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Students' perception of orchard farming for campus revenue generation and skills acquisition in the Bauchi State College of Agriculture, Nigeria

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Abstract
This study looks at how students at the College of Agriculture view orchard agriculture as a source of income and skills development. The researchers employed a cross-sectional survey approach to choose 100 students proportionately from the total number of two hundred and five (205) COA students. The researchers used a validated questionnaire to collect data and three specialized lecturers confirmed the validity of the instrument. SAS JMP version 17 was used to analyze the data, which included both descriptive and inferential statistics. Based on the study's research questions, students have different opinions about the economic sustainability of orchard farming, their awareness of its potential benefits and how well it helps them learn new skills. A sizable portion expresses doubts or reservations, although the majority of students think orchard farming can be profitable and helpful for skill development. Significant correlations between students' attitudes and responses were established using chi-square testing ($p<0.001$). The study emphasizes the necessity of inclusion of educational programmes (curriculum) that might increase students' understanding of the possibilities for profit generated from orchard farming. The study suggested that to increase student engagement and take advantage of orchard farming's commercial potential within educational institutions, it is crucial to develop educational programmes that incorporate orchard farming subjects into the curriculum and offer opportunities for hands-on learning experiences.

Keywords: College of Agriculture, Curriculum, Educational programme, Orchard farming, Skill acquisition

1. Introduction

An innovative approach to generating income and developing skills is the integration of orchard farming within our educational institutions. The advantages of such integration are highlighted in a study by Akinnubi et al. (2019), which emphasizes how it can generate revenue while also giving students real-world learning opportunities. Fruit-bearing plants like citrus, mango, and guava are found in orchards, which offer educational institutions a special opportunity to profit financially while simultaneously enhancing the technical skills of students enrolled in agricultural programmes. Assessing the effectiveness and widespread acceptance of such programmes requires an understanding of students' attitudes regarding orchard

farming within the College of Agricultures' (COA). The significance of student viewpoints in shaping agricultural instruction and college orchard farming expansion plans has been highlighted by some studies. For example, Akinnubi et al, (2019) highlighted the importance of educational participation in agricultural orchard farming, highlighting its ability to encourage entrepreneurial and practical learning experiences. Furthermore, Osei et al, (2020) found that students saw orchard farming as a significant opportunity to learn agricultural skills and improve their career opportunities. Considering the potential benefits, there are still significant barriers to implementing orchard agriculture for campus revenue generation and skill acquisition. According to some researches, students are not aware of the revenue-generating potential of orchard farming (Adekunle & Adetunji, 2018), and there are few practical experiences in agricultural curriculum (Ogunbanjo & Abiodun, 2019).

Despite the evident potential of orchard farming for income generation and skill development, the College of Agriculture (COA) in Yelwa, Bauchi, continues to face challenges in strengthening its Internally Generated Revenue (IGR) streams. Presently, the college relies heavily on government subventions with minimal contribution from internally sourced income. The underutilization of available land resources, lack of structured agribusiness models, and limited student engagement in revenue-oriented agricultural ventures have contributed to the IGR shortfall. This situation not only affects the institution's financial autonomy but also limits opportunities for students to participate in practical agricultural enterprises like orchard farming. Addressing this IGR issue is critical for creating a sustainable educational model that aligns income generation with experiential learning in agriculture. This study is important for a variety of reasons. For freshers, it provides insights into students' perspectives about orchard farming, which can be used to plan and implement agricultural education programmes that can be tailored to their specific needs and interests. Secondly, it adds to the knowledge of college revenue generation systems by providing actual information on the viability and popularity of orchard farming programmes at academic institutions such as COA.

One of the research gaps in this study is the need to look into how profitable orchard farming is, particularly in the functional context of COA. The study evaluated the attitudes of COA students regarding orchard gardening while accounting for factors such as skill development and economic viability. The study was limited by sample size restrictions, practical and the applicability of results beyond the study area. This study's main objective is to find out how students at the College of Agriculture in Yelwa, Bauchi State, Nigeria, feel about orchard gardening as a way to generate income on campus and also teach career skills.

