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ACQUISITION OF AGRICULTURAL SKILLS AND KNOWLEDGE AS A MOTIVATOR OF AGRI-PRENEURIAL INTENTIONS OF GRADUATES OF AGRICULTURAL EDUCATION IN NIGERIAN UNIVERSITIES

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Abstract

Agricultural education plays a crucial role in equipping graduates with the skills and knowledge needed to engage in entrepreneurial activities within the agricultural sector. However, the direct influence of agricultural education on agri-preneurial intentions may be mediated by the acquisition of specific agricultural skills and knowledge. Hence, this study investigated the role of Acquisition of Agricultural Skills and Knowledge (ASSK) as a mediator between Agricultural Education (AED) and Agri-preneurial Intentions of Graduates (APIG). A correlation research design was adopted by this study. Two hundred and sixteen (216) graduates of Agriculture and related courses were conveniently sampled for the study. Data was collected via a structured, validated, and field-tested questionnaire. The reliability of the instruments were determined using Cronbach's alpha coefficients [AED = 0.85 α; ASSK = 0.89 α and APIG = 0.86 α]. Data collated were anonymously analyzed using frequencies, percentages, Pearson's correlation, and linear regression. The mediation analysis indicated that AED significantly influences APIG through ASSK (β = .995, SE = .097; $p < 0.05$, F = 3655.043; 95% CI = [0.8049-1.1851]). More so, high positive significant associations were found between AED and APIG ($r = .986$; $p < 0.05$), AED and ASSK ($r = .993$; $p < 0.05$), and ASSK and APIG ($r = .978$; $p < 0.05$). ASSK serves as a significant mediator in the relationship between AED and APIG. This study suggests that entrepreneurial elements and experiential learning in Agricultural Education programmes in Nigeria should be enhanced by government and programme administrators to foster agri-preneurial intentions. Educational institutions and lecturers should incorporate more entrepreneurial and experiential learning elements into Agricultural Education programs.

Keywords: Agricultural Education (AED), Agri-preneurial Intentions of Graduates (APIG), Acquisition of Agricultural Skills and Knowledge (ASSK)

Introduction

In recent years, the world has recognized the crucial role that agriculture plays in ensuring food security, fostering economic development, and promoting sustainable practices (Pawlak, & Kołodziejczak, 2020; Loizou *et al.*, 2019). Thus, literature has shown that as the global population continues to grow, there is pressure on the agricultural sector to meet the rising demand for food and resources (Calicioglu *et al.*, 2019; Islam & Karim, 2019; Vos & Bellù, 2019). Consequently, to address these challenges, it has become essential to equip the younger generation with the necessary knowledge and skills to engage in agricultural practices and agri-businesses effectively (Talbert *et al.*, 2022). This can be accomplished through the implementation of functional Agricultural Education programmes.

One of the objectives of Agricultural Education (AED) is to provide students with adequate self-reliant skills and knowledge in different areas or professions of agriculture (Innocent-Ene, Suleiman & Sanni, 2021). According to Amadi (2017), this area of study has emerged as an entrepreneurial or vocational form of education, which aims at training students for professions in agriculture, and it now encompasses a wide range of agri-business or agri-preneurship prospects in addition to traditional farming. The term "agri-preneurship" has gained popularity to describe the inventive thinking and entrepreneurial spirit exhibited by people who actively look for opportunities in the agriculture industry (Nade and Malamsha, 2021). These prospective agri-preneurs boost agricultural productivity while also promoting rural economies and opening up job opportunities (Rakesh, 2020).

Indisputably, functional AED programme would ignite the intentions of its graduates to establish businesses in agriculture. Ehien *et al.* (2020) describe intention as internal states that have an impact on or regulate an individual's actions, serving as influential factors that shape the choices they make and enable the pursuit of specific courses of action. This study, therefore, opines that the term "Agri-preneurial Intentions of Graduates (APIG)" simply connotes the interest or internal states of individuals who have been trained in various areas of agriculture, that influence them to have the interest to start new businesses in the field, or expand existing ones. Furthermore, there seems to be dwelling intentions of fresh and young graduates to launch agri-businesses or go into farming (Ojebiyi *et al.,* 2015), probably due to little or no Acquisition of Agricultural Skills and Knowledge (AASK) through AED. The researcher argues that this condition may be attributed to numerous challenges facing Agricultural Education programmes in Nigerian tertiary institutions. For instance, Amadi (2017) reveals that Agricultural Education in Nigerian Universities and Colleges is hindered by numerous issues such as insufficient enrollment, limited funding for agricultural education in tertiary institutions, waning interest in research work within the field of AED, a shortage of qualified personnel, and inadequate provision of infrastructural facilities. Arguably, a functional AED may not be possible under these negative phenomena.

