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Youth Voices, Future Choices:

Comparing Agriculture Aspirations,
Perceptions, and Career Preferences
Across Education Pathways in Malaysia

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Executive Summary

Malaysia's agriculture sector stands at a critical turning point. Despite its continued importance to national food security, rural livelihoods, and economic resilience, the sector faces a persistent challenge in attracting young people to pursue agricultural careers. As Education Ministry Technical and Vocational Education and Training (TVET) Division Director Ts. Zulkernai Fauzi, highlighted, addressing issues related to "perception, industry collaboration and resource constraints will be crucial for increasing youth engagement and ensuring agriculture's sustainability as a vibrant career sector in the future" (The Star, 2025).

This challenge is becoming increasingly important as Malaysia seeks to transform agriculture into a more productive, technology-driven, and high-value sector. National initiatives such as the Digital AgTech programme, the New Industrial Master Plan (NIMP 2030), and the 13th Malaysia Plan (13MP) (2026-2030) seek to modernise the sector through technological adoption, precision farming, automation, and innovation.

However, these ambitions depend on the availability of a skilled and future-ready workforce. The sector currently faces a "double whammy" of an ageing agriculture workforce and limited youth participation, creating a significant barrier to sustaining long-term agricultural transformation. Although agriculture is becoming increasingly technology-intensive, many young people continue to associate the sector with traditional farming, physically demanding work, low wages, and limited opportunities for career advancement. These perceptions are often formed well before labour market entry and continue to shape educational choices and career aspiration.

Education pathways are central to this process. Following lower secondary education, students enter either the academic pathway leading to the *Sijil Pelajaran Malaysia (SPM)* or the Technical and Vocational Education and Training (TVET) pathway. Beyond developing technical competencies, these pathways expose students to different learning environments, career opportunities, and expectations that may influence how they perceive agriculture and the careers they aspire to pursue. Understanding how youths develop aspirations, how education pathways shape these perceptions, and what factors encourage and discourage agricultural careers is therefore essential to addressing both agriculture workforce challenges and Malaysia's broader human capital development goals.

This study examines how education pathways influence youth perceptions and career aspirations towards agriculture among Public Secondary School students (*Sekolah Menengah Kebangsaan, SMK*) and Vocational College (*Kolej Vokasional, KV*) students aged 15–16. The study is based on a large-scale survey of 14,305 students across 88 schools to examine differences between students in TVET and non-TVET pathways. The analysis explores how educational exposure, family background, and perceptions of agricultural careers shape young people's willingness to participate in the sector. Qualitative interviews in four sample schools provided supporting evidence and validation. However, qualitative data is not used in this report.

The findings reveal four key insights:

First, despite TVET playing an important role in increasing agricultural career interest, its potential remains underutilised. TVET students demonstrate stronger preferences toward agriculture careers compared to non-TVET students. Even after accounting for differences in student backgrounds, TVET students are more likely to identify agriculture as an ideal employment sector and express greater willingness to pursue agriculture careers. However, this advantage does not extend to modern agri-tech occupations, suggesting that this vocational pathway has yet to fully reposition agriculture as a high-skilled, technology-driven career option.

Second, classroom exposure is one of the strongest drivers of agricultural aspirations. TVET students who have prior exposure to agriculture-related subjects in secondary school emerge as one of the strongest predictors across outcomes, significantly increasing the likelihood that students identify agriculture as an ideal sector, express general openness towards agricultural careers, and consider agri-tech occupations.

Third, youth interest in agriculture is increasingly oriented towards specialised careers rather than traditional farming. TVET students are more likely to aspire towards engineering and machinery-related agriculture careers, while non-TVET students show stronger preferences for plant and animal science pathways, reflecting differences in education exposure. However, nearly 30% of students across both pathways remain uninterested in any agricultural occupation, highlighting the need to promote agriculture as a diverse, modern career sector with opportunities beyond primary production.

Fourth, agriculture career choices are shaped by skills development, parental attitudes, and social stigmas, not financial and physical labour concerns alone. Parental encouragement remains limited, with fewer than one in five students reporting family support for agriculture careers, highlighting the important role families play in shaping young people's career aspirations. Broader societal perceptions also continue to constrain interest, with only 51.3% of students recognising agriculture as a modern, high-tech sector. Although TVET students are less likely to associate agriculture with negative stereotypes than non-TVET students, these perceptions remain prevalent among many young people. At the same time, TVET students place greater emphasis on training opportunities, suggesting that clear pathways for skills development and career progression could strengthen the sector's appeal, particularly among vocational students.

Policy Recommendations:

To build a future-ready agriculture workforce, Malaysia should strengthen the connection between education, skills development, and agriculture career opportunities through the following measures:

- 1. Strengthen agriculture integration across education pathways:** Improve how agriculture is introduced across TVET and non-TVET pathways by strengthening career guidance, experiential learning, and industry engagement. Better connections between education institutions and the agriculture sector can help students understand the range of career opportunities available and the skills needed for future roles.
- 2. Build a future-ready agricultural skills ecosystem:** Ensure agricultural TVET remains responsive to industry transformation through stronger industry collaboration and forward-looking curriculum development. Training pathways should equip youth with relevant capabilities to support a modern and evolving agricultural sector.
- 3. Expand access to agriculture career pathways:** Create more inclusive routes into agriculture by reducing barriers for youth without existing agriculture backgrounds. Stronger links between education, training opportunities, entrepreneurship support, and industry pathways can broaden participation in the sector.
- 4. Reposition agriculture as a competitive career choice for youth:** Move beyond traditional perceptions of agriculture by highlighting the sector as a modern, skilled, and rewarding career pathway. Youth-focused communication should emphasise career prospects, skills development, and opportunities within a transforming agricultural sector.

Malaysia's ambition to build a modern, productive, and resilient agricultural sector will ultimately depend not only on investment in technology, but also on investment in people. The decisions young Malaysians make today will shape the sector's capacity to innovate, compete, and safeguard national food security in the decades ahead. By creating an ecosystem where agriculture is recognised as a skilled, innovative, and rewarding profession, Malaysia can cultivate a new generation of talent capable of driving the country's agricultural transformation and sustainable development.

1.0 Introduction

As Malaysia advances its ambition to become a high-income and innovation driven economy, ensuring the long-term sustainability of strategic sectors has become an increasingly important national priority (World Bank, 2019, 2024). Agriculture represents a particularly important strategic sector that plays a vital role in supporting national food security, rural livelihoods, and economic resilience.

Yet, the sector faces a decline in youth participation and an ageing workforce as new entrants to the labour market prioritise employments in other sectors (Shariff et al. 2025). Although national policies such as the 13th Malaysia Plan (13MP) (2026-2030), the New Industrial Master Plan (NIMP 2030), the National Agrofood Policy 2.0 (2021-2030) have increasingly emphasised agricultural modernisation, technological transformation, and talent development, youth interest in agriculture careers remains relatively low.

This presents a significant policy challenge as the future of Malaysia's agriculture sector depends not only on technological advancement but also on its ability to attract and retain a new generation of workforce. As the country transitions towards a high-income economy, agriculture will increasingly require a workforce capable of adopting modern technologies while meeting the growing demands of consumers. Ensuring that young people view agriculture as a viable and attractive career is therefore fundamental to sustaining the sector's long-term competitiveness and resilience.