Purpose of the Study

This study's main objective is to examine how College of Agriculture students view orchard farming as a means of generating income and developing their skills for career development. In particular, the study intends to;

a. investigates the viability of orchard farming as a means of generating revenue.
b. Determine whether COA students are aware of the potential financial advantages of orchard farming.
c. Assess how orchard farming affects the knowledge and expertise of COA agriculture students.

Research Questions

a. How profitable is orchard gardening as a means of producing income?
b. To what extent do COA students comprehend the financial benefits of orchard farming?
b. How can orchard farming improve the

knowledge and expertise of COA agriculture students?

Statement of Hypotheses

Ho_1: There is no significant difference in the economic viability of orchard farming as a means of revenue generating strategy within the COA as perceived by students.

Ho_2: There is no significant difference in the awareness levels of students regarding the economic benefits of orchard farming within the COA.

Ho_3: There is no significant difference in the effectiveness of orchard farming in providing valuable skills and experiences for students enrolled in agricultural programmes at COA.

2. Literature Review

Theoretical Framework: A variety of theoretical frameworks can be applied, given that the research focuses on students' perceptions of orchard farming as a source of income and skill development on campus. The Theory of planned behaviour (TPB) is one helpful framework. In 1985, social scientist Icek Ajzen presented the idea of the Principle of Planned Behavior (TPB). Ajzen expanded upon this as well as the earlier Theory of Reasoned Action proposed by Martin Fishbein in 1980. The TPB has since developed into one of the most significant tools for characterizing and predicting human behaviour. According to the Theory of Planned Behavior

(TPB), three major factors; attitudes, subjective standards, and what constitutes behavioural control have an impact on an individual's behaviour. In the present study, attitudes refer to students' positive or unfavorable perceptions of the orchard gardening as a revenue-generating method and means of skill development. Subjective norms define how students view social limits or expectations for orchard agricultural productivity, such as peer pressure or institutional support. Perceived behavioural control refers to students' confidence in their capacity to participate in orchards farming and overcome perceived impediments or challenges. Using the Principles of Planned Behaviour, the research will investigate how students' beliefs, personal needs, and perceived behavioural control influence their thoughts and intentions about orchard gardening at the College of Agriculture. This framework gives a detailed knowledge of the psychological aspects that influence students' behaviour and can help drive the development of therapies or treatments. Orchard farming in colleges and universities has lately come under increased notice because to its capacity to provide cash while simultaneously boosting student skill development.

The financial viability of orchard agriculture: Akinnubi et al. (2019) and Abdullahi et al. (2021) found that orchard farming has the potential to provide revenue for academic institutions. These studies demonstrate how orchard gardening may generate income through selling of high-value goods.

Economic advantages: Adekunle and Adetunji (2018) and Adekoya, Yusuf, et al. (2020) investigated students' perceptions of orchard farming's economic advantages in academic contexts. They observed that, despite some learners have a basic understanding of the orchard agriculture, it is still a need to expand awareness about its potential profitability and employment **generation.**

Efficacy in Skill Acquisition: Osei et al. (2020) and Atuoye et al. (2021) evaluated the efficacy of orchard farming in giving useful skills and experiences to agricultural students. They emphasize the importance of hands-on learning experiences in helping students improve their practical skills, entrepreneurial competences, and general employability in the agricultural industry.

While prior study has shed light on many aspects of orchard farming, including its economic potential, student understanding and viewpoint, and skill development

efficiency, there are a few notable gaps. These include a restricted focus on students' perspectives, regional differentiation, an integrated study of objectives, and an emphasis on real-world repercussions. This study intends to remedy such gaps by undertaking an in-depth analysis into students' attitudes toward orchard farming.