It has come to light that a significant proportion of university graduates, including those who were trained in Agricultural courses, possess little or no comparative knowledge and skills to motivate them to initiate and effectively manage new businesses as entrepreneurs, after completing their studies (Edokpolor, Imeokparia and Osifo, 2023; Yakubu, 2012). Previous studies have consistently shown a disparity between the knowledge and skills acquired by university graduates and those essential for successfully starting and running a new business venture (Otache, 2022; Pitan & Adedeji, 2012; Edokpolor, 2020).

In recent times, it has been reported that about 40.1% of university graduates in Nigeria, which translates to approximately 2,382,052 individuals, were unemployed during the fourth quarter of 2021. Additionally, 12.5% of university graduates, equivalent to around 741,208 people, were classified as underemployed during the same period (Edokpolor, Imeokparia and Osifo, 2023; Nigerian National Bureau of Statistics, 2022). Also, Edokpolor, Imeokparia and Osifo (2023) concluded that this data sheds light on the alarming lack of preparedness among Nigerian university graduates concerning the essential knowledge and skills required to venture into and establish new businesses. As a result, they exhibit low intentions and readiness to embark on entrepreneurial endeavours. Arguably, some Nigerian students have hope for the implementation of a functional Agricultural Education (AED) that would imbibe in young people self-reliant skills for agribusinesses or agri-preneurial businesses. However, lack of exposure of students in tertiary institutions to a functional AED, as a form of entrepreneurial education, is partly one of the reasons for high level of unemployment in the country (Edokpolor, Imeokparia and Osifo, 2023; Onoyase, 2019).

There is a plethora of literature revealing the relationship between entrepreneurship education and students' intention to start a business (e.g., Edokpolor, Imeokparia and Osifo, 2023; Ndofirepi, 2020; Liao, Nguyen, & Caputo, 2022; Adeel, Daniel & Botelho, 2023), however, there seems to be little or no empirical evidence showing the association between Agricultural Education as an entrepreneurial course, and intentions of graduates to start agribusinesses (Agri-preneurial Intentions of Graduates, APIG), particularly in Nigeria. In Tanzania, a similar study by Nade and Malamsha (2021) indicated a clear correlation between the knowledge and skills gained in agri-entrepreneurship and the intentions of young individuals to pursue farming as entrepreneurs. Previously, Nade (2019) found that the training of young people in agriculture influenced their entrepreneurial efficacy.

The acquisition of agricultural skills and knowledge in Nigeria is confronted with lots of issues which have reduced its efficacy and functionality (Amadi, 2017). Additionally, Abdullahi, Suleiman & Abubakar (n.d) asserted that majority of graduates in agricultural education in Nigeria do not pursue careers or businesses directly related to agriculture. This is partly due to poor acquisition of self-reliant agricultural skills and knowledge by most graduates in AED programmes in Nigerian tertiary institutes, thus, graduates may not have intentions to delve into agri-preneurship or agri-businesses.

Consequently, this study argues that Acquisition of Agricultural Skills and Knowledge (AASK) could have a mediating role between Agricultural Education (AED) and Agri-preneurial Intentions of Graduates (APIG). Similarly, several studies have investigated the mediating role of acquisition of entrepreneurial skills and knowledge on the relationship between education and intentions to launch a business (Edokpolor, Imeokparia and Osifo, 2023; Ndofirepi, 2020; Liao, Nguyen, & Caputo, 2022; Adeel, S., Daniel & Botelho, 2023), and sustainable development (Edokpolor, 2020). However, these studies were not delimited to Agricultural Education. Therefore, this study seeks to investigate the mediating role of AASK on the association between AED and APIG. The importance of this study lies in its potential to close the knowledge gap in the field of agriculture, promote innovation and sustainability in the agricultural industry, promote rural development, inform policy decisions to enhance agricultural education programmes, and affect students' career choices. The study's exploration of the mediating role of agricultural skills and knowledge in agri-preneurial intentions introduces a novel perspective that extends beyond the realms of agriculture and entrepreneurship. This framework could inspire similar investigations in other fields, enriching the understanding of the links between education, skill acquisition, and career aspirations.

Theoretical Review of Allied Literature

Agricultural Education (AED)

Agricultural Education (AED) is a comprehensive and systematic entrepreneurial-oriented program offered to students who wish to explore the scientific, commercial, and technological aspects of plant, fungi, and animal production, as well as environmental and natural resource systems (Emiri and Nlebem, 2020). Similarly, in the view of Chinasa, Ukonze and Okadi (2022), it is the process of facilitating learning and acquiring knowledge and skills related to agriculture. AED is widely recognized as a primary method for human capital development and offers comprehensive guidance on various agricultural facets such as crop cultivation, livestock production, soil and water conservation, and other essential aspects of farming (Amadi & Nnodim, 2018).