Addressing this challenge requires a better understanding of how young Malaysians develop career aspirations and decide their career pathways. Education and career choices made during secondary school often influence future labour market participation, making adolescence a critical stage for understanding career development. As young people evaluate different education pathways and occupations, the factors shaping their aspirations become increasingly important for workforce planning. More broadly, ensuring that the youth are able to successfully transition from education into productive employment has become a critical national priority. Recognising this challenge, Prime Minister Dato' Seri Anwar Ibrahim has repeatedly emphasised the need to equip Malaysian youths with the skills, confidence, and opportunities required to navigate a rapidly changing economic landscape (Bernama, 2026).

Even with these aspirations, many young Malaysians continue to experience difficult school-to-work transitions. While the national unemployment rate improved to 3.2% in 2024, youth unemployment among Malaysians aged 15-29 has remained high, between 14.1% to 16.3% from 2019 to 2024 (Labour Force Statistics Malaysia, 2024). This disparity suggests that economic growth alone has not translated into smooth school-to-work transitions for many young people. Instead, a significant number continue to encounter prolonged job searches or skills and time-based underemployment, highlighting the difficulties many young people face in transitioning from education to employment that do not match their qualifications and aspirations (Rong Sheng, 2026).

Formative education pathways play a critical role in shaping young people's career aspirations and labour market transitions. Beyond developing technical knowledge and skills, they influence students' employment expectations, perceptions of job opportunities, and career choices through curriculum, industry exposure, career guidance, and peer environments (Yusran et al., 2021). While considerable attention has been given to improving employability through both academic (non-TVET) and TVET pathways, questions remain regarding how different educational experiences influence youth's sectoral preferences and career decisions.

Despite this mismatch being long recognised, important evidence gaps hinder the development of policy solutions. Existing studies have primarily focused on employment outcomes and labour market performance, providing limited insight into how career aspirations and sectoral perceptions are formed prior to labour market entry (Khazanah Research Institute (KRI), 2024; Shaharudin & Abu Rahim, 2020). In particular, little is known about students aged 15-16 years' career aspirations, and how they make educational and career decisions during this critical stage. There is also insufficient understanding of how perceptions towards agriculture are formed among school-going youth and the factors that influence their willingness to consider agriculture as a future career. As a result, policymakers have limited evidence on the factors influencing youth interest in agriculture and the extent to which education pathways contribute to these perceptions. More specifically, it is not known whether TVET institutions can play a differential role in addressing labour market mismatches by nudging youths into sectors experiencing labour shortages such as agriculture.

To aid better policy targeting, this study examines youth perceptions and aspirations towards careers in agriculture among Malaysia's upper secondary education students and how they are shaped by non-TVET and TVET pathways. Aspirations reflect students' desired future occupations, while perceptions capture how they evaluate work in the agriculture sector in general, and as a potential career option in particular. Understanding both dimensions is important for explaining career decision-making and future labour market participation (OECD, 2020) as well as designing policies to encourage greater youth participation in agriculture. Specifically, the study assesses whether agriculture is perceived as a viable and aspirational career choice among youths. It also identifies factors that shape these perceptions and aspirations, including exposure to agriculture, income expectations, perceived prestige, and other career-related considerations, with a primary focus on the role of institutional exposure.

The study addresses these questions using a purposefully designed nation-wide survey of 14,305 Malaysian secondary students aged 15 to 16 years old. Focusing on students at a formative stage of career development, the study provides new insights into the factors that influence occupational choices before labour market entry and the conditions under which agriculture may emerge as an attractive career pathway.

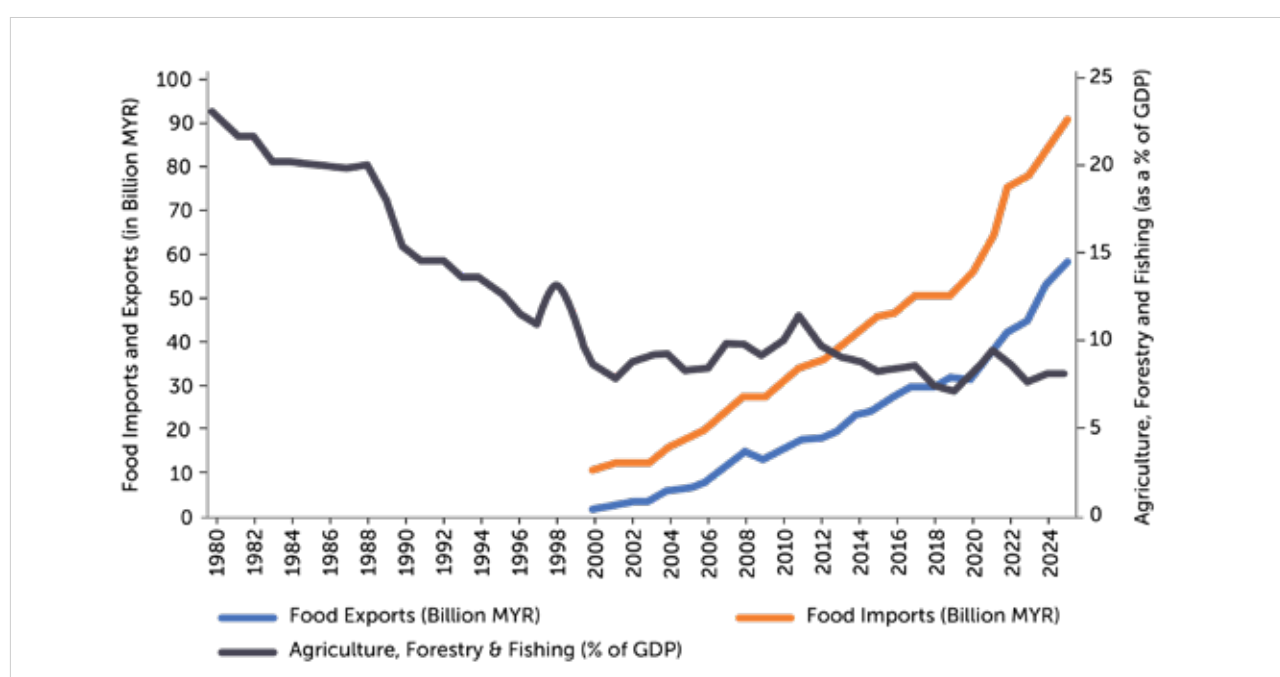
2.0 Agriculture, Youth Unemployment, and Education Pathways

2.1 Agriculture and Malaysia's Economy

Agriculture¹ is a strategically important sector in Malaysia. The sector plays a critical role in ensuring food security, supporting rural livelihoods, and promoting balanced regional development. Reflecting its strategic importance, the 13MP identifies strengthening national food security by increasing domestic food production as a key priority amid rising risks from climate change, geopolitical uncertainty, and global supply chain disruptions (Ministry of Economy, 2025).

At the same time the agriculture sector's economic importance is declining and reliance on overseas supply is rising. Agriculture's share of Gross Domestic Product (GDP) shows long-term decline from over 20% of GDP in 1980 to 8.1% in 2024 (Figure 1). Malaysia's net food imports have averaged RM26.5 billion between 2019 and 2024 (Figure 1). At the same time, there has been a corresponding decline in agricultural employment, with the contemporary labour market dominated by the services sector (Figure 2).

