Impact of Agricultural Education on Students' Career Choice: A Survey

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Abstract—Agriculture has become the bedrock of some growing economy in the world but the discovery of crude oil and other resources in a developing country like Nigeria has led to the extreme decline in the practice. Many youths now have either low or no interested in agriculture and the majority of the people that are actively practicing are the older generation.

This study revisits the impact of education on students interest in agriculture as a professional career. The study was carried out in an agriculture-based university with a state of the art equipment. Our findings show that 64% of agriculture students who participated in this survey are willing to pursue agriculture-related careers. Likewise, there is a significant relationship between the student's gender and farm ownership, with 84% of male students likelier to own farms. Also, our results have shown that students in higher levels have more interests in agriculture compared to students at lower levels and this invariably increases the possibilities of their pursuing agriculture-related careers or businesses.

Keywords—Agricultural education, student learning, academic performance, farming

1   Introduction

Nigeria is located in West Africa with a land mass of 923,768 sq.km measuring about 1,200 km from east to west and 1,050 km from north to south [1]. Nigeria is generously endowed with abundant natural resources and has the largest economy in sub-Saharan Africa [2]. Its economic growth relies heavily on oil as its main source of foreign exchange earnings and agriculture, as the country is endowed with a variety of vegetation and large farmlands with suitable agro-climatological conditions for crop cultivation and livestock rearing [3,4,5]. Many low middle-income countries such as Nigeria, rely on the agricultural sector to provide employment opportunities, food supply and foreign exchange with the exportation of such goods, contributing positively to their economic growth [6]. Several studies have tried to determine the effect of the agricultural sector on Nigeria's economic growth. Most studies found that agriculture has contributed positively to the economic growth of Nigeria [7], while others have found negative effects [8]. In the past, 63% of Nigeria's GDP was accounted for by the agricultural sector; however, there was a massive decline in agricultural practices due to the discovery of

oil in the early 1970s [9,10]. The agricultural sector now delivers only a 30.9% share in the country's GDP [4].

Although the government has introduced numerous agricultural programmes and initiatives to improve agricultural development such as the Agriculture Development Programme, Green Revolution, Operation Feed the Nation, Poverty Alleviation Programme, and the National Special Programme for Food Security, Nigeria still suffers the problem of poverty and food insecurity even with the new focus on agricultural practices because the majority of the farmers are aged between 55 – 70 years [11,12]. With the creation of sustainable agricultural policies and programmes as well as the introduction of agricultural science into the school's curriculum, there is now a growing interest and increased agricultural practices amongst the youths, that is, individuals aged between 15 and 35 years; Nigeria's agriculture still has immense potentials in contributing to the nation's economic development and growth [13,14]. Many youths are uninterested in farming and would rather enter the labor force as they perceive farming a "poor man's occupation"; this, in turn, has devastating effects on the agricultural sector as youths make up 51.9% of the world population and 60% of the Nigerian population [15,16].

Some studies revealed that limited knowledge on agriculture or farming due to increased population, limited access to agricultural information, lack of access to land, youths see agriculture as a course for less privileged and unintelligent, inadequate access to financial services, limited access to market and lack of youths involvement in policy dialogues, are some reasons for the decline in youths participation in agriculture [17,18,19]. Even though the youths play a vital role in the country's future development, unfortunately, youth unemployment accounts for 70% of the unemployment rate in Nigeria [20]. Youths involvement in agricultural activities will, therefore, reduce the unemployment rate significantly and consistently eradicate food insecurities in Nigeria. There is a need to simulate youths' interest and participation in agricultural activities and make them driving forces in agricultural development. [17] examined the effects of agricultural education and training in motivating students to pursue agriculture-related courses or agri-business. The study showed that although education and training have been effective, there lies the need to incorporate agriculture into the school curriculum especially at early stages [21]. [13] showed that some of the students who desired to be self-employed and have received adequate agricultural education and training are usually willing to pursue agriculture as a career. Education and training were also shown by [22] to be an effective tool in broadening knowledge and enhancing research interests. Embedding agricultural education and research into higher education, and linking this with practical farming activities, has proven beneficial in many countries [23]. Studies have recommended agricultural education at all levels of education and establishment of agricultural research institutes as a means to equip youths with agricultural skills and competencies [24,25]. Students choice of study at higher education is also often influenced by their family background, gender, family economic status, and ethnicity which also determines their willingness to pursue agriculture-related careers [26,27]. Practical agriculture through student industrial work experience scheme and practical farming activities as well the impact of trained agricultural experts has made learning agriculture more interesting and influenced students' attitude to learn