Additionally, some studies reveal that AED plays a vital role in the entrepreneurship development of students (Amadi & Nnodim, 2018; Amadi & Gibson, 2020). Evidence in some literature, indicate that the primary objective of agricultural education is to equip students with

the necessary innovative agricultural skills and knowledge to be well-informed and job-ready for their future careers, as well as to establish and manage agri-businesses (Amadi & Nnodim, 2018; Akramovich, 2022). Partly, this implies that AED can develop students' agri-entrepreneurial spirits to launch new businesses or expand existing ones in agriculture. In agreement, according to Ademu, Adah and Atsumbe (2018), the new Nigerian Agricultural education curriculum implemented in tertiary institutions places a strong emphasis on students acquiring practical work skills that are essential for both paid employment and self-employment. Thus, Ademu, Adah and Atsumbe (2018) asserted that to ensure that agricultural education graduates are productive and in demand in the real world, continuous skill improvement and relevance are crucial.

Based on the literature explored, AED is a form of entrepreneurial education, and a vital tool for the acquisition of entrepreneurial skills and knowledge in agriculture (Ademu, Adah and Atsumbe, 2018; Emiri and Nlebem, 2020; Ademu, Adah & Atsumbe, 2018; Akramovich, 2022). Similarly, evidence in several studies indicates that there is an association between entrepreneurial education and the acquisition of entrepreneurial skills and knowledge (Edokpolor, Imeokparia & Osifo, 2023; Ndofirepi, 2020; Liao, Nguyen, & Caputo, 2022; Adeel, S., Daniel & Botelho, 2023).

Acquisition of Agricultural Skills and Knowledge (ASSK)

In this study, competencies acquired through agriculture could be referred to as Agricultural Skills and Knowledge (ASSK). Agricultural skills are psychomotor skills, while agricultural knowledge is cognitive (Zhang *et al.,* 2022; Rhoades, Ricketts & Friedel, 2009). One of the objectives of AED is to imbibe in its recipients' skills and knowledge in various areas of agriculture such as crop and animal production, fisheries, forestry, etc (Amadi & Nnodim, 2018). Thus, the acquisition of sustainable agricultural skills and knowledge can serve as a viable solution to address the challenges of economic growth, and achieving zero hunger in Nigeria (Chinasa, Ukonze & Okadi, 2022). Indisputably, some authors argue that skills and knowledge in agriculture can be acquired through functional Agricultural Education programmes at various levels of education (Ekezie & Owo, 2019; Ugwuoke & Onah, 2015). Contextually, Edokpolor, Imeokparia and Osifo (2023) argue that effective acquisition of knowledge and skills or entrepreneurial abilities can spur graduates to develop intentions to start businesses. Deductively, this research argues that the effective acquisition of agricultural skills and knowledge through a functional AED can ignite graduates' intentions to launch businesses in the area of agriculture.

Agri-preneurial Intentions of Graduates (APIG) of Agricultural Education

Agricultural Education has been recognized in the literature as a tool for entrepreneurship education (Emiri & Nlebem, 2020). Since, AED aims at evolving graduates with self-reliant skills and knowledge to enable them to start new agri-businesses (Amadi & Nnodim, 2018), this implies that AED programmes have the potential of developing graduates' Agri-preneurial Intentions (API). Crant in Edokpolor, Imeokparia and Osifo (2023) asserted that researchers and professionals have characterized the intention to start a business as the desire to become a personal owner of a business venture. Thus, this study views Agri-preneurial Intentions of Graduates (APIG) as the desires of graduates to personally own or venture into agri-businesses.

A study by Nade (2019) shows that the training of young people in agriculture enhanced or influenced their entrepreneurial efficacy. Similarly, In Tanzania, Nade and Malamsha (2021) found a strong link between the knowledge and skills acquired in agri-entrepreneurship and the inclination of young people to embrace farming as entrepreneurs. Different studies show a correlation between entrepreneurship education and the intention of students to start new

businesses (Edokpolor, Imeokparia and Osifo, 2023; Ndofirepi, 2020; Liao, Nguyen, & Caputo, 2022; Adeel, S., Daniel & Botelho, 2023), however, these studies were not delimited to Agricultural Education, as a form of entrepreneurship education in Nigeria. The researcher assumes that since APIG is deliberate, it could be predicted through a framework or model of intention.

Review of Allied Empirical Studies

A qualitative study by Anoke *et al.* (2022) found that graduates were hesitant to enter agribusiness due to limited access to farmland, insufficient funds, and inadequate government support. Jemal (2017) noted challenges in obtaining startup capital due to collateral requirements and high-interest rates, with unsatisfactory infrastructure for self-employment. Contrary to these findings, Kaki *et al.* (2023) reported that 44.16% of students were willing to start agribusiness ventures upon graduation, particularly in agro-processing (35.48%) and crop production (26.45%). Pouratashi (2015) observed moderate entrepreneurial intentions in about half of the participants, while Jemal (2017) found high entrepreneurial intention among agricultural undergraduates with a strong desire to pursue entrepreneurial careers and take risks. These differences may be due to variations in samples, methods, geographical contexts, or aspirations.