Methodology

This study used a survey that was cross-sectional in nature to collect data and assess students' perspectives of orchard gardening as an avenue for school income generation and skill development at the College of Agriculture. The study location is the College of Agriculture Yelwa in Bauchi State, at 10.2044° North and 9.8546° East. Before its separation from Bauchi's Abubakar Tatari Ali Polytechnic (ATAP), the college was known as the School of Agriculture and Animal Husbandry and had been in existence since 1971. The College was created specifically to deliver certificates, National Diploma (ND), and Higher National Diploma (HND) to students upon completion in a variety of agricultural courses to provide appropriate student training in order to fulfill the State's and other organizations' demand for middle-level personnel. There are now nine academic departments at the college. In addition to addressing significant research issues that impact the community at large and the overall success of farm efforts in Bauchi State, Nigeria, selecting Yelwa as the study site offers a unique opportunity to examine agricultural dynamics in a particular location and setting using the resources and expertise available at the College of Agriculture, Yelwa. Based on information gathered by the researchers, the study's population was two hundred and five (205) students. Using Yamane's formula (1967), the sample size was determined at a 7% precision level (margin of error) for a population of 205 students. The formula is given by:

$n = N / [1 + N(e)^2]$ ……..*(1)*

Where:

n = sample size

N = population size (205)

e = margin of error (0.07)

Substituting the values:

$n = 205 / [1 + 205(0.07)^2] = 205 / [1 + 205(0.0049)] = 205 / 2.0045 \approx 102.3$…(2)

Therefore, at a 7% precision level, the appropriate sample size for a population of 205 is approximately 102 students. Thus, a sample of 100 students represents a balance between statistical rigor and practical feasibility acceptable within ±7% margin of error, particularly for perception studies. Data were gathered by a typical survey comprising five parts and 24 items aimed at obtaining comprehensive information about the students. Prior to the distribution of the study instrument, three expert lecturers from the Department of Agricultural Economics and Extension at Abubakar Tafawa Balewa University (ATBU) in Bauchi validated the questionnaire's content to ascertain its validity. The researchers distributed the questionnaires to the study participants which lasted for two weeks. Subsequent to collecting data, SAS JMP version 17 statistical software was employed to perform descriptive and inferential statistics through means and chi-square analysis. The chi-square test of independence was selected for this study because the data obtained from the questionnaire were predominantly categorical, collected using Likert-type scales and multiple-choice responses. These data do not meet the assumptions of parametric tests such as correlation (e.g., normality, linearity, or continuous variables). The chi-square test is suitable for testing the association between categorical variables, such as students' perceptions and awareness levels across different categories of responses. Additionally, the chi-square test does not assume a normal distribution, making it

ideal for the analysis of non-parametric, frequency-based data. As a result, using the chi-square test provides valid inferences about whether students' views on orchard farming significantly differ by response categories or not.

4. Results and Discussion

Economic Viability of Orchard Farming for Revenue Generation

Table 1: Counts, Probability Distribution, and chi-square test results of students' perception of the economic viability on orchard farming for revenue generation

	Rating	Count	Prob.
a.	Highly Viable	40	0.412
b.	Viable	17	0.175
c.	I don't know	31	0.319
d.	Not Very Viable	8	0.082
e.	Not Viable at All	1	0.010
Total		**97**	**1.000**
Test		*Chi-Square*	*Prob>Chi-sq*
Likelihood Ratio		62.3549	<.0001*
Pearson		53.2577	<.0001*

Source: Computed from Survey Data, 2024

The table depicts the values and distribution of likelihood for the views of students. Out of the 97 students, the majority say orchard farming is either extremely practical (40 students, 41.2%) or viable (17 students, 17.5%), giving a good opinion of its economic prospects. However, a significant number of participants answered with "I don't know" (31 students, 31.9%), suggesting a lack of knowledge or understanding concerning the economic sustainability of orchard farming. Fewer students stated that the orchard gardening was probably not very economic (8.2%) or not economic at all (1.0%). Chi-square tests found substantial correlations between students' perceptions and responses (Likelihood Ratio Chi-Square = *62.3549, p <.0001*; Pearson Chi-Square = *53.2577, p <.0001*), demonstrating that perceptions are not randomly distributed.