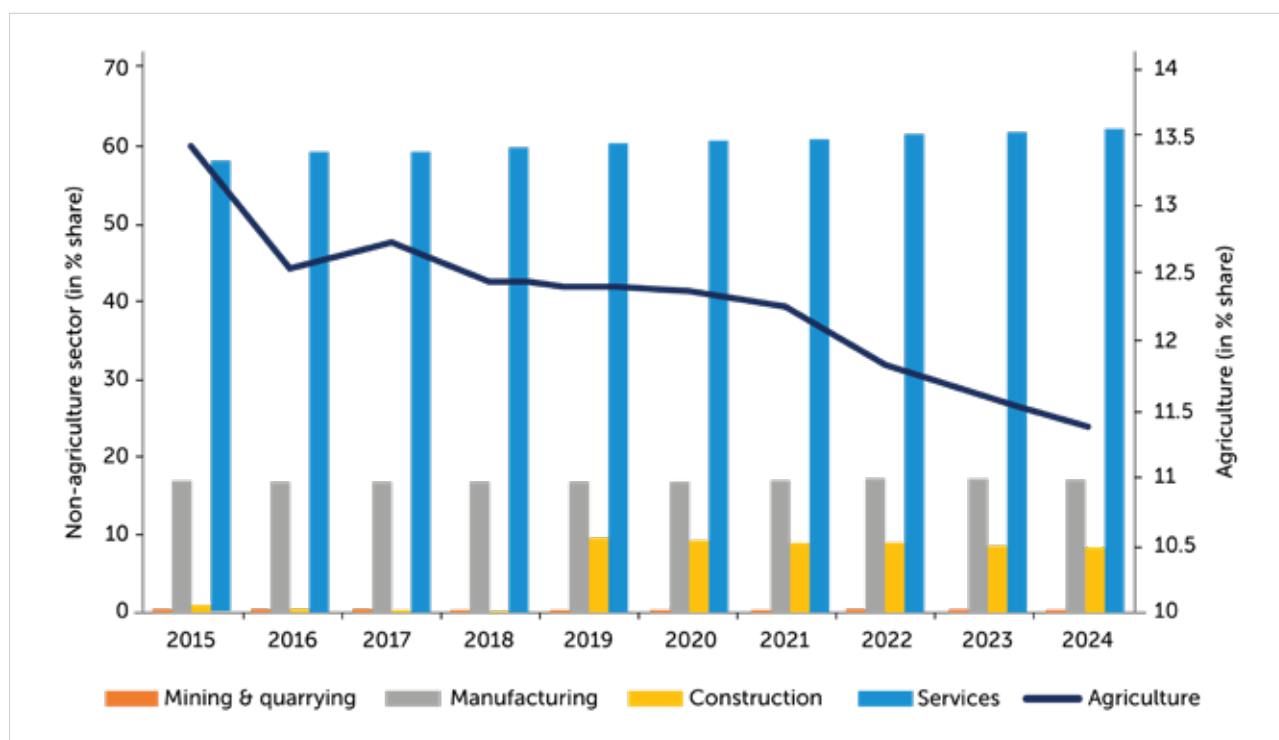
Figure 1: Key Trends in Agricultural Trade and GDP Share in Malaysia, 1980 to 2024



Source: Authors' based on World Development Indicators (WDI), World Bank; and Department of Statistics Malaysia (DOSM), 2025.

¹ Agriculture is defined broadly following Malaysia's classification of economic activities to include crop cultivation, livestock breeding and rearing, production of animal products, forestry, capture fisheries, and aquaculture activities involving the utilisation of plant and animal natural resources (Annual Economy Survey, 2022, DOSM, 2021).

Figure 2: Employment Share by Sector in Malaysia, 2015 to 2024

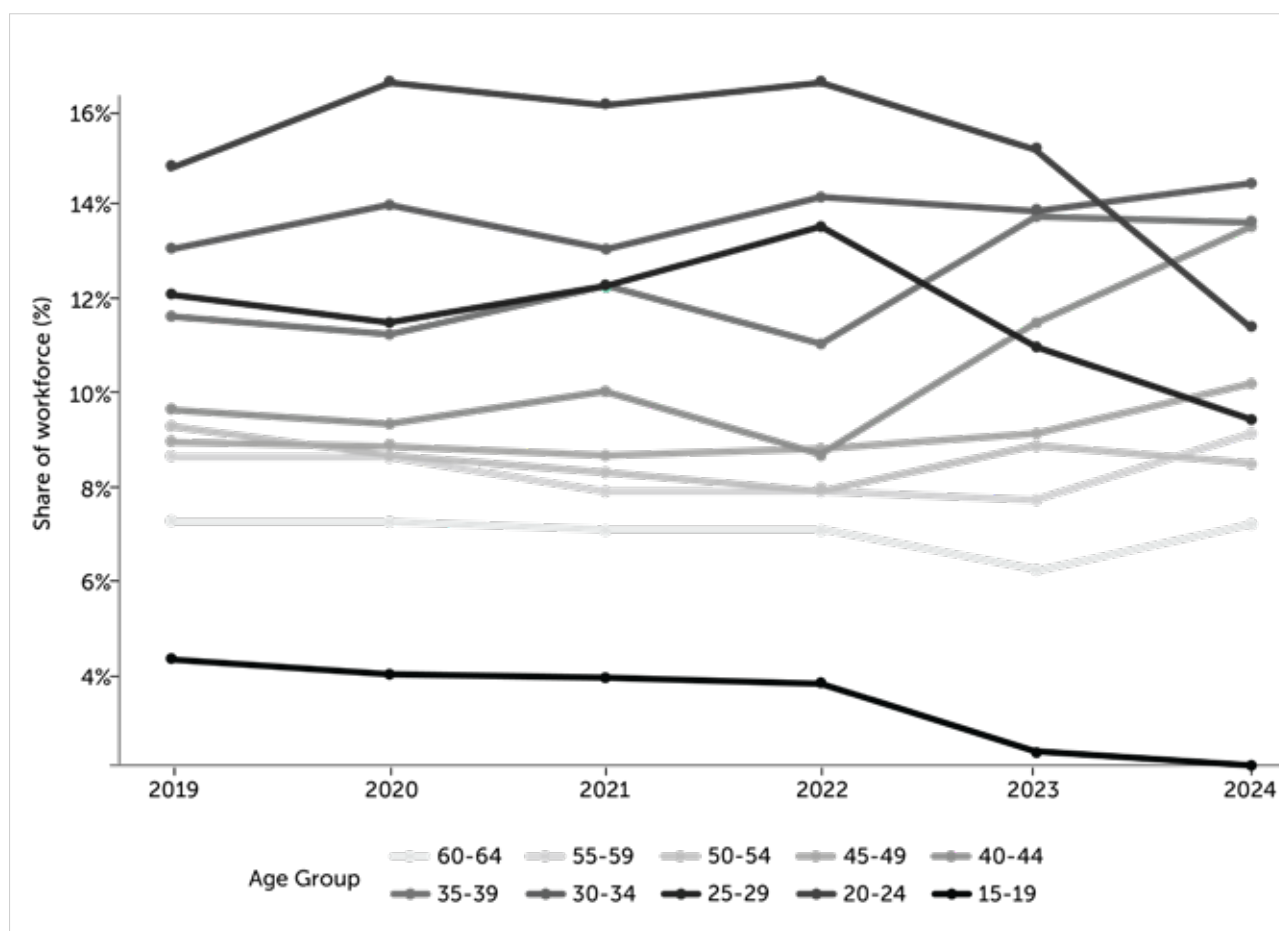


Source: Authors' based on data extracted from Department of Statistics Malaysia (DOSM), *Annual Productivity by Economic Sector*, OpenDOSM Data Catalogue. Employment shares calculated by the authors' using the employment series and overall employment.

Although agriculture now represents a smaller share of Malaysia's economy and employment, its strategic importance has become increasingly evident as food security, supply chain resilience, and sustainable domestic food production gain prominence in national development planning. Ensuring the sector's long-term sustainability therefore requires not only improvements in productivity but also a workforce capable of supporting its continued transformation.