Pouratashi (2015) noted significant differences in intentions between students who had taken entrepreneurship courses and those who had not, and between students with self-employed parents and those without. Che *et al.* (2022) found that male graduates showed higher acceptance of agro-business opportunities compared to females. Novanda *et al.* (2020) argued that students' attitudes toward agri-preneurship do not significantly impact their intentions (P-value: 4.329). However, Che *et al.* (2022) found that students' attitudes, perceived behavioral control, and acceptance of agro-entrepreneurial opportunities positively impact their intentions. Sachitra & Gunasinghe (2022) showed that Sri Lankan students' agri-entrepreneurial intentions are shaped primarily by personal attitudes and perceived behaviors, with subjective norms having a weaker influence. Zampetakis, Anagnosti, & Rozakis (2013) found a minor negative effect of subjective norms on entrepreneurial intentions. Their path analysis corroborated earlier research using the Theory of Planned Behavior (TPB), indicating that attitudes and perceived behavioral control are robust predictors of entrepreneurial intention. Studies show that agri-preneurial intentions are influenced by skills and knowledge gained. Nade and Malamsha (2021) found a clear correlation between knowledge and skills in agri-entrepreneurship and young individuals' intentions to pursue farming. Paschal and Christian (2021) noted a significant correlation between agri-entrepreneurship knowledge and skills and entrepreneurial intentions among young individuals in Tanzania. Nade (2019) found that agricultural training influenced entrepreneurial efficacy. Hou & Qiao (2021) concluded that entrepreneurial education, practical experiences, policy support, and family background positively contribute to enhancing students' entrepreneurial intentions. Kaki *et al.* (2023) identified factors influencing students' intentions, including age, field of study, university type, prior agribusiness experience, having a friend as a role model, and perception of the agribusiness environment. Few studies have identified the relationship between skills and knowledge gained and agri-preneurial intentions (Paschal and Christian, 2021; Nade and Malamsha, 2021; Hou & Qiao, 2021). Most were conducted in Tanzania and China, revealing a theoretical gap in Nigeria. Agricultural skills and knowledge are obtained through functional Agricultural Education (AED) (Chinasa, Ukonze & Okadi, 2022). Nade (2019) found that agricultural training influences entrepreneurial efficacy. Despite factors affecting AED efficacy in Nigeria, such as poor funding and lack of infrastructure (Amadi, 2017), there is little literature on the mediating role of agricultural skills and knowledge in the relationship between AED and agri-preneurial intentions of graduates. Thus, further research is needed in this area.

Theoretical Framework

This study was suitably anchored on the Theory of Planned Behaviour (TPB) championed by Ajzen (1991) TPB is a widely used psychological theory for understanding and predicting human behaviours. The central tenet of TPB is that human behaviour is driven by behavioural intentions (BI) and that BIs are predicted by three major constructs such as attitude, subjective norms and perceived behavioural control (Ajzen, 1991, Ajzen. & Fishbein, 2005).

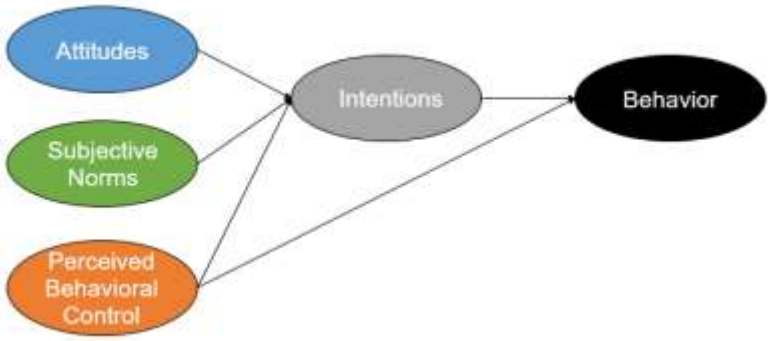

Figure 1. Theory of Planned Behaviour

Additionally, TBP has found extensive application among entrepreneurship researchers for examining individuals' intentions to initiate a business venture (Edokpolor, Imeokparia and Osifo, 2023; Kautonen, Gelderen & Tornikoski, 2013). Hence, based on the tenets of TPB, this study argues that APIG (Agri-preneurial Intentions of Graduates) may be influenced by both AED (Agricultural Education) and AASK (Acquisition of Agricultural Skills and Knowledge). The assumption is that AED offers students an opportunity to gain agri-entrepreneurial skills and knowledge, which, in turn, impacts their agri-preneurial endeavours. Furthermore, AASK, facilitated by AED, can act as a motivating factor for students to make informed decisions about starting their agricultural businesses. The Theory of Planned Behavior (TPB) supported the current study by suggesting that the acquisition of agricultural knowledge and skills through AED and practical experience can inspire students to make informed choices and venture into agri-businesses. Therefore, this study assumes that students' intentions to pursue agri-business opportunities are nurtured through the acquisition of knowledge and skills acquired through education and experiential learning.

