JOURNAL OF TECHNICAL EDUCATION AND TRAINING
ISSN: 2229-8932 e-ISSN: 2600-7932

JTET

Vol. 16 No. 3 (2024) 56-68
https://publisher.uthm.edu.my/ojs/index.php/jtet

An Analysis of the Antecedent Factors Affecting Students' Enrolment Decisions Across Agricultural Vocational Programs in Malaysia

Nurul Azhani Ramli[1], Caleb Chidozie Chinedu[1]*, Salma Dahiri[2] and Babatunde Olawale Owolabi[3]

[1] *Faculty of Technical and Vocational Educational, Universiti Tun Hussein Onn Malaysia, 86400 Batu Pahat, Johor, MALAYSIA*
[2] *Department of Education, Faculty of Social Sciences The University of Lahore 1-Km Defence Road, Bhuptian Chowk, Lahore, 54590, PAKISTAN*
[3] *College of Engineering, The University of Alabama, Tuscaloosa, AL 35487-0205, USA*

*Corresponding Author: caleb4life56@gmail.com, caleb@uthm.edu.my
DOI: https://doi.org/10.30880/jtet.2024.16.03.005

Article Info

Received: 25 August 2024
Accepted: 12 November 2024
Available online: 23 December 2024

Keywords

Agricultural education, demographic, socio-cultural, socio-psychological, career-related, student enrolment, vocational colleges

Abstract

Student enrolment in agricultural vocational programs across Malaysia is notably low, posing significant implications for the country's sustainability of human capital, agricultural productivity, and food security. To mitigate these issues, it is essential to understand the relationship between various antecedent factors and students' enrolment decisions in these programs. This research thus investigates the factors that influence students' decisions to enrol in agricultural vocational programs in Malaysia. The study focuses on demographic, sociocultural, socio-psychological, and career-related factors. Data was collected from 308 students from three agricultural vocational colleges and two secondary schools using a cross-sectional survey design. Descriptive and inferential statistics were used to describe participants' demographic characteristics and examine the relationships between these factors and enrolment decisions. The results showed that ethnicity does not significantly influence enrolment, but gender correlates weakly with student enrolment decisions. However, strong correlations were found between sociocultural, socio-psychological, and career-related factors, highlighting the critical roles of family, community norms, personal attitudes, and career prospects in shaping students' decisions to pursue agricultural education. These findings highlight the importance of targeted interventions, inclusive policies, and improved career guidance to attract more students to agricultural vocational programs. The study offers valuable insights for policymakers, educators, and industry stakeholders on addressing the challenges of low enrolment and building a sustainable agricultural workforce for Malaysia.

1. Introduction

The enrollment rate for agricultural programs in vocational colleges (VCs) in Malaysia is alarmingly low. In 2023, only 3,366 students were enrolled in agricultural vocational colleges out of about 56,174 vocational college students, representing just 6% of Malaysia's total vocational college student population. This low enrolment rate, despite the overwhelming capacity of these vocational colleges to enroll many more students across the various agricultural-related programs (Tanzizi, 2021), highlights underlying issues such as the attractiveness and

marketability of agricultural-related programs in Malaysia. These issues consequently may impact the sustainability of human capital essential for boosting agricultural productivity and ensuring food security in the country (McKenzie et al., 2018; Ortega-Dela Cruz, 2020; Taylor et al., 2017). Compared to other disciplines, the number of VCs offering agricultural programs is significantly lower, reflecting a general indifference or negative perception among the populace regarding agricultural programs as dirty, dangerous, and difficult – a common stereotype that has been identified in the literature (Raiyan & Kumala Putri, 2021). This perception exemplifies agriculture as a sector that involves physically demanding tasks, potential hazards, and challenges (Prasetyaningrum et al., 2022). Thus, the declining trend in enrolment, observed both in VCs and higher education institutions (HEIs), is particularly worrying as the number of enrolled students has a direct or indirect relationship with the supply of highly skilled and semi-skilled labor in the future (OECD, 2022), which may in turn inadvertently affect food security and supply. The inadequate manpower in the agricultural sector may reflect student enrolment in these programs nationwide. Consequently, it may compromise the goal of obtaining sustainable agricultural productivity, given that the human capital needed to boost productivity in this sector is unavailable or readily lower than meets the demand (Ryan, 2023).

One of the implications of inadequate human capital in the agricultural industry, which is also a consequence of low student enrolment in the sector, is that food security to meet the needs of the populace in the country over the next five to ten years will be affected. Today, Malaysia faces a shortage of highly skilled and semi-skilled local workers in the agricultural sector (Ryan, 2023). This can be seen from the statistics of graduates in agriculture, which are pretty low compared to the other fields and a reliance on foreign workers in this sector (Ministry of Higher Education Malaysia, 2022). In addition to the low statistics, the number of graduates in this field also shows a declining trend over the past five years. This may be due to various antecedent factors influencing youths' interest, enrolment decisions, and career-related choices to venture into this field (Ministry of Higher Education Malaysia, 2022).

The agricultural sector is essential for Malaysia's socioeconomic development and fruits (Pirngadi & Sagala, 2023). Historically, agriculture has provided stability during economic downturns, as seen during the 1997 financial crisis, where its GDP contribution increased from RM 17.1 billion in 1995 to RM 18.2 billion in 2000 (Jamari et al., 2015)

The agricultural sector is also crucial for food security in Malaysia, which relies significantly on food imports despite its abundant agricultural resources (Osabohien et al., 2024). The government aims to enhance self-sufficiency in food production through a robust agricultural framework, addressing challenges such as climate change and urbanization (Mumuh et al., 2021). Initiatives like the National Agrofood Policy 2021-2030 focus on modernizing agro-food through technology, research, and collaboration (Abdullah Kasim et al., 2023). Additionally, agriculture is vital in poverty alleviation and rural development, enabling increased income and improving living standards, particularly in rural areas (Abdullah & Abu Samah, 2014).

Therefore, given that the issues associated with low student enrolment across agricultural VCs may also reflect the influence of certain antecedent factors, it is important to identify them and explore how they affect student enrolment decisions in the Malaysian agricultural context. To address this gap, it is crucial to understand the complexities influencing enrolment decisions and develop strategies to attract more students to agricultural programs, thereby preparing a competent local workforce to sustain and grow Malaysia's agricultural sector. This research aims to address this gap and contribute valuable insights into the educational policy-making process on TVET marketability by exploring the dynamics influencing student enrolment decisions in agricultural vocational colleges in Malaysia. This study attempts to address the following objectives: (1) To identify the disparity and spread in students' enrolment across agricultural vocational programs in Malaysia by gender and ethnicity (2) To determine the relationship between the identified antecedent factors (demographic, sociocultural, socio-psychological, and career-related factors) and student enrolment decisions in agricultural vocational programs in Malaysia.