2.1.1 The Changing Nature of Agricultural Work and Workforce

The sector's future sustainability is increasingly challenged by demographic changes. Malaysia's agriculture workforce is ageing, with relatively few younger workers entering the sector in recent years, for instance, among 15-19 year olds (Figure 3). At the same time, the sector relies heavily on foreign labour, which accounts for more than one-third (45%) of agricultural employment (DOSM, 2024). Youth participation overall remains limited, reflecting the sector's continued difficulty in attracting and retaining young Malaysians.

Figure 3: Age Composition of Malaysia's Agricultural Workforce, 2019 to 2024

Source: Department of Statistics Malaysia (DOSM), 2024.

In response to these challenges, the nature of agriculture work is changing. Advances in digitalisation, automation, artificial intelligence (AI), precision farming, and climate-smart agriculture are transforming the sector and creating demand for new technical and entrepreneurial skills. Through the Digital AgTech initiative, more than 600 digital agriculture systems have been deployed and over 30,000 agripreneurs trained since 2022 (The Edge, 2026). Agriculture is being repositioned as a modern, technology-driven industry offering a broader range of skilled career opportunities.²

² Agricultural occupations are based on relevant categories from the Malaysia Standard Classification of Occupations (MASCO), 2020, including Agriculture Engineer, Agriculture Operations Manager, Agriculture Scientist, Agriculture Technician, Biotech Food Researcher, Breeder or Livestock Worker, Farmer/Vegetable or Fruit Grower, Farming Executive, Farming or Plantation Adviser, Fishery Farmer, Mechanics/Machine Operator, and Quality Control Inspector (Ministry of Human Resource, 2020).

Nonetheless, public perceptions have not kept pace with the sector's transformation. Agriculture continues to be widely associated with physically demanding work, low wages, and limited career prospects (D'Silva et al., 2020). This disconnect between the sector's ongoing transformation and prevailing perceptions may discourage youths from considering agriculture as a viable and attractive career.

The Malaysian government has prioritised agricultural transformation through the National Agrofood Policy 2.0, the NIMP 2030, and the 13MP. These strategies emphasise food security, productivity enhancement, technological adoption, climate resilience, and talent development as key priorities for the sector's long-term competitiveness. Achieving these goals will depend not only on technological advancement but also on the ability to attract and retain a new generation of skilled workers. Understanding how young Malaysians perceive agriculture and agriculture careers is therefore increasingly important for supporting the sector's future development and sustainability.

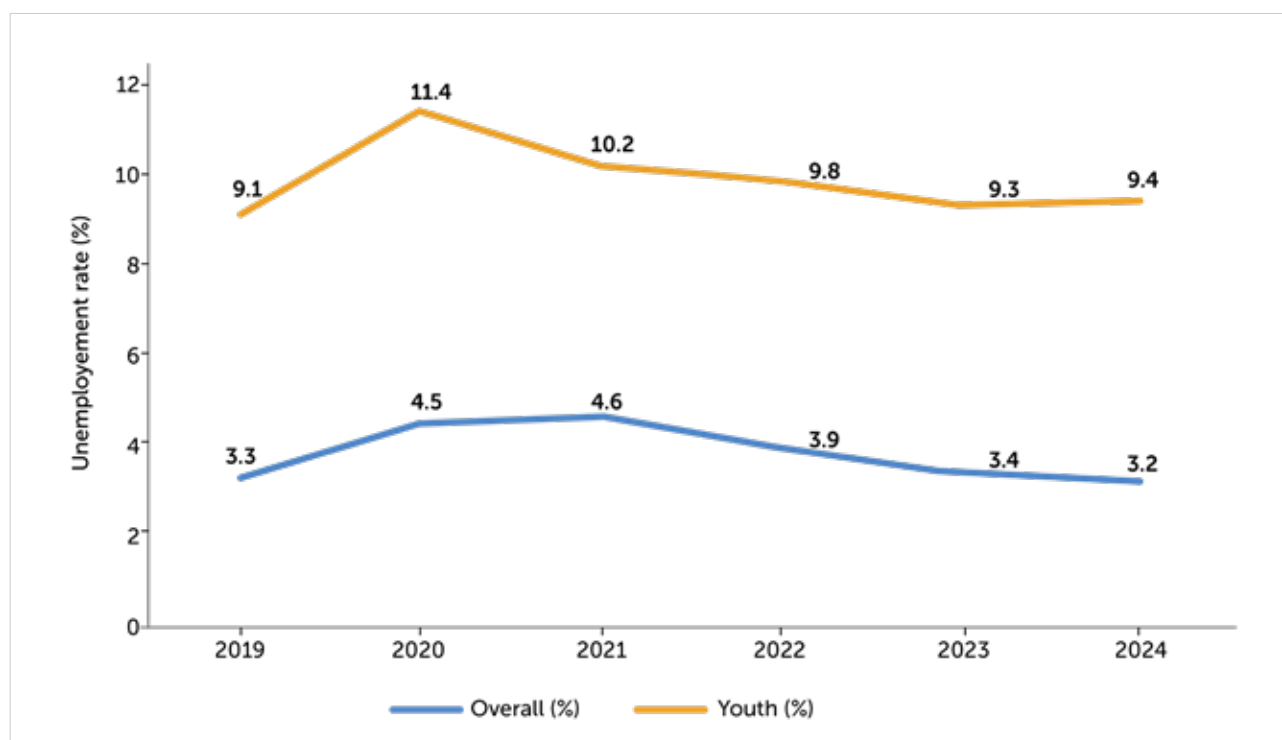
2.2 Youth Unemployment and Education-to-Work Transition in Malaysia

The challenges facing Malaysia's agriculture workforce are situated within broader labour market trends affecting young people nationwide. As Malaysia continues to transition towards a knowledge-based and high-income economy, ensuring that the youth³ successfully move from education into meaningful employment has become an increasingly important policy priority. The country's ability to develop a productive, adaptable, and future-ready workforce depends largely on how effectively young people are integrated into the labour market.

According to the International Labour Organization (ILO), young people are nearly three times more likely to be unemployed than adults globally, highlighting the persistent challenges associated with transitioning from education into employment (ILO, 2024). Malaysia mirrors this broader trend. Although overall unemployment has remained relatively low, youth unemployment continues to exceed the national average, suggesting that young people face greater difficulties entering and integrating into the labour market (DOSM, 2024; KRI, 2024). Between 2019 and 2024, youth unemployment remained consistently above overall unemployment, reaching 9.4% in 2024 compared to 3.2% for the overall labour force (Figure 4). There is also a pronounced gap between rural and urban youth unemployment, which stood at 12.2% and 8.6% respectively in 2024.