Conceptual Framework and Hypotheses

Figure 2 shows a conceptual model developed by the researcher to illustrate and explain the interconnectedness among the variables in this study. This model elucidates the relationship between Agricultural Education (AED) and APIG, with the mediating effect of Agricultural Skills and Knowledge (ASSK) in this connection. The underlying assumptions are that students who engaged in a well-structured AED program will acquire the necessary knowledge and skills in agriculture, which will positively influence their intentions to venture into agricultural entrepreneurship. On the contrary, if the AED program lacks effectiveness, the knowledge and skills acquired by students may be hindered, leading to a decrease in their intentions to start an agri-business enterprise. Furthermore, the model suggests that the relationship between university students' participation in a functional-oriented AED program and their intention to begin an agri-business venture can be explained by the knowledge and skills they gain during their studies. Based on these intelligent guesses, the researchers put forth the following hypotheses are formulated in this study:

H1. There will be significant association between AED with APIG
H2. There is significant association between AED and AASK
H3. There is significant association between AASK and APIG
H4. There is mediating effect of AASK on the association between AED and APIG

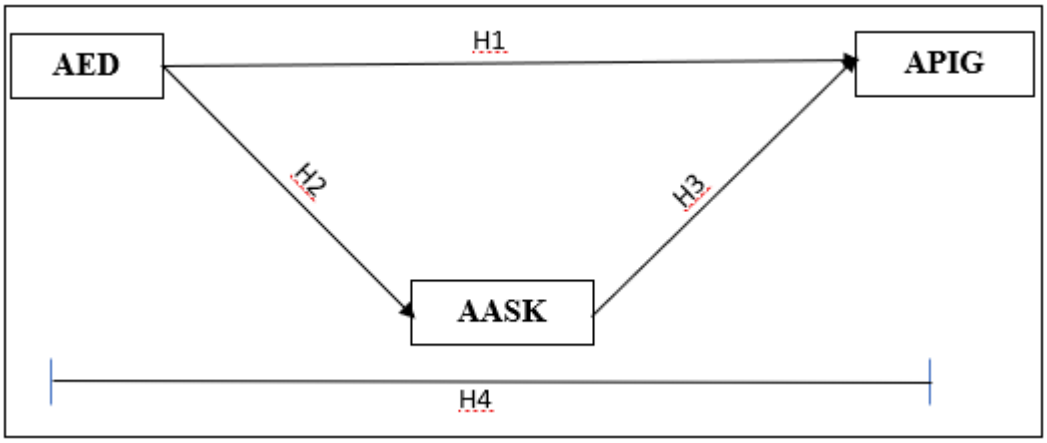

Figure 2: Conceptual or Hypothesized Model of the Study (Researcher, 2023)

Methods

Research Design

The study adopted a Correlation Research Design (CRD) for investigating and describing the association among and between variables under study, such as AED, ASSK and APIG. This design was suitable for this study because, evidence in literature reveal that a correlation research design seeks to determine the relationship between two or more variables, however, it does not establish a cause-and-effect association (Seeram, 2019, Curtis, Comiskey & Dempsey, 2016). Therefore, the correlation coefficient (r) was used to represent the extent to which the independent variable (AED) and the mediator variable (ASSK) predict the dependent variable (APIG).

Research Setting, Sample and Sampling Method

This study was carried out among graduates of Agricultural Education, including other fields of Agriculture in Nigerian tertiary institutions (Universities). The study participants consisted 216 graduates, who were conveniently sampled. A convenient sampling is a non-probability sampling technique in which the researcher selects the study's participants based on their accessibility and availability (Stratton, 2021). Thus, this study chose participants who could be accessible through social media platforms, precisely WhatsApp and Telegram.

Research Instrument, Validation and Test for Reliability

The instrument used for data collection was an online survey created by the researcher using Google forms. The instrument was titled "Agricultural Education and Agri-preneurial Intentions Questionnaire (AEAIQ)". The e-questionnaire contained 4 clusters and a total of 20 items (AEAIQ-20). The first cluster or section included 4-items on demography of respondents (Gender, Age, Qualification and Field of Study), while the remaining three clusters comprised of items that elicited data on variables under investigation such as AED (4-items, e.g. "The agricultural education I received has adequately prepared me for a career in agribusiness"), ASSK (4-items, e.g. "I have acquired sufficient practical skills and knowledge in agriculture during my education") and APIG (4-items, e.g. "I plan to start my own agribusiness within the

next five years"), adapted from the review of related literature (Lorz, 2011; Paschal and Christian, 2021; Nade and Malamsha, 2021; Hou & Qiao, 2021). The questionnaire items for cluster 2 to 4 were structured on 5-point Likert Scale (5-Strongly Agreed, 4-Agreed, 3-Neutral, 2-Disagree and 1-Strongly Disagree), and also designed to be few and short in order to enhance the reliability of the instrument. According to Zohrabi (2013), the number and length of questions in a research instrument can significantly affect its reliability.

