, access to credit, and agricultural experience all have a substantial impact on employment generation among trained youngsters. The study indicated that age had a favourable and statistically significant effect on job creation among youths ($\beta = 0.041$, $p < 0.05$). This data shows that older teenagers are more likely than younger participants to start and sustain agricultural businesses that generate jobs. One probable

explanation is that older teenagers typically have more social capital, practical experience, risk management skills, and access to productive resources than younger people.

The finding is compatible with Magagula. Furthermore, Tsvakirai (2020) found that age positively influenced agribusiness involvement and enterprise performance among young farmers in Southern Africa. Similarly, Sinyolo and Mudhara (2018) found that older agricultural entrepreneurs were more likely to adopt innovations and expand their operations because they had greater knowledge and stronger market networks.

However, the study contradicts certain entrepreneurship research that claims younger people are more innovative and willing to take entrepreneurial risks (Bosma et al., 2020). The distinction may be due to the resource-intensive nature of agriculture, where experience and resource ownership are often more essential than risk-taking alone.

Sex significantly influenced employment generation ($\beta = 0.284$, $p < 0.05$), with male participants outperforming female participants. This conclusion may reflect ongoing gender disparities in access to land, agricultural finance, training opportunities, and productive assets in rural Nigeria. The findings support those of Doss and Morris (2021), who discovered that male farmers have greater access to agricultural resources and extension services than female farmers, resulting in higher enterprise productivity and company growth. Similarly, FAO (2023) stated that gender inequities continue to limit women's engagement in commercial agriculture in many developing nations.

Nonetheless, the findings should not be construed as indicating that women have inferior entrepreneurial capacity. Rather, it highlights systemic hurdles to female participation in agricultural operations. Ogundipe et al. (2024) found that when women have equal access to funding, technology, and training, their agribusiness performance matches that of males. Educational attainment significantly increased employment generation ($\beta = 0.072$, $p < 0.01$). This suggests that more years of formal education boost the likelihood of producing jobs through agricultural ventures.

The findings strongly support Becker's (1964) Human Capital Theory, which holds that education boosts productivity, innovation, and entrepreneurial skills. Youth who have received an education are more likely to recognise business prospects, have access to information, handle their funds properly, and adopt new technologies.

The findings are consistent with Nwibo and Okorie's (2022) discovery that educational attainment greatly increased agribusiness success among young entrepreneurs in Nigeria. Similarly, Popoola (2025) found that entrepreneurship-focused education improves entrepreneurial goals and venture creation among Nigerian undergraduates.

The findings also support those of Maresch et al. (2016), who found that entrepreneurship education significantly increases the likelihood of self-employment and business startup among young individuals.

Attending training sessions significantly influenced employment generation ($\beta = 0.198$, $p < 0.01$). This conclusion implies that regular participation in innovation-driven agricultural training programmes strengthens entrepreneurial competencies and improves employment outcomes.

The findings are consistent with Rasheed and Owotutu (2026), who found that entrepreneurship education significantly improves students' agropreneurship skills and increases their likelihood of pursuing self-employment. Similarly, Samuel and City (2024) found that entrepreneurship training significantly reduces unemployment by equipping participants with practical business and technical skills.
The findings further confirm Davis et al.'s (2021) conclusion that agricultural training and extension services promote the uptake of innovation, productivity, and company development. According to Rogers' (2003) Diffusion of Innovation Theory, training promotes awareness, assessment, and acceptance of innovations, hence expanding economic potential.

Furthermore, the strong influence of training participation suggests that job creation among youngsters depends not only on access to training but also on the frequency and quality of training they receive.
Access to credit was the most significant predictor of employment generation ($\beta = 0.467$, $p < 0.01$). This conclusion suggests that financial resources are crucial for turning acquired agricultural skills into sustainable businesses that create jobs.

The findings are consistent with those of Abate et al. (2023), who found that access to agricultural loans significantly boosts youth entrepreneurship and business growth in Africa. Similarly, Obayelu and Afolami (2021) found that access to credit has a beneficial impact on agricultural investment decisions and enterprise expansion among Nigerian farmers.

The finding lends support to Ebiye et al.'s (2025) assertion that entrepreneurship training alone cannot generate long-term employment without adequate access to starting capital and firm funding.
The coefficient's significance indicates that financial restrictions remain one of the most significant impediments to trained adolescents establishing profitable agricultural companies. As a result, even highly skilled individuals may be unable to pursue job opportunities due to a lack of financial means.

The study indicated that farming expertise has a favourable and significant effect on job creation ($\beta = 0.091$, $p < 0.01$). This suggests that experienced participants are more likely to identify job opportunities through agricultural enterprises than less experienced participants.

This conclusion supports the findings of Abdulai and Huffman (2019), who discovered that agricultural experience improves management efficiency, innovation uptake, and enterprise performance. Similarly, Kassie et al. (2020) found that experienced farmers are better able to detect market opportunities and manage production risks more efficiently.

The findings further support Human Capital Theory, which acknowledges experiential learning as an important element of human capital accumulation. Individuals gain practical knowledge that

helps them make better decisions and run their businesses through repeated participation in agricultural activities.

The study found that farming experience had a positive and significant impact on employment generation ($\beta = 0.091$, $p < 0.01$). This implies that experienced participants are more likely to create work opportunities through agricultural firms than less experienced players. This conclusion is consistent with the findings of Abdulai and Huffman (2019), who observed that agricultural experience enhances managerial efficiency, innovation uptake, and enterprise performance. Similarly, Kassie et al. (2020) found that experienced farmers are better able to anticipate market opportunities and manage production risks more efficiently.

The findings provide additional support for Human Capital Theory, which recognises experiential learning as an important component of human capital accumulation. Individuals gain practical knowledge that helps them make better judgments and run their enterprises through regular agricultural activities.

Conclusion

The study found that innovation-driven agricultural training helps to create jobs for young people in Ogun State. The findings show that socioeconomic traits and resource-related factors, including educational attainment, training participation, credit access, and farming experience, all play important roles in influencing employment outcomes. Access to financing and participation in training programmes emerged as the most influential determinants of job creation, implying that skill acquisition alone may be insufficient without associated financial support systems.

Recommendations

Based on the statistically significant findings, the study recommends that:

1. To reach more youths in Ogun State, government agencies and development partners should expand agricultural training programmes that prioritise innovation.
2. To improve the quality and frequency of training, agricultural training institutes should offer refresher courses and advanced innovation modules on an ongoing basis.
3. Establish youth-focused agricultural loan programmes with low interest rates and flexible collateral criteria to increase access to finance.
4. Educational institutions should include courses on practical agribusiness management, digital agriculture, and innovation in their curricula.
5. 5 Implement gender-inclusive agricultural empowerment policies to increase female youth access to productive resources and entrepreneurial possibilities.
6. Mentorship programmes in agricultural extension services can help inexperienced teenagers learn from successful entrepreneurs.
7. Strengthen public-private partnerships to support youth-led agricultural firms through knowledge transfer, agribusiness incubation, and market access.

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