³ In Malaysia, youths refer to individuals aged 15 to below 30 years following the *Youth Societies and Youth Development (Amendment) Act 2019* [Act A1602], which amended the previous upper age limit of 40 years under the *Youth Societies and Youth Development Act 2007* [Act 668] (Youth Societies and Youth Development (Amendment) Act 2019)

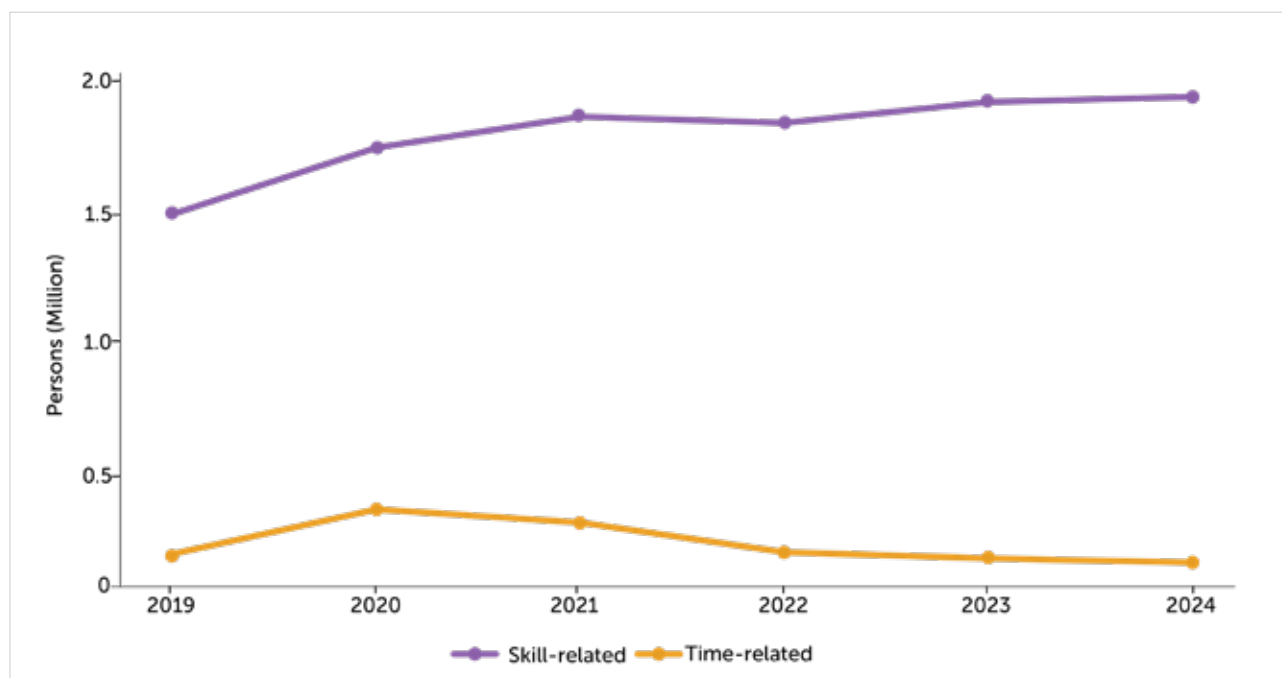
Figure 4: Youth Unemployment Rate Compared to Overall Unemployment Rate in Malaysia, 2019 to 2024



Source: Authors' own, based on Labour Force Survey Report (DOSM), 2016-2025

One of the key challenges concerns the alignment between education and labour market demand. Although educational attainment among Malaysian youth has improved considerably over time, unemployment remains prevalent among school leavers and graduates. While unemployment reflects difficulties in securing work, underemployment suggests many young people enter jobs that do not fully utilise their skills, qualifications, or career aspirations (Azahar, 2022; Rong Sheng, 2026). This indicates a mismatch between workforce skills and employer requirements that is resulting in a high and rising level of skill-related underemployment among graduates (Figure 5) (Bank Negara Malaysia [Central Bank Malaysia], 2024). Tertiary-educated individuals are compelled to crowd into occupations that require lower skill levels than their actual educational qualifications.

Figure 5: Skill-and Time-Related Underemployment among Graduates in Malaysia, 2019-2024



Source: Labour Force Survey Report (DOSM), 2019-2025

Labour market opportunities also remain uneven across sectors. While the supply of labour is concentrated in sectors such as services and manufacturing, many available vacancies are found in low-and semi-skilled jobs across agriculture, construction, and physical labour-intensive services (*Bank Negara Malaysia*, 2024).

In response, policymakers have increasingly emphasised the role of education and workforce development in addressing labour market challenges. TVET, in particular, has been positioned as an important pathway for improving employability and reducing skills shortages in priority sectors. There have been efforts to adapt curriculum to strengthen employer-focused skills development through TVET and across universities. However, participation in vocational pathways remains relatively limited, partly due to persistent perceptions regarding the status and career prospects associated with vocational education (Amin et al., 2023).

Whether such education pathways are equipping young people with the knowledge and competencies required for emerging sectors such as modern agriculture has not been assessed. Nor has whether these pathways influence students' perceptions of and interest in agricultural careers. Consequently, it remains unclear whether the limited participation of youth in agriculture reflects a mismatch between the skills developed through education and those demanded by the sector, or whether educational experiences and other factors shape students' perceptions and aspirations in ways that discourage them from considering agriculture as a viable career, or both.

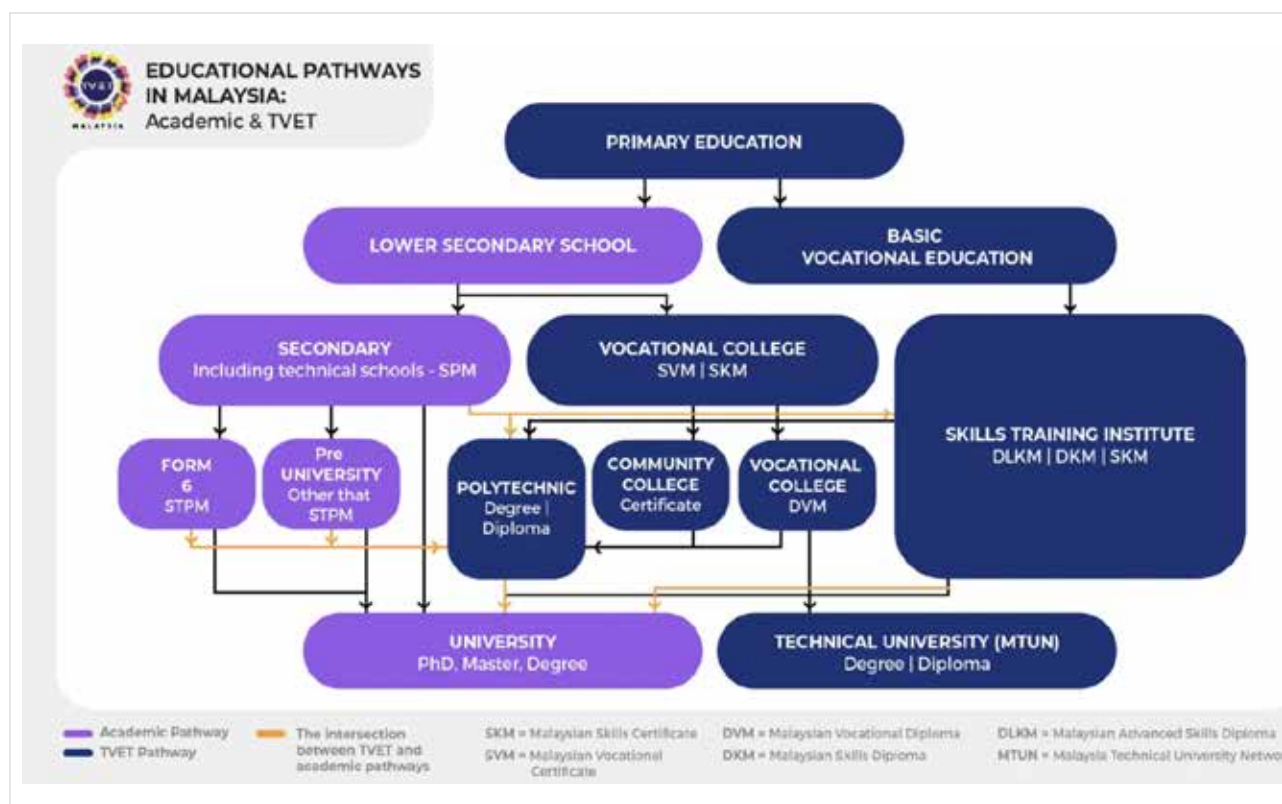
2.3 Education Pathways

The challenges associated with youth unemployment and labour market mismatch has renewed attention towards the role of education in preparing young people for employment. In Malaysia, students may pursue either non-TVET or TVET pathways after completing their lower secondary education (Form 3) (Figure 6), each offering different forms of learning, skills development, and exposure to future career opportunities. As education experiences shape students' understanding of work and employment, they may also influence their career preferences and aspirations.