Additionally, the instrument was subjected to content validity, to ensure that the items or questions in the research instrument accurately and comprehensively measure the construct they are intended to assess (Bolarinwa, 2015). This was accomplished by giving the AEAIQ-20 to three scholars for review and improvement, one from the field of measurement and evaluation, and two in Agricultural Education, and Agribusiness and Management, all in Michael Okpara University of Agriculture Umudike (MOUAU). More so, to determine the reliability, the content-validated instrument was field-tested. Data was gathered from 10 graduates of Agriculture, who were not part of the study. Results from Cronbach's Alpha reliability test method an average alpha (α) reliability coefficient of 0.87 [AED = 0.85 (α); ASSK = 0.89 (α) and APIG = 0.86 (α)], which showed that the instrument was reliable for data collection. The researcher made this decision based on the thumb rule recommended by Nawi *et al*. (2023). According to Nawi *et al.* (2023), as the coefficient alpha approaches 1.0, a scale shows higher levels of internal consistency or reliability.

Data Collection

Furthermore, this study gathered data through an e-questionnaire (AEAIQ-20) within a period of 2 months (between 21st June and 10th August 2023). The e-questionnaire was administered through WhatsApp and Telegram groups, where the target population could be easily reached (e.g., Asogwa Research Forum, Social media group for Agricultural Education Teachers Association of Nigeria [AETAN], Alumni, College and Faculty Social Media Groups of some Universities in Nigeria). Data was collected through the help of 3 research assistants. They assisted in distributing the e-questionnaire to the various social media groups where potential respondents could be reached. A consent note, including ethical appeal accompanied the circulation of the e-questionnaire on various social media platforms, which encouraged the potential respondents to voluntarily fill the survey, and also ensured their confidentiality and anonymity of data generated. The online survey resulted to 216 responses within 2 months, which formed the sample for this study (convenience sample).

Data Analysis

Data gathered on demography of participants was analyzed using frequencies, and simple percentages (in pie charts). Data obtained on research variables was analyzed using Pearson's correlation, linear regression, and 10,000 re-samples bias-corrected (BC) bootstrapping regression estimate. Pearson's correlation was used to address the research questions, while linear regression tested the unmediated hypotheses. The non-parametric re-samples BC bootstrapping regression estimate examined the significance of indirect effects. To perform a regression analysis, categorical data gathered was transformed into dummy [0(Disagree) or 1(Agree)) [Dummy coding], based on the recommendations of Alkharusi (2012). Regarding decision rules, Sedgwick (2012) asserted that Pearson's correlation can check the strength of associations between variables based on different coefficient r-values: ± .8 to ± 1.0 indicates very high correlation, ± .6 to ± .8 indicates high correlation, ± .4 to ± .6 indicates moderate correlation, ± .2 to ± .4 indicates low correlation, ± .0 to ± .2 indicates very low correlation, ± 1.0 means perfect correlation, and a coefficient r-value of 0 means no correlation. Negative coefficient r-values represent a negative correlation, meaning that as one variable increases, the other decreases. Positive coefficient r-values indicate a positive correlation,

meaning that as one variable increases, the other also increases. In regression analysis, a probability p-value less than or equal to .05 signifies significance (rejecting H_0), while a probability p-value greater than .05 implies non-significance (accepting H_0). For the BC bootstrapping regression estimate, if the confidence interval (CI) values (LL - lower limit and UL - upper limit) fall within the same axis (excluding zero value), it signifies a significant hypothesized relationship. On the other hand, if CI values are across axes (including zero value), it indicates a significant hypothesized relationship.

Results

Demographic Analysis

Table 1.

Frequency Distribution of the Demographic Variables of Respondents

Demographics	Frequency
Gender	
Male	147
Female	69
Age	
25-34 Years	119
35 to 44 Years	79
Above 44 Years	18
Educational Level	
Diploma	0
Bachelors of Science	28
Bachelors of Education	124
Masters	48
Doctor of Philosophy	16
Field of Study	
Agricultural Education	176
Crop Science	9
Soil Science	2
Animal Science	6
Fishery	16
Veterinary Medicine	0
Agricultural Engineering	1
Others	6

Table 1 presents the frequency distribution of respondents' demographic variables. The sample consists of 147 males and 69 females from different fields of studies in Agriculture. In terms of field of study, 176 respondents were from Agricultural Education, 9 from Crop Science, 2 from Soil Science, 6 from Animal Science, 16 from Fishery, none from Veterinary Medicine, 1 from Agricultural Engineering, and 6 from other related fields. Age distribution shows that 119 respondents aged 25-34 years, 79 aged 35-44 years, and 18 above 44 years. Regarding educational level, none holds a Diploma, 28 had a Bachelors of Science, 124 had a Bachelors of Education, 48 had a Masters, and 16 had a Doctor of Philosophy.