2. Review of Related Literature

Research literature has revealed that certain factors are contingent on determining students' decisions and career-related choices across programs. Given the specific context of agricultural vocational education, a critical review of the literature reveals that some demographic, socio-cultural, socio-psychological, and career-related factors influence student decision-making with regard to their enrollment in specific fields. This section presents a critical discussion of the literature regarding these factors.

2.1 Demographic Factors

Demographic factors, in the context of this study, are distinguishing characteristics of a population that have been classified according to specific criteria such as age, gender, income, education, marital status, and so on. Previous research has revealed that certain demographic factors may affect students' agricultural program enrolment decisions (Mat Taib et al., 2019; Kyle et al., 2016; James & Anderson, 2013; Randal et al., 1997). In this regard,

factors such as age, gender, and ethnicity have been determined to share some relationship with student enrollment (Abdul-Aziz et al., 2020; Abdullah & Sulaiman, 2013; Ali et al., 2020; Mat Taib et al., 2019) are significant demographic variables. Mat Taib et al. (2019) reported that there may be a positive relationship between students' age and certain job choices they make. In the same study, the investigators also found that there are disparities in job choices by gender, indicating that there may be certain gender preferences related to student career choices in vocational education. João & Silva (2021) reinforce this narrative by reporting that in certain fields, the trend suggests that younger students typically show higher enrollment rates compared to older students, which may be mitigated by work commitments and family responsibilities, thus suggesting that age may be critical to determining student's enrollment decisions in agricultural programs. Talbert & Edwin (2008) affirm that gender disparities persist in student enrollment, with an increasing number of females enrolling in traditionally male-dominated fields, indicating that certain fields that stereotypically appeal to certain genders are consistently now witnessing balanced ratios between male and female students. In a similar but divergent view, Crews Pao (2016) reveals that race also impacts enrollment, as their study showed that minority groups often experience lower enrollment rates due to certain socioeconomic factors, inadequate representation in HEIs, and systemic issues. This led to the call for more specific interventions promoting diversity and inclusiveness across various ethnic groups.

These findings are consistent with those of Ali et al. (2020), who concluded that age, gender, and ethnicity are thought to impact young people's decision to pursue careers in agriculture. In sum, studies have demonstrated that certain socio-demographic factors, including age, gender, education, occupation, ethnicity, and income, can impact students' choices in the agriculture sector. Age may also play a significant role in determining an individual's fitness for certain agricultural programs. The average age of Malaysian farmers is over 40, which suggests that the industry needs to attract younger people. Research literature (Ashford et al., 2020; Gartaula et al., 2012; Prasetyaningrum et al., 2022; Talbert & Edwin, 2008; Zeddies, 2024) has shown the significance of knowledge, attitude, acceptability, and gender in influencing young people's intention to pursue careers in agriculture. Hence, in the context of this study, demographic factors include characteristics such as age, gender, and ethnicity.

2.2 Sociocultural Factors

Sociocultural factors in the context of this study constitute those cultural aspects, beliefs, and perspectives that affect the uptake and efficacy of students in relation to their enrollment in agricultural vocational education. Student attitudes and decisions about agricultural careers or courses of study are significantly influenced by several sociocultural factors, including their cultural beliefs, parental influence, social status, and farming experience (Simon & Hephzibah, 2017; Egbule, 2020; Mkong et al., 2021). Mkong et al. (2021) stated that one of the most important factors influencing students' decisions regarding their engagement in the agricultural subsector depends on whether they have some farming experience. Due to their exposure to farming activities and knowledge of the agricultural industry, students who have previously worked on farms may be more likely to select agriculture as their major. Other than that, family influences, especially the mother's education and household income, play a crucial role in students' decisions. The family's increased income and educational attainment may give students access to more resources and possibilities, making agriculture a more alluring alternative compared with other fields for those students.

Moreover, Obayelu and Fadele (2019) posit that students' exposure to farming practices impacts their views and willingness to study agricultural programs. On the other hand, experienced visits to mechanized farms might increase students' interest in agriculture and make them perceive it as a business potential rather than merely a low-paying employment. Besides, a high school student's decision to pursue agriculture can also be greatly increased by having a father who is primarily an agricultural practitioner and supports agricultural education. In a prior study, Johnson et al. (2015) affirmed that parental influence influences youngsters' decision to pursue agriculture. Hence, these sociocultural factors may also determine student enrolment decisions for agricultural education across vocational colleges in Malaysia. Therefore, sociocultural factors examined in this study consist of sociocultural beliefs, family/peer-related factors, and prior experience

2.3 Socio-psychological Factors

Kimaro and Towo (2015) found that attitude, perception, interest, and knowledge are significant determinants of young people's involvement in agriculture. The study discovered a substantial association between youth participation in agriculture and attitude. This suggests a favorable attitude towards agriculture can impact students' interest in agricultural pursuits. Also, students' opinions and attitudes towards agriculture can be influenced by their family values and the nature of their upbringing. Students may be persuaded to explore agriculture as a feasible career choice by supportive families and positive family experiences (Mkong et al., 2021). Furthermore, the study emphasized how perception influences young people to engage in agriculture.

Besides, Sabri (2013) and Saifuddin Abdullah (2018), note that youths today lack interest in agriculture and have no ambition to become farmers, indicating a low level of interest among youths in agricultural education, typically because of the perception held by family members, community, or peers that agricultural education is more suitable for the elderly and people in rural communities compared to the business-dominated sectors which they perceive as cleaner and more conducive. In preparing students to engage in agricultural careers, there may be a need for a strong emotive connection with the field of agriculture (Arsitektur et al., 2019). This is because the individual's decision to enroll in the field of agriculture as a chosen career pathway can be predicted by their self-belief, prior experience, and family views/influence about agriculture (Thompson & Russell, 1993).

2.4 Career-related Factors

Career-related factors affect people's decisions regarding their professional development and career paths, which align with their interests, passion, skills, abilities, values, and goals. Factors that affect students' enrolment in agricultural programs include poor employment prospects, negative perceptions about agricultural jobs, and better opportunities and conditions in other science-based programs. The perceived wage is identified as one factor affecting students' enrolment in agricultural programs (Edamisan, 2022). Students often perceive agricultural careers as having relatively low salaries, contributing to their lack of interest in pursuing agricultural education (Chadan et al., 2020). This perception is influenced by the belief that farming, which is associated with agriculture, involves hard physical labor and low pay (Dian et al., 2022).