Students who follow the non-TVET pathway continue their studies in upper secondary school and sit for the *Sijil Pelajaran Malaysia (SPM)* examination at the end of Form 5. *SPM* serves as the primary qualification for progression into pre-university programmes such as *Sijil Tinggi Pelajaran Malaysia (STPM)* and matriculation, as well as diploma and degree programmes offered by higher education institutions (*Rancangan Pendidikan Malaysia (RPM)*, 2026–2035).

Students who prefer skills-based learning may pursue TVET pathways, which are available through both mainstream secondary schools and specialised vocational institutions. Within selected secondary schools, the *Program Vokasional Menengah Atas (PVMA)* provides an alternative pathway for students who are less inclined towards purely academic learning. *PVMA* combines selected *SPM* subjects with vocational training, allowing students to remain within the secondary school system while developing occupational skills. Upon completion, eligible students receive an *SPM* certificate for selected subjects, *Pernyataan Mata Pelajaran Aliran Kemahiran (MPAK)*, and the *Sijil Kemahiran Malaysia (SKM)* Level 2 awarded by the Department of Skills Development (*Jabatan Pembangunan Kemahiran, JPK*). This pathway allows graduates to either enter active employment, pursue further skills training, or pursue higher education (*Bahagian Pendidikan Dan Latihan Teknikal Vokasional, Kementerian Pendidikan, n.d.*).

Figure 6: Malaysia's Educational Pathways



Source: National TVET Policy 2030 (Dasar TVET Negara 2030) (MyGovernment, 2026)

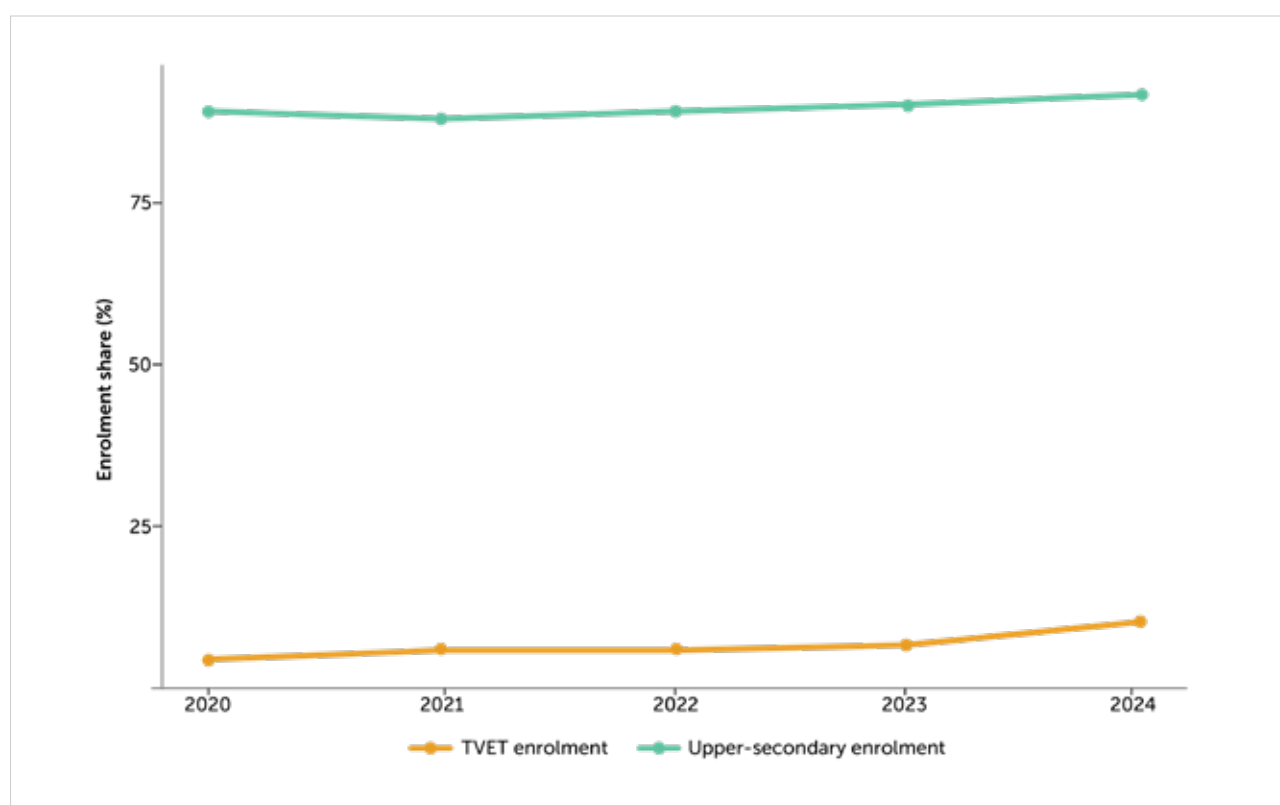
A more specialised TVET pathway is offered through *Kolej Vokasional (KV)* under the Ministry of Education (MOE), which provides structured vocational education focused on practical, hands-on, and industry-oriented learning. Students in *KV* undertake the *Sijil Vokasional Malaysia (SVM)* under the *Kurikulum Standard Kolej Vokasional (KSKV)*, which is recognised as equivalent to the *SPM*. Graduates who meet competency requirements are also awarded the *SKM* Level 3, reflecting a higher level of competency. Eligible students may subsequently continue to the *Diploma Vokasional Malaysia (DVM)*, which provides pathways into skilled employment, further education, or entrepreneurship (*Bahagian Pendidikan Dan Latihan Teknikal Vokasional, Kementerian Pendidikan, n.d.*).

Collectively, the key distinction between these pathways lies in their emphasis: the non-TVET route provides broader academic preparation, while TVET pathways integrate technical and occupational skills development. Within TVET, *PVMA* provides vocational exposure within the mainstream secondary school setting, whereas *KV* offers a more specialised pathway with deeper industry-oriented training and progression opportunities. *KV* is MOE's contribution to a wider TVET ecosystem involving 12 ministries and 1,370 institutions (about half of which are part of the public education system; (*Sekretariat Majlis TVET Negara (MTVET), Jabatan Perdana Menteri, 2024*)).

TVET continues to face negative perceptions, despite offering greater employability for graduates. Historically, vocational education has been viewed as a secondary option for students with weaker academic performance, while university education remains widely regarded as the preferred pathway to career success (KRI, 2024). Stigmas associated with vocational occupations, parental preferences for non-TVET routes, and limited awareness of career opportunities available through TVET continue to influence education decision-making (Omar & Desa, 2023).

Nevertheless, TVET enrolment has increased in recent years. The TVET enrolment rate among upper secondary school students increased from 3.8% to 9.6% between 2020 and 2024 (Figure 7). Within the same period overall upper secondary students (inclusive of TVET students) increased from 89.3% to 91.0% (Figure 7). This suggests that participation in TVET has expanded alongside continued policy efforts to strengthen vocational education, although it continues to account for a relatively small share of upper secondary enrolment.