Table 2.

Pearson's Correlation Matrix

Correlation				
		AED	**ASSK**	**APIG**
AED	Pearson Correlation	1	.993	.986
	Sig. (2-tailed)		.000*	.000*
	n	216	216	216
ASSK	Pearson Correlation	.993	1	.978
	Sig. (2-tailed)	.000*		.000*
	n	216	216	216
APIG	Pearson Correlation	.986	.978	1
	Sig. (2-tailed)	.000*	.000*	
	n	216	216	216

AED = Agricultural Education, APIG = Agri-preneurial Intention of Graduates (APIG), Acquisition of Agricultural Skills and Knowledge (ASSK), p-Value < 0.05 (2 tailed), n= sample size

Table 2 presents a Pearson correlation matrix of AED, ASSK and APIG. The result reveals that AED shows a high positive significant relationship with ASSK [r = .993; p < 0.05] and APIG [r=.986; p < 0.05]. ASSK and APIG also had a high positive significant association [r = .978; p < 0.05]. This indicates a strong, positive relationship between these variables, suggesting that improvements in agricultural education and skills acquisition are closely associated with higher agri-preneurial intentions among graduates.

Testing of Hypotheses

Table 3

Direct Correlation between the Variables Using Linear Regression

Pathways	**SE**	**B**	***T***	**Bias**	**Adj R^2**	***P-value***	***F***	**Lower Limit**	**Upper Limit**
AED → APIG	.012	.986	85.698	1.001	.972	.000	7344.077	0.7508	1.2212
AED → ASSK	.008	.993	120.879	1.000	.985	.000	14611.796	0.9773	1.0087
ASSK → APIG	.014	.978	69.350	.986	.957	.000	4809.377	0.9506	1.0054

AED = Agricultural Education, APIG = Agri-preneurial Intention of Graduates (APIG), Acquisition of Agricultural Skills and Knowledge (ASSK), p-Value < 0.05, t-critical = 1.96, standard error of the regression coefficient [SE], β = Beta (Point Estimate), Confidence Interval [Cl], BCa = Bias- Corrected and Accelerated Estimates, F-statistic or F-ratio (F).

Table 3 above presents findings indicating that AED exerted a notable positive impact on APIG. The statistical analysis yielded a significant result for this influence, with F =7344.077, SE = .012, β = .986, t = 85.698, and a confidence interval ranging from 0.7508 to 1.2212 at the 95% level. The adjusted R-square value of .972 suggests that 97.2% of the variance in APIG can be attributed to the influence of AED. The outcomes of a bootstrap analysis involving 10,000 resamples further supported the significance of AED's effect on APPIG [bias = 1.001, p = .000].

Similarly, the results depicted in Table 3 above reveal a significant positive relationship between AED and ASSK. The statistical details include F=14611.796, SE = .008, β = .993, t = 120.879, and a 95% confidence interval ranging from 0.9773 to 1.0087. The adjusted R-square value of .985 indicates that AED accounts for 98.5% of the variance in ASSK. The bootstrap

analysis, conducted with 10,000 resamples, yielded statistically significant coefficients for AED's influence on ASSK [bias = 1.000, p = .000]. Further exploration in Table 3 above unveils that ASSK also holds a significant positive influence on APIG. This finding is supported by statistical values of F = 4809.377, SE = .014, β =. 978, t = 69.350, and a 95% confidence interval ranging from 0.9506 to 1.0054. The adjusted R-square value of .957 indicates that 95.7% of the variance in ASSK is attributable to APIG. The bootstrap analysis, based on 10,000 resamples, showed statistically significant coefficients for ASSK's influence on APIG [bias = .986, p = .000].

Table 4
Mediating Impact of ASSK on the Association between AED and APIG

					Bootstrap with BCa 95% CI	
Impact	***β***	***SE***	***P-value***	***F***	**Lower Limit**	**Upper Limit**
Indirect effect						
AED → ASSK → APIG	.995	.097	.000	3655.043	0.8049	1.1851

AED = Agricultural Education, APIG = Agri-preneurial Intention of Graduates (APIG), Acquisition of Agricultural Skills and Knowledge (ASSK), *p*-Value < 0.05, standard error of the regression coefficient [SE], β = Beta (Point Estimate), Confidence Interval [Cl], BCa = Bias- Corrected and Accelerated Estimates, F-statistic or F-ratio (F)

Table 4 above indicates that the mediated influence of AED on APIG through ASSK (β = .995, SE = .097; p < 0.05, F= 3655.043; 95% CI = [0.8049-1.1851]) is statistically significant. Thus, the null hypothesis 4 (Ho_4) is rejected, while the alternate form is upheld. Nevertheless, considering the significant direct effect of AED on APIG (β = .986, SE = .012; p = 0.000, 95% CI = [0.7508-1.2212]); the significant direct effect of AED on ASSK (β = .993, SE = .008; p = 0.000, 95% CI = [0.9773-1.0087]); and the significant direct effect of ASSK on APIG (β = .978, SE = .014; p = 0.000, 95% CI = [0.9506-1.0054]), as previously shown in Table 3 above, ASSK can thus be regarded as a potential mediator in the relationship between AED and APIG. Thus, hypothesis 4 is accepted by this study.