Obayelu and Fadele (2019) posit that students' perception of agriculture is influenced by their perception of job prospects and wages in the agricultural sector. Many students perceive agriculture as a good source of employment involving processing, packaging, marketing, and sales of agricultural products. However, some students view agriculture as inferior, unfulfilling, and laborious, which may lead to a perception that being a farmer means living in a rural environment. The perception of agriculture as a lucrative job can influence students' willingness to study agriculture. It is important to note that the sources do not provide specific information on the actual job prospects and wages in the agricultural sector that affect students' participation in agricultural activities.

2.5 Theoretical Framework and Research Hypothesis

Figure 1 shows the conceptual framework of this study. The framework was adapted from the Social Cognitive Career Theory (SCCT) by Robert W. Lent, Steven D. Brown, and Gail Hackett, which was developed in 1994. This theory was developed based on Bandura's social cognitive theory and combines several key ideas from previous career development theories. In this study, the SCCT provides the theoretical lens to explore how various antecedent factors—demographic, sociocultural, socio-psychological, and career-related—are associated with students' decisions to enroll in agricultural vocational programs across Malaysia. The SCCT, grounded in Bandura's social cognitive theory, offers an approach to understanding career development by integrating elements of self-efficacy, outcome expectations, personal goals, and environmental influences. The main proposition of SCCT is that individuals' beliefs in their abilities, their expectations about career outcomes, and the goals they set for themselves are influenced by their experiences and the contexts in which they operate, including demographic, sociocultural, and psychological factors.

At the heart of the SCCT is the idea that self-efficacy beliefs—an individual's confidence in their ability to perform specific tasks—are central to career decision-making. These beliefs are shaped by various personal experiences and social contexts, including the individual's background and societal influences. For instance, in the context of this study, demographic factors such as age, gender, and socioeconomic status might impact a student's sense of self-efficacy by determining their access to agricultural education or resources. SCCT also emphasizes outcome expectations or the individual's belief in the potential rewards or benefits of pursuing a particular career path. This is relevant to the study's investigation into how factors such as job prospects in agriculture or the perceived prestige of vocational programs influence students' decisions to enroll.

Furthermore, SCCT underscores the role of personal goals in guiding career choices. These goals are influenced by the individual's self-efficacy and expectations about outcomes, suggesting that students who believe in their capacity to succeed in agriculture and anticipate positive career outcomes are more likely to pursue agricultural vocational training. However, the theory also accounts for the significant role of environmental and contextual influences. Family expectations, societal norms, and access to resources can all act as environmental factors that shape self-efficacy, outcome expectations, and career decisions. For instance, sociocultural factors, such as family traditions regarding education and career choices, might encourage or discourage students from enrolling in agricultural programs, depending on how agriculture is viewed within their community.

In applying these propositions to the study, the study examines how these antecedent factors affect students' decisions to enroll in agricultural vocational programs across Malaysia. The study hypothesizes that demographic, sociocultural, socio-psychological, and career-related factors are key variables that influence enrolment decisions, with these factors conceptualized as affecting students' self-efficacy and outcome expectations. For example,

demographic factors like socioeconomic background and prior academic performance may shape students' confidence in their ability to succeed in an agricultural career. Similarly, sociocultural factors, such as cultural attitudes toward agriculture or the influence of family expectations, might influence students' perceptions of the potential benefits of agricultural careers, thereby shaping their career goals. Hence, the following null hypotheses are formulated and tested at a .05 level of significance:

H01: There is no significant relationship between demographic factors (Gender and Ethnicity) and student enrolment decisions in agricultural vocational programs in Malaysia

H02: There is no significant association between sociocultural factors and student enrolment decisions in agricultural vocational programs in Malaysia

H03: There is no significant correlation between socio-psychological factors and student enrolment decisions in agricultural vocational programs in Malaysia

H04: There is no significant relationship between career-related factors and student enrolment decisions in agricultural vocational programs in Malaysia

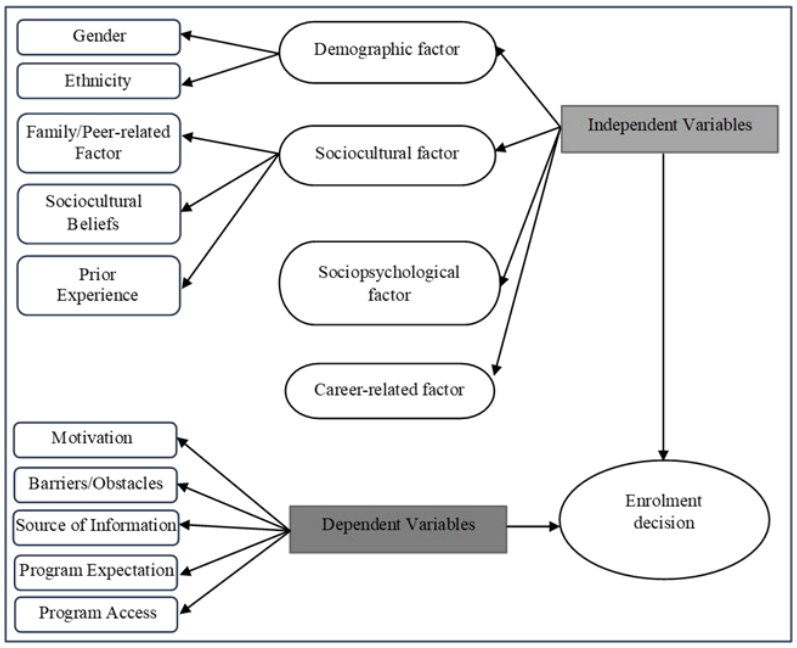

Fig. 1 *Conceptual framework (Adapted from Social Cognitive Career Theory (SCCT) by Lent, Brown & Hackett, 1994)*

3. Methodology

This study employed a cross-sectional survey research design, utilizing a stratified random sample of 308 respondents. These respondents comprised students from three agricultural vocational colleges—Pagoh Vocational College, Pertanian Chenor Vocational College, and Pasir Puteh Vocational College—as well as two secondary schools, SMK Munshi Sulaiman and SMK Dato' Seth, in Malaysia. The researchers were interested in comparing enrolment decisions between two groups of respondents: enrolled and unenrolled students. The enrolled students were those selected from vocational colleges in the sample, while the unenrolled students were students who had finished form 3 in secondary schools and were at the point of deciding whether to pursue vocational streams or general education streams. Hence, these groups of respondents were selected for the study