Figure 7: TVET and Overall Upper Secondary Education Enrolment Rates in Malaysia, 2020 to 2024



Source: *Pelan Pembangunan Pendidikan Malaysia, 2013-2023; Laporan Tahunan 2023 (Kementerian Pendidikan Malaysia, 2024).*

Note: Overall upper secondary enrolment refers to the proportion of the relevant age cohort enrolled in upper secondary education. TVET enrolment refers to the proportion of upper secondary students enrolled in TVET. The two indicators measure different denominators and should not be interpreted as additive.

The Malaysian government has intensified efforts to strengthen and elevate the TVET ecosystem to raise skills development outcomes. The National TVET Policy 2030 (*Dasar TVET Negara 2030*), together with the Malaysia Education Blueprint 2026–2035, and the 13MP (2036–2030), aim to improve the quality, relevance, and attractiveness of vocational education. National initiatives such as *Hari TVET Negara* have also been introduced to improve public perceptions of TVET. More recently, the government announced up to RM50 million under the Skills Development Fund Corporation (*Perbadanan Tabung Pembangunan Kemahiran, PTPK*) High Impact Programme Fund to support the implementation of TVET 2.0 in collaboration with industries, reinforcing its commitment to developing a highly skilled workforce (Prime Minister’s Office of Malaysia, 2026).

These initiatives recognise that strengthening education pathways extends beyond developing technical competencies. Education pathways also influence how young people perceive occupations and evaluate future career opportunities through curriculum design, industry engagement, internships, career guidance, and peer environments. As a result, students enrolled in different educational pathways are likely to develop different expectations regarding employment prospects, income potential, occupational prestige, and career progression. These are particularly relevant for sectors such as agriculture, where attracting young talent depends not only on developing relevant skills but also on improving awareness of evolving career opportunities.

The influence of educational pathways is shaped by the broader career information and support available to students. Although schools play an important role in exposing students to different education and occupation opportunities, access to comprehensive career guidance remains uneven, with counselling often focused on conventional academic pathways. At the same time, education and career decisions are also shaped by family expectations, peer networks, personal interests, and prevailing social perceptions. Career guidance represents one of several factors that influence how young people evaluate different career pathways, including agriculture.

Attracting more young people into agriculture requires understanding the broader factors that shape their career decisions, including labour market conditions, educational pathways, and societal perceptions of the sector. While Malaysia has prioritised both agricultural transformation and TVET development, less attention has been given to how policy efforts in these two related sectors can join forces to influence youth views of agricultural careers, and in turn, youth employment in the agriculture sector.

3.0 Methodology

This section outlines the research design, data collection procedures, sampling strategy, and analytical approach used in this study. Quantitative survey data are used to examine how education pathways influence students' perceptions, preferences, and career aspirations towards agriculture. The section also details the sampling framework, survey instrument, statistical methods, and ethical considerations guiding the research process. Together these components ensure a systematic and robust approach to understanding the differences between non-TVET and TVET students' positions on agriculture careers.

3.1 Research Design

This quantitative component of the study seeks to document and unpack youth perceptions, career preferences, and career aspirations with respect to agriculture. Students' perceptions of agriculture — including working conditions, career prospects, and social prestige — may shape career preferences, which in turn influence their aspirations to pursue employment in the sector. Understanding these relationships is essential for designing policies to strengthen youth participation and build a future-ready agricultural workforce.

Currently, there are no existing government education surveys that collect the information necessary to examine youth attitudes empirically. A survey, entitled "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia (*Pendidikan Pemacu Aspirasi: Keutamaan dan Pilihan Pekerjaan Belia di Malaysia*)", was developed to capture how educational pathways influence youths' perceptions, preferences, and aspirations towards agriculture careers. It specifically compares TVET and non-TVET pathways, as this is a critical stage of education and career decision-making (Ismail et al., 2019; OECD, 2018).

To help understand the quantitative findings, the study also conducted key informant interviews (KIIs) which offer deeper insights and validates into the factors shaping the surveyed attitudes. However, qualitative data is not used in this report.

3.2 Target Population and Sampling Strategy

The target population comprised Malaysian secondary students aged 15 to 16 years⁴ enrolled in either Public Secondary Schools (*Sekolah Menengah Kebangsaan, SMK*) or Vocational Colleges (*Kolej Vokasional, KV*)⁵. A purposive sampling was adopted to facilitate comparisons between non-TVET and TVET pathways. Respondents were drawn from:

- Public Secondary Schools (SMK) offering either academic pathway culminating into a *Sijil Pelajaran Malaysia (SPM)* certificate or integrated programmes combining the *Sijil Pelajaran Malaysia (SPM)* and *Sijil Kemahiran Malaysia (SKM)* qualifications, where available.
- Vocational Colleges (KV) offering the *Sijil Vokasional Malaysia (SVM)* and *Sijil Kemahiran Malaysia (SKM)*.

A target sample of 100 non-TVET and TVET institutions was selected covering all 14 states and 46 districts. The absence of a full population frame on TVET institutions and logistics challenges of securing access to non-TVET schools necessitated this targeted sampling strategy. Non-TVET institutions were prioritised based on availability within the LeapEd Trust Schools network, with additional schools selected from nearby institutions to broaden coverage while ensuring feasibility within project constraints.⁶ Comparable TVET institutions were then identified to capture a similarly diverse and representative sample. This approach produced comparable coverage of non-TVET and TVET institutions for each state in Peninsular Malaysia, while sampling non-TVET schools from Sabah and Sarawak to assess the applicability of equivalent policy approaches for these states.

⁴ Ministry of Education (MOE) guidelines restrict the inclusion of 17-year-old students in research conducted in schools, as they are *Sijil Pelajaran Malaysia (SPM)* examination candidates. Therefore, this study only includes students aged 15–16 years (eRAS2.0, n.d.).

⁵ The study focused on Ministry of Education (MOE) institutions because students aged 15–16 are enrolled in MOE Public Secondary Schools and Vocational Colleges, allowing for a stricter comparison between TVET and non-TVET pathways.

⁶ For further details on LeapEd Trust schools, see Asadullah (2024) and Asadullah et al. (2023).

3.3 Survey Administration and Data Collection

Data were collected between January and May 2026 using an online self-administered questionnaire distributed to non-TVET and TVET institutions separately, each with the same sets of questions, through the survey partner, LeapEd Services Sdn. Bhd.⁷ LeapEd coordinated communication with education institutions and the administering teachers, and monitored the implementation of data collection. Ethical and administrative approvals were obtained from MOE, the Education Planning and Research Division (EPRD), the relevant State Education Departments (JPN), and the Technical and Vocational Education Division (BPLTV), as well as participating schools, prior to the commencement of data collection.

The survey was designed to be completed in schools during designated sessions, with participating teachers overseeing the process. This process aimed to ensure a controlled survey environment, minimise external influence, and support consistent administration across participating institutions.⁸ However, schools were provided flexibility in administration due to operational considerations, with some teachers sharing the survey link with parents or students to complete outside school hours without direct supervision. Based on survey timestamps, approximately 83% of responses were completed in schools or hostels, while 17% were completed without invigilation.