Discussion of Findings

The findings of this study reveals that ASSK acted as a potential mediator on the association between these two variables. Therefore, the researcher argues that the effective acquisition of agricultural skills and knowledge through a functional and entrepreneurial-oriented AED programmes can ignite graduates' intentions to launch businesses in the area of agriculture. In a similar study, Edokpolor, Imeokparia and Osifo (2023) found that effective acquisition of knowledge and skills or entrepreneurial abilities through entrepreneurship education can spur graduates to develop intentions to start businesses. Also, the findings from this study reveals a very high positive significant correlation between ASSK and APIG. This finding is consistent with previous studies on this subject view (Nade & Malamsha, 2021; Paschal & Christian, 2021). Specifically, Nade & Malamsha (2021) observed an association between the skills and knowledge students learnt through agri-entrepreneurship and their intentions to start farming as entrepreneurs. This finding is also in tandem with the study by Paschal and Christian (2021), who found that a relationship between the acquisition of entrepreneurial knowledge and skills in Agriculture and the entrepreneurial intentions of young individuals.

This study found a very high positive significant correlation between AED and ASSK, with AED accounting for a substantial portion (98.5%) of the variance in ASSK. In agreement with this finding, Chinasa, Ukonze & Okadi (2022) argued that agricultural skills and knowledge are obtained through a functional Agricultural Education (AED). This opinion also resonates with the views obtainable in other literature (Ekezie & Owo, 2019; Ugwuoke & Onah, 2015). Worthy of note, Amadi & Nnodim (2018) asserted that the ultimate objective of any agricultural education programme is to equip students with the necessary entrepreneurial and innovative skills and knowledge in Agriculture to be well-informed and ready for jobs, and businesses Thus, when graduates of agricultural programmes are competent or acquire desirable skills and knowledge in Agriculture, they may be motivated to start their own agri-businesses, all other factors being equal. This assumption is further validated by the findings of this study which indicated a very high positive significant association between AED on APIG, with a considerable effect size. The adjusted R-square value indicates that a substantial proportion (97.2%) of the variance in APIG can be attributed to the influence of AED. In agreement with this finding, Nade (2019) found that agricultural education of young people influenced their entrepreneurial efficacy. Similarly, Hou & Qiao (2021) argues that entrepreneurial education, focusing on practical experiences, policy support, and family background in entrepreneurship all positively contribute to enhancing the entrepreneurial intentions of agricultural college students. In addition, Kaki *et al.* (2023) identified several other factors that influence students' entrepreneurial intentions in agribusiness, such as age, field of study, university type, prior experience in agribusiness, having a friend as a role model, and their perception of the agribusiness environment. More so, the desire to start one's own business have been linked to other factors such as certainty of starting a business, intentions and willingness to assume risk (Jemal, 2017), cultural differences (Sachitra & Gunasinghe, 2022), students' attitude towards agro-entrepreneurship, perceived behavioral control, and acceptance of agro-entrepreneurial opportunities (Che *et al.*, 2022).

Limitations of study

This study employed a correlation research design, which identifies associations between variables investigated but did not establish causation. The use of convenience sampling limits the generalizability of the findings of this study, as the sample may not be representative of the entire population. Additionally, data collection was conducted online, which may exclude individuals without internet access, potentially introducing selection bias. The reliance on self-reported data through questionnaires may also result in response bias. Lastly, the study's cross-sectional nature means it captures a single point in time, preventing the assessment of changes or long-term effects of agricultural education on agri-preneurial intentions. To address the limitations of this study, future research should consider employing a longitudinal design to capture changes over time and provide a deeper understanding of the causal relationships between Agricultural Education (AED), Acquisition of Agricultural Skills and Knowledge (ASSK), and Agri-preneurial Intentions of Graduates (APIG). Further research could also explore qualitative approaches, such as interviews or focus groups, to gain richer insights into the experiences and perceptions of graduates regarding agricultural education and entrepreneurship.

Conclusions

The findings of this study establish a significant role for Acquisition of Agricultural Skills and Knowledge (ASSK) as a mediator in the relationship between Agricultural Education and Graduates' Agri-preneurial Intentions (APIG). The study underscores the importance of

effective acquisition of agricultural skills and knowledge through functional and entrepreneurial-oriented Agricultural Education (AED) programs in stimulating graduates' intentions to venture into agribusiness. The study not only confirms the positive association between ASSK and APIG, but also demonstrates that AED serves as a powerful determinant of both ASSK and APIG. These results align with previous research, highlighting the pivotal role of educational interventions in nurturing entrepreneurial intentions in the agricultural sector.

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