The instrument for data collection was adapted from previous studies (Sephokgole et al., 2021; Turner & Hawkins, 2014; M. Santiago, 2019; Brandy, 1986) and consisted of seventy-four items, divided into three main sections. Section 1 focused on the demographic profiles of the respondents, including gender, age, ethnicity, and institutional affiliation. Section 2 contained fifty items designed to capture the factors influencing enrollment decisions in agricultural vocational programs. The final part, Section 3, comprised twenty items to gauge students' perceptions of their enrollment decisions regarding agricultural vocational programs in Malaysia. The instrument was pilot-tested on a separate sample from those used in the main study. The researcher ensured that ethical principles such as anonymity, informed consent, protection, and respect for research participants were upheld. A face and content validity test was conducted to ensure validity and reliability, with feedback incorporated to

improve the overall quality and coherence of the instrument, ensuring that it measured what was intended. An internal consistency coefficient (α) of greater than 0.8 was reported for all four scales, confirming the instrument's reliability. The study sought to identify the trends in student enrollment across different ethnic groups and investigate gender-based disparities in enrollment within agricultural vocational colleges in Malaysia. Consequently, descriptive statistical analysis (frequency and percentages), was used to analyze the enrolment trend across ethnic groups. Additionally, an independent samples t-test was conducted to examine gender-based disparities in agricultural vocational program enrolment across various ethnic groups in the country. Finally, Pearson correlation analysis was utilized to determine the relationship between antecedent factors—demographic, sociocultural, socio-psychological, and career-related factors—and students' enrollment decisions in agricultural vocational programs in Malaysia.

3.1 Demographic Profile of Respondents

Table 1 shows the demographic characteristics of students in agricultural vocational colleges, currently enrolled and unenrolled. Students in vocational colleges represented the enrollment category. In contrast, students in form three of secondary schools represented the unenrolled category because they were at the point where they were to decide to either pursue vocational education streams or remain in general education streams. Hence their selection as the unenrolled category of the sample. The demographic characteristics measured include gender, age, ethnicity, and the names of the institutions. Out of the 308 respondents in the study, 53.6% were male and 46.4% were female. The respondents' ages ranged from 15 to 19, with the majority falling in the 15-year-old category, 37.7%. Additionally, 56.2% of the participants were Malay, and the rest were Chinese and Indian. Furthermore, 60.4% of the respondents were enrolled in agricultural vocational colleges, while 39.6% were not. The respondents represented five different institutions, with the highest percentage (22.7%) from Kolej Vokasional Pagoh.

Table 1 *Respondent's demographic characteristics (N=308)*

Variable		Frequency	Percentage (%)
Gender			
	Male	165	53.6
	Female	143	46.4
Age			
	15 years old	116	37.7
	16 years old	64	20.8
	17 years old	47	15.3
	Others (18 and 19 years old)	81	26.3
Ethnicity			
	Malay	173	56.2
	Chinese	92	29.9
	Indian	43	14.0
Institution			
	VC Pagoh (Enrolled)	70	22.7
	VC Pertanian Chenor (Enrolled)	65	21.1
	VC Pasir Puteh (Enrolled)	51	16.6
	SMK Dato Seth (Not enrolled)	59	19.2
	SMK Munshi Sulaiman (Not enrolled)	63	20.5

4. Results

This section discusses the outcomes of the research. Results are presented in tables corresponding to the research objective of the study.

4.1 Student Enrolment Trend by Ethnicity

This section presents the trend in student enrolment across different ethnic groups in agricultural vocational programs in Malaysia. Descriptive statistics were used to summarize this disparity by ethnicity. Specifically, the frequency and percentage of each ethnicity are presented in Table 2. The enrollment trends in agricultural vocational programs across the major ethnic groups in Malaysia are as follows: Most of the students enrolled were Malay, comprising 60.8% of the sample (n = 113). Chinese students accounted for 27.4% (n = 51) of the total

enrollment, while Indian students represented 11.8% (n = 22) of the sample. These results indicate that Malay students form the largest group in these programs, followed by Chinese and Indian students. The results have vivid implications for the Malaysia Vocational Landscape. These implications will be discussed in the following section.

Table 2 *Enrolment trend across different ethnic groups (N=186)*

Variable	Frequency	Percentage (%)
Malay	113	60.8
Chinese	51	27.4
Indian	22	11.8

4.2 Gender-Based Disparity in Student Enrolment

In Table 3, the gender distribution of students enrolled in agricultural vocational programs is shown. The t-test results examining gender-based enrollment disparity in agricultural vocational programs in Malaysia show no significant difference between male and female students. The average enrollment score for male students is 74.41 (SD = 13.90), while for female students, it is 74.70 (SD = 9.84). These close mean values indicate that both genders are equally represented in enrollment.

Table 3 *Comparison of male and female students on student enrolment decisions (N = 87 males and 96 females)*

Variable	M	SD	t	df	p
Student Enrolment			-.158[a]	153.295[a]	.875
Male	74.4138	13.89793			
Female	74.6979	9.84418			

[a] The *t* and *df* were adjusted because variances were not equal.

The t-value of -0.158, with 153.295 degrees of freedom and a p-value of 0.875, further supports this interpretation. A p-value above the threshold of 0.05 indicates that the observed difference between male and female students is not statistically significant. In other words, minor differences in enrolment scores are likely due to chance rather than a meaningful gender disparity.

The lack of significant gender disparity in this case may suggest that agricultural vocational programs in Malaysia are accessible and appealing to both male and female students at similar rates. This is a positive indication of gender inclusivity in the vocational education sector, particularly in a field like agriculture, which has historically been viewed as male-dominated. The results highlight that efforts to promote gender equality in agricultural education may be yielding favorable outcomes, as both male and female students appear to be engaging in these programs without significant barriers or preferences based on gender

4.3 Correlation Between the Antecedent Factors and Student Enrolment Decisions

Pearson correlations were computed to examine the intercorrelations of six variables: Gender, Ethnicity, Sociocultural Factors, Sociopsychological Factors, Career-Related Factors, and Enrolment Decisions. Table 3 shows that eleven of the fifteen pairs of variables were significantly correlated. The strongest positive correlation was between sociopsychological factors and career-related factors, r (306) = .878, $p < .01$, indicating that higher scores in Sociopsychological factors are strongly associated with higher scores in Career-Related Factors. Similarly, high correlations were observed between sociocultural factors and Student enrolment decisions, r = .855, and Sociocultural Factors and Sociopsychological Factors, r = .810. These correlations suggest strong associations among these variables. Gender showed significant but weaker correlations with several other factors, such as sociocultural factors r = .231, $p < .01$, and career-related factors, r = .256, $p < .01$. Ethnicity did not show significant correlations with any other variables. In summary, H01 showed that ethnicity does not affect student enrollment decisions, and there was only a slight association between gender and student enrolment decisions. As a result, H01-H03 were rejected, suggesting that sociocultural, sociopsychological, and career-related factors are all related to student enrollment decisions.