Several studies have revealed the impact of students' attitudes on their engagement in agricultural activities and projects (Abdullahi & Adekunle, 2020; Ogunbanjo & Abiodun, 2019). The huge proportion of students who consider orchard farming is highly profitable or viable for revenue generation is consistent with past studies revealing students' positive sentiments toward agricultural entrepreneurial endeavors (Akinnubi *et al.,* 2019; Adekunle & Adetunji, 2018). Furthermore, the discovery that a significant proportion of students responded with "I don't know" emphasizes the importance of increased awareness and education about orchard farming's potential for revenue generation, which is consistent with previous studies advocating for initiatives in education and curriculum integration to improve learners' understanding and knowledge (Abdullahi et al., 2021; Adekoya et al., 2020).

In addition, the chi-square test results, which demonstrate a statistically significant association between students' perceptions and responses, lend to the

support of the notion that students' attitudes toward orchard farming do not vary at random but are influenced by a variety of variables such as awareness, education, and personal experiences (Adetoro *et al*., 2020; Atuoye *et al.,* 2021). This conclusion coincides with Ajzen's (1991) Theory of Planned Behavior, which states that ideas, personal standards, and perceived behavioural control all impact individual behaviour. In the instance of orchard farming, students' views of the profit potential may be impacted by their attitudes toward agriculture, subjective criteria shared by their social networks, and their ability to actively engage in orchard operations.

Awareness of Potential Economic Benefits of Orchard Farming

Table 2: Counts, probability distribution, and chi-square test results of students' perception on awareness of potential economic benefits of orchard farming

	Rating	Count	Prob
a.	Increased revenue	37	0.381
b.	Creation of on-campus jobs	35	0.360
c.	Management Opportunities	20	0.206
d.	Potential for research collaborations	3	0.031
e.	Educational Opportunities for Students	2	0.020
	Total	**97**	**1.000**
Test		*Chi-Square*	*Prob>Chi-sq*
Likelihood Ratio		70.0129	<.0001*
Pearson		58.0000	<.0001*

Source: Computed from Survey Data, 2024

Table 2 demonstrates that the majority of students perceived higher revenue (37 students, 38.1%) and work prospects on campus (35 students, 36.0%) as the principal economic benefits of orchard farming. However, a lesser proportion of students discover advantages such as management chances (20 students, 20.6%), research collaboration (3 students, 3.1%), and educational opportunities for students (2 students, 2.0%). The chi-square test findings reveal statistically substantial connections across students' opinions and what they expressed (Likelihood Ratio *Chi-Square = 70.0129, p <.0001; Pearson Chi-Square = 58.0000, p <.001)*. This means that pupils' attitudes remain constant randomly and are shaped by a number of events.

These findings show that, while students acknowledge the potential economic advantages of orchard agriculture, they differ in their understanding and awareness of key aspects. This emphasizes the importance of focusing educational programmes and outreach campaigns on increasing students' understanding and awareness of orchard farming's economic benefits, such as earning money, creating employment, managing prospects, research partnerships, and educational enrichment. The earlier explanation of the findings and its consequences is consistent with the literature reviewed, which emphasizes the importance of increasing students' awareness and perceptions in order to encourage participation in agricultural initiatives and programmes within

educational contexts (Abdullahi & Adekunle, 2020; Ogunbanjo & Abiodun, 2019).

According to studies, students are enthusiastic about the economic benefits of agricultural programmes, but they also emphasize the importance of specific educational interventions to increase knowledge and awareness (Akinnubi et al., 2019; Adekunle and Adetunji, 2018). The statistically significant associations between students' opinions and responses support the idea that individual attitudes and awareness are important for affecting students' participation in orchard farming programmes, which is compatible with the Theory of Planned Behavior (Ajzen, 1991). Bridging these knowledge and awareness gaps allows academic institutions to increase student participation while also optimizing the revenue-generating potential for orchard farming operations within the College of Agriculture.