agriculture especially in the university [28,29]. However, studying an agricultural course at a higher education may not always be a prerequisite to becoming an agricultural entrepreneur "agripreneur" or owning an agribusiness.

Many of the surveys on the impact of higher education on selecting agriculture as a career path have been inconsistent, for instance in [14, 30, 31], this is because they either considered only a small sample of final year students or many non-major agricultural students in federal universities. Our approach is different because we considered students studying agriculture-related courses in an agriculture-based private university in order to get a more refined and usable result. There is a need to investigate the impact of agriculture in higher education and student's perception towards agriculture-related careers, to be able to make future recommendations that will encourage youths to take up agriculture as professions and for sustainable agricultural practices.

The creation of agricultural policies, governments involvement in agriculture, increased use of ICT in agriculture and learning, functional or practical agriculture education (formal and informal), gamification, scholarships to improve tertiary agricultural education and availability of start-up funding opportunities are some recommendations made to enhance students interest in Agriculture [3,28,32,22,24].

2 Methodology

The study was carried out with a questionnaire which was completed by 85 students studying agriculture-related courses at Landmark University. Landmark University is an agrarian institution and has four colleges namely, the college of engineering, college of business and social science, college of pure and applied science and the college of agricultural science. Although all students in the university compulsory undergo "farm practice" throughout their stay in the university, this study focused on the students in the college of agricultural science and engineering as it is assumed that their affinity and expression towards agriculture as a profession would be more realistic. The questionnaire captured the student's educational background, what influenced their choice of agriculture as a course, their preferred agricultural branch, preferred mode of study, their previous and current interests in studying agriculture, their family background and interests in agriculture, their future plans in pursuing agriculture a career as well as the future prospects of agriculture in Nigeria.

The survey was carried out for a period of 7 days and participants were randomly drawn from students in the second year through the fifth year as they were in a better position to answer many of the related questions than first-year students.

Statistical Package for the Social Sciences (SPSS) software package was used for analyzing the data collected. The data obtained were subjected to descriptive statistics using frequency counts, chi-square analysis and symmetric measures for hypothesis testing.

3 Results

There were 29 students in 200 level, 42 in 300 level, 11 in 400 level and just 3 students in 500 level with a total of 46 female students and 39 male students. The majority (68) of the students were students studying agricultural sciences and others (17) in agricultural engineering. Table 1 shows the distribution of preferred specializations by the students.

61 students have a family member who is an agriculture enthusiast, 54 students reported having a family member who owns a farm but only 11.8% of the students were influenced by their parents in choosing agriculture as their course of study; Other students chose to study agriculture on their own. Furthermore, 42 students' indicated livestock production is their preferred branch of agriculture; This might be because livestock production is one of the most practical branches of agriculture and Landmark university has a large farm for livestock production and rearing were students can raise and maintain livestock. Also, 86% of the students preferred fieldwork as a mode of learning rather than classroom learning. All the respondents in this survey agreed that agriculture has great future prospects and that the government should invest more in agriculture and 97% of students agreed that more agrarian institutions should be developed.

Table 1. Preferred branch of agriculture

Preferred branch of agriculture	
Livestock Production	42
Crop Production	15
Agricultural Economics	10
Agricultural Engineering	17
None	1

3.1 The current level of interest in agriculture and the likelihood of pursuing agriculture as a career

A cross-correlation of the student's current level of interest in agriculture and the likelihood of pursuing agriculture as a career is shown in table 2. Of the 85 respondents, 37 students who were "very interested" in agriculture showed they were "very likely" to pursue agriculture as a career. Also, there is a high correlation between the current level of interest in agriculture and the likelihood of pursuing agriculture as a career in future. Table 3 shows the Pearson chi-square ($P < 0.05$) indicating the likelihood of pursuing agriculture as a career is significantly dependent on the students current level of interest in agriculture. The symmetric measures is a Pearson's R-value greater than 0.5 showing a "strong positive" correlation. We can, therefore, say hypothetically that as the student's interest in agriculture increases, there would be a significant increase in the likelihood of he/she pursuing agriculture as a career. Furthermore, most students are very interested in agriculture and are willing to pursue agriculture as a career.