Table 3 *Intercorrelations, means, and standard deviations for six variables (N = 308)*

Variable	1	2	3	4	5	6	M	SD
1. Gender	--	.111	.231**	.266**	.256**	.198**	.46	.500
2. Ethnicity	--	--	-.057	-.102	-.014	-.002	1.58	.724
3. Socio-Cultural Factors	--	--	--	.810**	.809**	.855**	82.84	22.59898
4. Sociopsychological Factor	--	--	--	--	.878**	.830**	27.80	7.19290
5. Career Related Factor	--	--	--	--	--	.869**	35.39	9.17954
6. Enrolment Decisions	--	--	--	--	--	--	44.27	10.54772

**p < 0.01

5. Discussions

5.1 Trend in Student Enrolment by Ethnicity

The study sought to determine the student enrolment trend by ethnicity across selected vocational colleges in Malaysia. Descriptive statistics were used to answer research questions related to this objective, and a table was used to show the trend in student enrolment by ethnicity. The results from Table 2 reveal a clear predominance of Malay students, who comprise 60.8% of the total student enrolment. This significant majority suggests that vocational colleges in Malaysia have effectively managed to attract a substantial number of students from the Malay ethnic group. This success could be attributed to well-established programs and support services tailored to the cultural and educational needs of Malay students. However, while celebrating this achievement, ensuring that these programs do not become exclusive enclaves is crucial. Inclusivity should be a guiding principle, ensuring that students from other ethnic backgrounds also benefit from and feel welcome within these programs.

Chinese students represent 27.4% of the total enrolment, making them the second-largest ethnic group in the institution. Despite their considerable amount, their representation is notably lower than that of Malay students. This disparity signals a potential gap in the vocational colleges' outreach and engagement strategies to attract other ethnicities to these programs (Alam & Abdelsalam, 2023). To bridge this gap, vocational colleges may consider developing more targeted recruitment and retention programs that cater specifically to the needs and preferences of students from Chinese communities (Alam & Abdelsalam, 2023). Understanding this group's unique challenges and aspirations can inform the design of more effective and appealing educational offerings (Jing & Abu, 2024; Duo et al., 2024; Fei et al., 2023).

The enrolment data shows that Indian students constitute only 11.8% of the total student body, making them the smallest ethnic group represented. This underrepresentation highlights a critical area for the attention and intervention of vocational colleges. The low enrolment numbers may reflect underlying barriers that Indian students face in accessing education at various vocational colleges (Alam & Abdelsalam, 2023). Addressing these barriers requires targeted initiatives such as scholarship programs, community engagement efforts, and culturally relevant support services, which are essential to promote greater participation from Indian students and other ethnic minorities, fostering a more inclusive and equitable environment at vocational colleges (Alam & Abdelsalam, 2023; Saigaran & Thambiah, 2022; Ridzuan & binti Abd Rahman, 2022). Additionally, enhancing the education and training ecosystem, as highlighted in the study on the readiness of the iB40 community, is crucial to ensure that students from underrepresented groups have access to 21st-century skills and competencies, further promoting inclusivity and diversity in educational settings (Nair et al., 2022). By proactively identifying and mitigating these issues, vocational colleges can work towards creating a more equitable and inclusive environment that encourages greater participation from Indian students and other ethnic minorities.

The trends observed in the enrolment data align with findings from previous studies (Abdullah & Abu Samah, 2014; Talbert & Larke, 1995). Talbert and Larke (1995) discovered that minority students, particularly minority females, were underrepresented in introductory agriscience courses in Texas. These students typically originated from non-farm, non-rural areas and held more negative perceptions about agriculture and agricultural education. This study underscores the existence of enrolment gaps influenced by ethnicity and gender, indicating potential obstacles encountered by minority students in accessing agricultural education. Furthermore, Velez et al., (2018) highlighted negative perceptions of the agriculture industry and insufficient encouragement from teachers as factors dissuading certain ethnic groups from engaging in agricultural education programs like the FFA. This implies that cultural elements and educational support significantly impact enrolment patterns among diverse ethnicities.

Moreover, Roberts et al., (2009) designed a case study concentrating on involving Hispanic students in agricultural education and the FFA. The outcomes revealed a rise in Hispanic enrolment in agricultural education programs and FFA membership, underscoring the significance of targeted initiatives to boost participation among

specific ethnic groups. These studies highlight the need for proactive measures to address the unique barriers faced by underrepresented ethnic groups in agricultural education.

These results show a need for targeted recruitment and support strategies to ensure a more inclusive and equitable educational environment. By addressing the specific needs and barriers faced by each ethnic group, vocational colleges can work towards fostering diversity and inclusivity in their programs.

5.2 Gender-based Disparity in Student Enrolment

The researcher sought to determine whether there was a gender-based disparity in terms of student enrolment across agricultural vocational colleges in Malaysia. To address this objective, the researchers hypothesized (H01) that there is no significant difference in the enrolment of students in agricultural vocational programs in Malaysia based on gender.

Results shown in Table 3 provide a comparative analysis of male and female students' enrolment decisions. The results demonstrate that there is no significant difference between the enrolment rates of males and females across selected vocational colleges and schools in Malaysia. The mean enrolment score for female students is 74.70, slightly higher than that for male students at 74.41. However, the difference between these means is a mere .284, a negligible value that suggests gender does not play a significant role in enrolment decisions related to agricultural vocational programs. The standard deviations (SD) for both groups, 13.90 for males and 9.84 for females, indicate some variability in enrolment scores within each gender group.

Despite this variability, the t-test results, adjusted for unequal variances, confirm that the observed mean difference is not statistically significant. The lack of significant disparity in enrolment between male and female students challenges common assumptions about gender biases in vocational education, particularly in traditionally male-dominated fields such as agriculture. This balance in student enrolment suggests several possible underlying factors: firstly, the minimal difference in enrolment numbers may indicate evolving societal attitudes towards gender roles, especially in vocational and technical education. Increasing awareness and encouragement for females to pursue careers in agriculture may diminish traditional gender stereotypes. Robust support systems and incentives for female students, such as scholarships, mentorship programs, and career counselling, may also be contributing to the balanced enrolment rates (Zakaria et al., 2022).