The effectiveness of orchard farming in providing valuable skills and experiences for students

Table 3: Counts, probability distribution, and chi-square test results for students' perception of the effectiveness of orchard farming in providing valuable skills and experiences

Rating	Counts	Prob
a. Yes, strongly believe	27	0.27835
b. Yes, I believe	45	0.46392
c. I cannot Say	8	0.08247
d. No, I do not believe	4	0.04124
e. Strongly do not Believe	13	0.13402
Total	**97**	**1.000**
Test	*Chi-Square*	*Prob>Chi-sq*
Likelihood Ratio	56.3619	<.0001*
Pearson	57.7938	<.0001*

Source: Computed from Survey Data, 2024

The findings in Table 3 offer insight on students' perceptions of the effectiveness of orchard farming in providing critical skills and experiences at the College of Agriculture. A substantial number of students (27 students, 27.8%) or strongly believe (45 students, 46.4%) that orchard farming gives useful skills and experiences. However, there is a significant proportion of unsure students, with 8 students (8.2%) suggesting that they have nothing to say, and a smaller percentage conveying skepticism, with 4 students (4.1%) stating they do not believe, and 13 students (13.4%) strongly disagreeing with the success of orchard farming in providing valuable skills and experiences. The chi-square test findings demonstrate substantial connections between students' opinions and what they stated (Likelihood Ratio *Chi-Square = 56.3619, p <.0001*; *Pearson Chi-Square = 57.7938, p <.0001*), demonstrating that opinions do not fluctuate randomly and are impacted by various variables. These findings reveal that, while the majority of students believe orchard farming is effective in imparting critical skills and experiences, others are perplexed or

skeptical. This stresses the need for more study and clarification on the perceived value of orchard farming in terms of skill acquisition and experience. This interpretation of the findings and their consequences is similar with earlier research, which highlights the need of addressing students' attitudes and concerns in order to boost participation in agricultural programmes within educational institutions (Abdullahi & Adekunle, 2020; Ogunbanjo and Abiodun, 2019). The statistically significant relationships between students' opinions and responses support the notion that individual attitudes and awareness play an essential role in influencing students' participation in orchard farming programmes, which is consistent with the Theory of Planned Behavior (Ajzen, 1991). Bridging these gaps in knowledge and comprehension enables academic institutions to boost student engagement and enthusiasm for orchard farming activities, hence enhancing their efficacy in providing practical knowledge and expertise inside the college.

5. Conclusion and Recommendations

The study's findings highlight the importance of increasing students' understanding and awareness of orchard farming's revenue potential through educational approaches and curriculum integration, as well as the impact of personal mindsets and social standards on students' perceptions and behaviour. The study also identified positive feelings and regions of doubt. While many students feel orchard farming is highly possible or realistic for revenue creation, a sizable minority are unsure or do not comprehend its economic feasibility. The statistically significant connections between students' perspectives and responses highlight the need to correct this misconception and provide them with factual information about the benefits of orchard cultivation and educational activities as well as interactive opportunities for learning.

Based on the findings and conclusions, the following recommendations were given.

1. It is vital to create instructional programs and awareness campaigns that teach undergraduates about the monetary advantages of orchard farming, with a focus on income generation and employment growth inside the school.
2. Integrating orchard farming topics into agricultural curricula to equip students with practical knowledge and skills in orchard management, entrepreneurship, and agricultural economics is undeniably important.
3. To help students gain firsthand knowledge and understand the economic possibilities of orchard farming, provide them with experiential learning opportunities including internships, field trips, and hands-on training.
4. By expanding on these insights and addressing knowledge gaps, educational institutions can boost student involvement in orchard farming operations and make use of their financial resources to benefit the college and its students.

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