Table 2. Student's current level of interest vs likelihood of pursuing an agricultural-related career

Cross-table						
		Likelihood of pursuing Agric as a career				*Total*
		Unlikely	Neutral	likely	Very likely	
The current level of interest in agriculture	Not interested at all	1	1	0	0	2
	Neutral	1	5	1	3	10
	Interested	1	1	13	15	30
	Very interested	0	0	6	37	43
Total		3	7	20	55	85

Table 3. Chi-square tests and symmetric measures for student's current level of interest vs likelihood of pursuing an agricultural-related career

Chi-square test				
	Value		*df*	*Asymp. Sig. (2-sided)*
Pearson Chi-Square	59.887[a]		9	.000
Likelihood Ratio	43.746		9	.000
Linear-by-Linear Association	32.948		1	.000
N of Valid Cases	85			
Symmetric measures				
		Value	*Asymp. Std. Error[a]*	*Approx. T[b]*	*Approx. Sig.*
Interval by Interval	Pearson's R	.626	.085	7.319	.000[c]
Ordinal by Ordinal	Spearman Correlation	.542	.091	5.873	.000[c]
N of Valid Cases		85			

3.2 Farm owners and pre-university interest in agriculture

We try to find a correlation between the students who had a pre-university interest in agriculture and those who own farms currently. Table 4 shows that out of the 85 respondents, 13 students currently own a farm and only 10 of the 13 students had a prior interest in agriculture whereas 1 student who did not have any prior interest in agriculture currently owns a farm. Also, we noticed that owning farmland was independent of having a prior interest in agriculture. 36% of students who do not own farmlands now, had a high interest in agriculture prior to pursuing a degree in it. The analysis in Table 5 showed a Pearson's R-value less than -0.5 (indicating that the correlation is a "strong negative") which affirms there is no relationship between the students that own farms and having a prior interest in agriculture. This also means that although a student doesn't own a farm at the university level, he/she might still become an '"agripreneurs'" or own an agribusiness.

Table 4. Farm owners vs pre-university interest in agriculture symmetric measures for student's current level of interest vs likelihood of pursuing an agricultural-related career

Cross-table						
		Pre-university interest in agriculture				
		Not interested at all	Neutral	Interested	Very interested	Total
Farm owners	Yes	1	1	1	10	13
	No	5	13	28	26	72
Total		6	14	29	36	85

Table 5. Chi-square tests for farm owners and their pre-university interest in agriculture

Chi-square tests			
	Value	*df*	*Asymp. Sig. (2-sided)*
Pearson Chi-Square	8.199[a]	3	.042
Likelihood Ratio	8.870	3	.031
Linear-by-Linear Association	3.135	1	.077
No of Valid Cases	85		

Symmetric measures					
		Value	*Asymp. Std. Error[a]*	*Approx. T[b]*	*Approx. Sig.*
Interval by Interval	Pearson's R	-.193	.112	-1.794	.076[c]
Ordinal by Ordinal	Spearman Correlation	-.239	.108	-2.239	.028[c]
No of Valid Cases		85			

3.3 Gender and farm owners

A total of 13 students, 11 male, and 2 female students, own farms. Although 60% of the respondents are female students, only 3% of them own farms, whereas 32% of the male students currently own farms as shown in Table 6. The chi-square tests in Table 7, was used to outline a correlation between the student's gender and farm ownership, and we see that there is a significant relationship between a students gender and his/her likelihood of owning a farm, implying male students are more likely to own farms compared to female students.