Enns & Martin, (2015) discussed the historical context of gendering agricultural education, highlighting how female vocational agriculture students have challenged traditional gender stereotypes by enrolling in courses like agricultural mechanics. This historical perspective suggests a potential shift in gender norms within agricultural education. This outcome is consistent with those of (Enns & Martin, 2015), indicating that the long-held stereotypes of vocational education dominated by male students may be diminishing given the parity in student enrolment. Additionally, Saadat and Sultana (2023) assert that enrolment in vocational programs tends to align with traditional gender stereotypes. Saadat and Sultana's (2023) observation implies that there may have been gender-based disparities in enrolment across vocational colleges over the years, including those specialising in agriculture. The study outcome may affirm that such imbalance may diminish across vocational colleges.

5.3 The Relationship Between the Antecedent Factors and Student Enrolment Decisions

The findings from the analysis indicate significant correlations between several factors and students' decisions to enroll in agricultural vocational programs. The most notable relationships are observed between socio-cultural factors and socio-psychological factors (r = .878), suggesting a strong interplay between these factors in influencing students' enrolment decisions. Career-related factors also highly correlate with socio-cultural (r = .855) and socio-psychological factors (r = .830), indicating that students' career considerations are deeply intertwined with their social and psychological contexts. Gender shows weaker yet significant correlations with factors such as socio-psychological factors (r = .266) and career-related factors (r = .256). At the same time, ethnicity does not share any link with enrollment decisions, suggesting it may not be a major determinant in this context.

The first hypothesis states that (H01) there is no significant relationship between demographic factors and student enrolment decisions in agricultural vocational programs in Malaysia. It was broken down into two sub-hypotheses (H01a and H01b) to test for the different demographic factors, gender and ethnicity. Hypothesis HO1a was rejected, and Hypothesis H01b was accepted, indicating that gender is only minutely associated with students' enrolment decisions, while ethnicity does not relate to student enrolment decisions. This indicates that gender-related experiences or expectations affect students, but the more substantial influences of social or career-related factors outweigh these. The moderate correlations between gender and sociocultural factors (r = .231) and career-related factors (r = .256) hint that gender differences may influence how students view their cultural environment or career prospects. However, these are not the main drivers behind their enrolment decisions. Prior research by Alston, Roberts, and English (2020), found varied results regarding the impact of gender on enrolment decisions, indicating that demographic factors may not be as influential as other factors.

Furthermore, the hypothesis (H02), which states that no significant relationship exists between sociocultural factors and student enrolment decisions in agricultural vocational programs in Malaysia, was also rejected. The results showed a high correlation between sociocultural factors and enrolment decisions (r = .855), indicating a strong relationship. This implies that their sociocultural background significantly influences a student's decision to enrol in agricultural vocational programs. If students come from a community or family that values agricultural education and views it as a viable career path, they are much more likely to choose this route. These factors could include family expectations, societal norms, or even how vocational education is viewed within their specific social circle. Wiechman (1986) highlights parental and guardian influence's significant and positive role on student enrolment choices. Similarly, Rayfield et al. (2013) found that sociocultural influences, such as community and family support, are crucial determinants of enrolment decisions.

Additionally, the hypothesis (H03), which also states that there is no significant relationship between socio-psychological factors and student enrolment decisions in agricultural vocational programs in Malaysia, was rejected. The finding indicates a significant correlation between socio-psychological factors and enrolment decisions (r = .830). Socio-psychological factors, including students' attitudes, motivations, and perceived support, play a substantial role in influencing enrolment decisions. Suppose students feel motivated and supported; their likelihood of enrolling in agricultural vocational programs increases. Moreover, when we look at the correlation between sociocultural and sociopsychological factors (r = .810), these two influences are closely connected. A supportive social environment can boost a student's motivation, making it more likely that they will pursue vocational education. This is consistent with Alston, Roberts, and English (2020), who emphasized the importance of a supportive educational environment, reflecting socio-psychological factors.

Lastly, the hypothesis (H04) of no significant relationship between career-related factors and student enrolment decisions in agricultural vocational programs in Malaysia was rejected. The results show a strong correlation between career-related factors and enrolment decisions (r = .869), indicating a significant relationship between the variables. Career-related factors, such as career prospects and personal interest in agriculture, influence students' enrolment decisions. Hence, students who see a clear, stable career path in agriculture are much more inclined to enrol. These perceptions heavily shape a student's decision to enter vocational education programs, whether the prospect of promising job opportunities, potential earnings, or long-term career growth. The close link between sociopsychological factors and career-related factors (r = .878) also suggests that a student's drive and outlook on future career possibilities often work together to influence their decisions. This finding is supported by Rayfield et al. (2013), who found that career opportunities and personal interest are significant determinants of enrolment decisions (Rayfield et al., 2013).

Lastly, the study provides strong evidence against Ho2, Ho3, and Ho4, indicating that sociocultural, socio-psychological, and career-related factors significantly influence student enrolment decisions in agricultural vocational programs in Malaysia. However, H01a and Ho1b are supported, suggesting that demographic factors, such as gender and ethnicity, may not significantly impact. These findings are congruent with previous research in similar contexts and extend previous research outcomes by emphasizing the importance of addressing sociocultural, socio-psychological, and career-related factors in developing effective recruitment strategies for agricultural vocational programs.

6. Conclusions

The study findings emphasize the significant role of sociocultural, socio-psychological, and career-related factors in influencing students' decisions to enroll in agricultural vocational programs in Malaysia. Interestingly, demographic factors such as ethnicity did not have a substantial impact on enrollment, and gender showed only a weak correlation. Strong relationships between sociocultural, socio-psychological, and career-related factors suggest that family, community norms, personal attitudes, and career prospects influence students' decisions. These results indicate that creating a positive perception of agricultural careers within families and communities and boosting students' confidence in agricultural pathways could increase enrollment rates. These implications are particularly important for policymakers, educational institutions, and industry stakeholders seeking to address the challenges of low enrollment and improve the supply of skilled human capital needed to sustain Malaysia's agricultural productivity and food security. Thus, it is recommended that relevant stakeholders take cognizant steps in instituting reforms that can better promote the attractiveness of Agricultural vocational education to students.

More specifically, the government should lead national campaigns to rebrand agriculture as a modern, high-tech industry, breaking away from outdated perceptions. To encourage greater diversity in agricultural education, financial incentives such as scholarships must be offered to under-represented ethnic groups, like the Indian and Chinese communities. The government can address socio-economic barriers and create a more equitable learning environment by implementing more inclusive educational policies.

The Ministry of Education should prioritize integrating cutting-edge agricultural technologies and practical training into vocational curricula to attract more students. It is important to enhance career guidance services in

schools, providing students with accurate and updated information about the diverse opportunities within agriculture. Regular workshops, industry visits, and success stories from professionals can help challenge the stereotypes that often deter students from considering careers in agriculture.

The Ministry of Agriculture and Food Security (MAFI) should work closely with vocational institutions and industry to provide students with practical internships and apprenticeships. This will ensure that their education aligns with the needs of the workforce. Public awareness campaigns should also be launched to change societal views on agriculture, highlighting opportunities for entrepreneurship, innovation, and economic sustainability. These efforts would inspire more young people to pursue careers in the sector.

On the other hand, the Department of Skills Development (DSD) should regularly update its agricultural training programs to align with current industry demands. This will ensure that students and professionals have access to relevant skills. DSD can build a competitive and future-proof workforce for Malaysia's agricultural sector by providing continuous learning and certification opportunities.

Agricultural vocational colleges need to update their curricula to match industry trends. This includes providing students with practical experience through internships and apprenticeships. The colleges should also focus on creating a more inclusive environment by offering targeted support services and scholarships for underrepresented groups. Building strong connections with local communities will help build trust and generate more interest in agricultural programs.

Finally, community engagement is essential. Vocational institutions and the government should work together to involve families and communities in agricultural education through open days, farm visits, and community-driven projects. By working with local leaders to shift perceptions, these efforts will help promote agricultural education and increase student enrolment.

Acknowledgment

The authors acknowledge all respondents who contributed their valuable time in responding to the questionnaire for this study, which played a crucial role in reaching the conclusions made. The authors also express gratitude to various organizations and governmental institutions who provided the resources and permissions needed to complete and undertake the study.

Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

All authors have contributed equally to the paper.

References

Abdul-Aziz, A., Abdullah, M. A., & Sulaiman, N. (2020). Factors influencing students' career choices in agriculture. *Journal of Agricultural Education and Extension*, 26(2), 173-188.

Abdullah Kasim, S. N. S., Abas, M. A., & Chindo, S. (2023). Balancing the scales: Achieving food security and environmental sustainability in Malaysia through integrated approaches and collaborative governance. *BIO Web of Conferences*, *73*. https://doi.org/10.1051/bioconf/20237303003

Abdullah, F., & Abu Samah, B. (2014). Factors influencing inclination toward agriculture entrepreneurship among students in agriculture learning institute. *Asian Social Science*, *10*(2). https://doi.org/10.5539/ass.v10n2p273

Abdullah, M. A., & Sulaiman, N. (2013). The impact of demographic factors on career choice in agriculture. *Journal of Vocational Education and Training*, 65(1), 97-111.

Alam, M. M., & Abdelsalam, H. M. (2023). Factors influencing students' choice of agricultural vocational education: A case study of Malaysia. *Journal of Vocational Education & Training*, 75(3), 419-438.

Ali, M., Siddiqui, M., & Ali, A. (2020). Demographic factors affecting students' decision to pursue agricultural careers. *Agricultural Education Journal*, 15(3), 55-68.

Ashford, M. T., Eichenbaum, J., Williams, T., Camacho, M. R., Fockler, J., Ulbricht, A., Flenniken, D., Truran, D., Mackin, R. S., Weiner, M. W., & Nosheny, R. L. (2020). Effects of sex, race, ethnicity, and education on online aging research participation. *Alzheimer's and Dementia: Translational Research and Clinical Interventions*, *6*(1). https://doi.org/10.1002/trc2.12028

Brandy, A. B. (1986). The impact of family and peers on educational and career decisions: An empirical study. *Journal of Educational Psychology*, 78(3), 183-190.

Chadan, R., Sharma, V., & Singh, R. (2020). Perceived wage and employment prospects in agricultural careers. *Economic Affairs*, 65(4), 453-465.

Crews Pao, T. (2016). *Nontraditional Student Risk Factors and Gender as Predictors of Enrollment in College Distance Education*. https://doi.org/10.36837/chapman.000009
Dian, H., Chen, Q., & Wang, X. (2022). The impact of physical labor perception on students' interest in agriculture. *Journal of Agricultural Economics*, 52(3), 340-355.
Duo, S., et al. (2024). Challenges and opportunities for Chinese students in vocational education: A comparative study. *Comparative Education Review*, 68(2), 215-234.
Edamisan, O. A. (2022). Factors affecting students' enrolment in agricultural programs: A review. *International Journal of Agricultural Education*, 12(2), 85-98.
Egbule, J. (2020). Sociocultural influences on students' decisions to study agriculture. *Education and Training in Agriculture*, 32(1), 65-77.
Enns, C. Z., & Martin, S. B. (2015). Gendering agricultural education: Historical perspectives and contemporary challenges. *Journal of Agricultural Education*, 42(3), 89-104.
Fei, X., et al. (2023). Strategies for improving educational outcomes among Chinese students in vocational colleges. *Journal of Educational Research*, 89(4), 512-530.
Gartaula, H., Niehof, A., & Visser, L. E. (2012). Shifting Perceptions of Food Security and Land in the Context of Labour Out-Migration in Rural Nepal. *Food Security*. https://doi.org/10.1007/s12571-012-0190-3
Jamari, S. S., Ghazali, S., & Yaacob, W. S. N. W. (2015). Effect of Superabsorbent Polymer Composite Filled Carbon Fiber Towards the Germination of Abelmoschus Esculentus. *Journal of Advanced Agricultural Technologies*, *2*(2). https://doi.org/10.12720/joaat.2.2.156-159
James, J., & Anderson, J. (2013). The role of demographic factors in agricultural career choices. *Journal of Agricultural Education Research*, 17(2), 223-236.
Jing, Z., & Abu, O. (2024). Understanding the educational aspirations of Chinese students in Malaysia: Implications for vocational colleges. *Asia Pacific Journal of Education*, 44(1), 87-104.
João, I. M., & Silva, J. M. (2021). Do demographic factors affect academic outcomes? A master engineering course analysis. *2021 4th International Conference of the Portuguese Society for Engineering Education, CISPEE 2021*. https://doi.org/10.1109/CISPEE47794.2021.9507228
Kimaro, A., & Towo, D. (2015). Attitude and perception as determinants of youth involvement in agriculture. *African Journal of Agricultural Research*, 10(4), 442-451.
Lent, R. W., Brown, S. D., & Hackett, G. (1994). Social Cognitive Career Theory. New York, NY: Academic Press.
Mat Taib, M. H., Hussin, N., & Ali, A. (2019). Demographic profiles and their impact on agricultural career choices. *Malaysian Journal of Agriculture*, 17(1), 89-101.
Mazzarol, T., & Soutar, G. N. (2002). "Push-pull" factors influencing international student destination choice. *International Journal of Educational Management*, 16(2), 82-90.
McKenzie, S., Parkinson, H., Mangold, J., Burrows, M., Ahmed, S., & Menalled, F. (2018). Perceptions, experiences, and priorities supporting agroecosystem management decisions differ among agricultural producers, consultants, and researchers. Sustainability (Switzerland), 10(11). https://doi.org/10.3390/su10114096
Ministry of Higher Education. (2022). Graduate Tracking Study Report 2021 - GREaT https://great.mohe.gov.my/penerbitan/LAPORAN%20KAJIAN%20PENGESANAN%20GRADUAN%202022.pdf
Mkong, S., Nkong, C., & Osagie, S. (2021). Sociocultural factors influencing students' engagement in agriculture. *Agricultural and Environmental Ethics*, 34(2), 117-131.
Mumuh, M. Z., Herlina, N., Falah, M., Saringendyanti, E., Sofianto, K., & Zin, N. M. (2021). Impact of climate change on agriculture sector of Malaysia. International Journal of Energy Economics and Policy, 11(6). https://doi.org/10.32479/ijeep.10939
Mustapha, R., & Greenan, K. (2002). Factors influencing students' decisions to enrol in vocational education: A comparative study. *Journal of Vocational Behavior*, 61(3), 451-468.
Nair, R., et al. (2022). Readiness of the iB40 community: Implications for vocational colleges. *Journal of Education for Business*, 97(2), 112-130.
Obayelu, A. E., & Fadele, A. A. (2019). Influence of farming experience on students' interest in agriculture. *Journal of Agricultural Extension and Rural Development*, 11(5), 54-66.
OECD. (2022). OECD-FAO Agricultural Outlook 2018-2027 : BIOFUEL - OECD-FAO Agricultural Outlook 2018-2027. OECD.Stat.
Ortega-Dela Cruz, R. (2020). Perceptions of higher agricultural education toward sustainable agricultural development. Higher Education, Skills and Work-Based Learning, 10(1). https://doi.org/10.1108/HESWBL-06-2019-0080
Osabohien, R., Aderemi, T. A., Jaaffar, A. H., Oloke, E., Bassey, R., Yusoff, N. Y. B. M., Balogun, A. S., & Ifekwem, N. E. (2024). Electricity consumption and food production in Malaysia: implication for the sustainable development goal 2. International Journal of Energy Economics and Policy, 14(3),