Table 6. Cross table correlation between male and female farm owners

Cross-table				
		Farm owners		*Total*
		Yes	No	
Sex	Male	11	23	34
	Female	2	49	51
Total		13	72	85

Table 7. Chi- Chi-square test of male and female farm owners

Chi-square tests					
	Value	*df*	*Asymp. Sig. (2-sided)*	*Exact Sig. (2-sided)*	*Exact Sig. (1-sided)*
Pearson Chi-Square	12.729a	1	.000		
Continuity Correction[b]	10.629	1	.001		
Likelihood Ratio	13.041	1	.000		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	12.579	1	.000		
N of Valid Cases	85				
Symmetric measures					
		Value	*Asymp. Std. Error[a]*	*Approx. T[b]*	*Approx. Sig.*
Interval by Interval	Pearson's R	.387	.093	3.823	.000[c]
Ordinal by Ordinal	Spearman Correlation	.387	.093	3.823	.000[c]
N of Valid Cases		85			

3.4 Students' level and current level of interest in agriculture

From Table 8, we see that out of the 43 students who are very interested in agriculture, the highest number(11 students) are in their third year. Only 2 and 7 students in 400 and 500 level respectively are very interested in agriculture although this might be due to the low number of students in these levels, for instance, there are only a total of 3 students in 500 level.

The Pearson chi-square test as shown in Table 9, has a p-value less than 0.05 (P<0.05), which shows that the students' level of interest in agriculture is dependent on their current level in the university. Also, the Pearson R value > 0.05 shows a "strong positive" correlation. We can, therefore, deduce that as the students move to a higher level, his/her interest in agriculture is increased also.

Table 8. Students' level vs current level of interest in an agriculture chi-square test of male and female farm owners

Interest in agriculture		Level				Total
		200	*300*	*400*	*500*	
The current level of interest in agriculture	Not interested at all	0	1	0	1	2
	Neutral	3	7	0	0	10
	Interested	12	14	4	0	30
	Very interested	14	20	7	2	43
Total		29	42	11	3	85	85

Table 9. Table Chi-square tests for students' level vs current level of interest in agriculture

Chi-Square Tests		Value	df	Asymp. Sig. (2-sided)	
Pearson Chi-Square		17.773[a]	9	.038	
Likelihood Ratio		12.473	9	.188	
Linear-by-Linear Association		.000	1	.986	
N of Valid Cases		85			
Symmetric measures		**Value**	**Asymp. Std. Errora**	**Approx. Tb**	**Approx. Sig.**
Interval by Interval	Pearson's R	.002	.131	.017	.987[c]
Ordinal by Ordinal	Spearman Correlation	.052	.107	.475	.636[c]
N of Valid Cases		85			

4 Concluding Remark

The agricultural sector can be a major contributor to the economic development of a nation and there is a need to attract the young generation through modern education to see the need for agricultural practices. In this work, we carried out a survey to evaluate the impact of agricultural education on students of agriculture-related courses at Landmark University.

Our findings showed that 64% of agriculture students who participated in this survey are willing to pursue agriculture-related careers; which is better and justifies a progressive increase from what was obtained (57%) in the most recent study by [31] who studied the perception of final year agriculture students in taking up farming as a means of livelihood or venturing into agriculture-related enterprises after graduation. 46.5% of students who indicated high interests in studying agriculture as a course, were in their third year (300 level). Interestingly, only 15.2% of students currently own farmlands and a majority of them (11.8%) had a prior interest in studying agriculture as a course. This implies that if the government can make lands available for farming, it can have a direct influence on the practical application after studies.

In summary, this survey has analyzed the relationship between the student's pre-university interests, current interests in agriculture and the future possibilities of pursuing agriculture-related careers or businesses at their different levels particularly in a private university whereas previous studies have focused on students in federal universities. Also, many of the respondents prefer hands-on farming activities to classroom learning; It is, therefore, important to integrate practical farming activities to agricultural education in order to enhance students' interest in taking agriculture as a profession. The use of technologies and incentives that boost agricultural education and farming activities should be made available to all students, to motivate them in becoming "agripreneurs" or own agribusinesses in order to eliminate food insecurity in Nigeria.

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