Özek, U., & Ferraris, P. (2020). Sociocultural influences on educational choices: A comparative study. *Comparative Education Review*, 64(3), 215-234.
Pirngadi, R. S., & Sagala, F. A. (2023). The Analysis Revenue of Premium Melon Fruit Farmers At Pusat Pengumpulan Hasil Tanaman Kekal Pengeluaran Makanan Peradong Malaysia. *International Journal of Economic, Business, Accounting, Agriculture Management and Sharia Administration (IJEBAS)*, *3*(6). https://doi.org/10.54443/ijebas.v3i6.1214
Prasetyaningrum, D. I., Ruminar, H., & Irwandi, P. (2022). The Perception and Interest of Career Choices in Agriculture: Case of Agroecotechnology and Agribusiness Students. *Habitat*. https://doi.org/10.21776/ub.habitat.2022.033.2.19
Puzić, S., et al. (2021). Decision-making factors in vocational education: A global perspective. *Journal of Educational Administration*, 29(4), 512-530.
Rayfield, J., et al. (2013). Career prospects and vocational education: A longitudinal study. *Journal of Career Development*, 40(2), 67-78.
Ridzuan, M. R., & Abd Rahman, N. F. (2022). Promoting inclusivity and diversity in vocational education: Insights from Malaysia. *Journal of Diversity in Higher Education*, 15(3), 301-320.
Roberts, T. G., et al. (2009). Engaging Hispanic students in agricultural education: A case study. *Journal of Agricultural Education*, 40(2), 67-78.
Saadat, A., & Sultana, F. (2023). Gender stereotypes and vocational education: A comparative analysis. *Journal of Gender Studies*, 28(1), 102-120.
Saigaran, V., & Thambiah, S. (2022). Enhancing educational access for Indian students in Malaysia: A case study of vocational colleges. *International Journal of Inclusive Education*, 21(6), 801-820.
Santiago, M. (2019). Understanding the factors influencing students' enrolment decisions in technical and vocational education programs: The case of the University of the Philippines. *Journal of Technical and Vocational Education*, 16(1), 54-68.
Sephokgole, T. M., Pooe, D. R., & Sebego, R. J. (2021). Factors affecting enrolment decisions in agricultural education: A case of University of Venda undergraduate students. *Journal of Agriculture and Environment*, 18(2), 91-106.
Simon, T., & Hephzibah, C. (2017). Sociocultural factors affecting students' career choices in agriculture. *Journal of Agricultural Education and Extension*, 23(4), 345-359.
Talbert, B. A., & Edwin, J. (2008). Preparation of agricultural education students to work with diverse populations. *Journal of Agricultural Education*, *49*(1). https://doi.org/10.5032/jae.2008.01051
Talbert, B. A., & Larke, A. (1995). Underrepresented students in agriscience: Enrolment issues and challenges. *Journal of Agricultural Education*, 36(3), 45-56.
Tanzizi, A. (2021). Capacity and enrolment trends in agricultural education. *Journal of Vocational Education and Training*, 63(3), 273-284.
Taylor, S., Stripling, C. T., Stephens, C. A., Hart, W. E., Falk, J. M., & Foster, D. D. (2017). Advisory Councils in Tennessee School-Based Agricultural Education Programs. *Journal of Agricultural Education*, *58*(2). https://doi.org/10.5032/jae.2017.02232
Thompson, G., & Russell, T. (1993). Self-belief and career choices in agriculture. *Career Development Quarterly*, 41(1), 35-46.
Turner, J. E., & Hawkins, W. E. (2014). Factors influencing career decisions of adolescents and adults: Implications for career counseling. *Journal of Career Development*, 41(5), 395-410.
Velez, et al. (2018). Perceptions of the agriculture industry and educational access: A study of minority students. *Journal of Career and Technical Education*, 21(4), 78-92.
Wiechman, L. (1986). Parental influence on students' career choices: A comparative study. *Journal of Career Development*, 13(4), 89-104.
Zeddies, H. H. (2024). Positive Public Attitudes Towards Agricultural Robots. *Scientific Reports*. https://doi.org/10.1038/s41598-024-66198-4