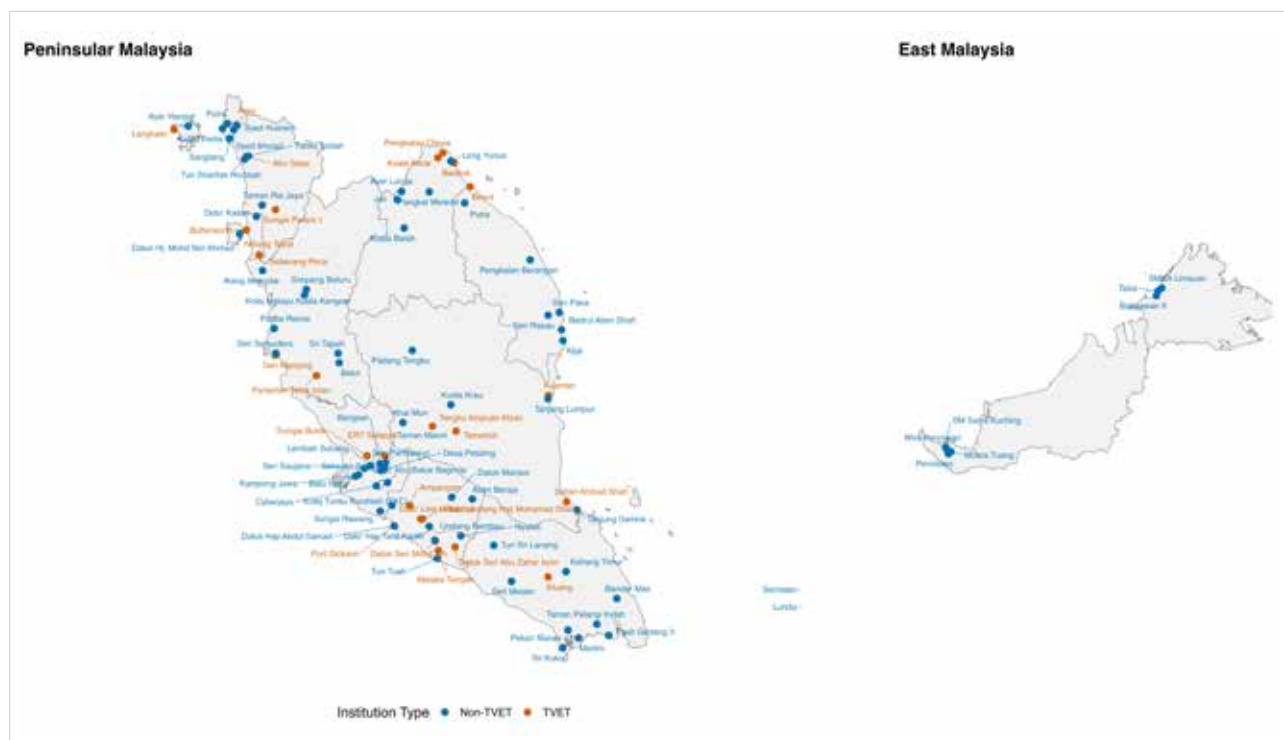
The assigned teacher in charge in each participating educational institution shared the survey link with eligible students (Form 3 and 4 in Public Secondary Schools and Year 1 SVM in Vocational Colleges). Students received brief instructions from their teachers and completed the survey under their supervision. The completed responses were transmitted directly to the IDEAS research team, where the data was subsequently cleaned, processed, and prepared for empirical analysis.

A final sample of 14,305 students was drawn from 88 participating schools (see Appendix Table A1.1 and Appendix Figure A1). The sample includes representation from both non-TVET and TVET institutions and across a wide and diverse geographic region (Figure 8, Appendix Table A1.2 and Appendix Figure A2). While there were some differences in response rates across schools and states, this did not appear systematic around a particular geographic cluster.

⁷ LeapEd is a Malaysian education service provider and social enterprise that implements education transformation programmes supporting school systems, leaders, teachers, students, parents, and communities (LeapEd, n.d.).

⁸ The study was conducted in accordance with relevant ethical considerations to ensure the protection and confidentiality of respondents. Participation was voluntary, and respondents were informed of the purpose of the study prior to participation. All responses were anonymised and analysed only in aggregate form, with no individual respondent identifiable in the reporting of findings. The study also obtained the necessary approvals from relevant educational authorities prior to survey implementation.

Figure 8: Map of schools that participated in the survey



Source: Authors' own illustration.

3.4 Survey Instrument Development and Execution

The survey instrument was developed through a combination of stakeholder consultation and a review of existing literature. Specifically, its design was informed by: (i) two industry stakeholder consultation sessions; and (ii) a review of studies on TVET participation, existing surveys on attitude and aspirations of secondary school students (Asadullah 2024; Asadullah et al., 2023), agricultural sectoral development, and publicly available survey instruments, including the Khazanah Research Institute's Intergenerational Mobility Survey (KRI, 2016), and School-to-Work Transition Survey (SWTS) (KRI, 2018). These informed the identification of the key survey modules and the development of candidate questions. The survey implementation partner LeapEd also lent its expertise to ensure the instrument was suitable for school-based implementation. Owing to resource and time constraints, a full pilot study was not feasible, with internal testing and refinement undertaken instead.

The final questionnaire included a total of 53 questions (35 questions in Section 1 and 18 questions in Section 2) to capture students' perceptions, preferences, and aspirations towards agricultural careers. Section A covers the following areas: **(i) Demographic and Educational Background:** age, gender, ethnicity, educational pathway, parental background, and socioeconomic characteristics; **(ii) Agricultural Exposure:** family involvement in agriculture, participation in agricultural activities, school programmes, and exposure through media and social networks; **(iii) Career Perceptions and Aspirations:** perceptions of agriculture in terms of attractiveness, income potential, job security, career

progression, prestige, and interest in pursuing agricultural careers; **(iv) Stream Choice:** reasons for selecting the current education stream and perceptions of how the chosen stream prepares students for future employment. In Section 2 of the survey instrument, students are presented with vignette-based scenarios, which involve choices concerning hypothetical agricultural jobs that vary by descriptive (low, medium, high) salary, job security, incentives, working conditions, and technology adoption. The combinations of job attributes and the sequence of job offers were randomised across respondents to minimise ordering effects and allow the independent influence of each attribute on career preferences to be identified.

3.5 Data Analysis

As the focus of this study is to explore the influence of education pathways on student perceptions, preferences, and career aspirations, the main analysis centres on the sub-sample of students who have already chosen a pathway and for which comparable non-TVET and TVET institutions exist. It samples the 7,222 students from Form 4 in the non-TVET (4,089) and Year 1 SVM students in the TVET pathway (3,133), capturing the 12 states for which these data were collected. Form 3 students and respondents from Sabah and Sarawak require separate analysis under future research, as a strict pathway comparison is not possible.

The influence of education pathways (non-TVET and TVET) on students' career aspirations and perceptions towards agriculture is explored using a combination of descriptive statistics and regression analysis. Graphical presentation of data identifies visible patterns among student survey responses, while regression analysis statistically explores the direction and magnitude of education pathway influence over and above differences explained by demographic, socioeconomic, and educational characteristics. Multiple logistic regression analysis is used to estimate the probability that a student agrees with a particular statement (for example, a strong preference for agriculture careers), allowing the analysis to assess whether students in one pathway are more or less likely to hold certain preferences than those in another, all else equal.

Four main outcomes are examined: whether students intend to enter the workforce immediately after school, whether they identify agriculture as their ideal career sector, whether they report a relatively high likelihood of working in agriculture, and whether they express a preference for modern agriculture or agri-technology. The agriculture job likelihood variable is originally measured on a 10-point scale and is re-coded into a binary indicator for the regression analysis, where responses of 5 or above are treated as indicating higher willingness to consider agriculture, and responses below 5 as lower willingness.⁹ Given this transformation, all four outcome variables are binary so that logit

⁹ A threshold of five was selected because it represents the midpoint of the 10-point likelihood scale, distinguishing respondents expressing at least a moderate willingness to consider agricultural employment from those expressing lower levels of interest).

regression specification is employed to document how the outcomes differ by educational pathways.

Beyond the primary outcome variables of interest, the analysis also examines students' general career motivations and perceptions of agriculture using an additional set of logit regressions. On the one hand, career motivation variables capture whether students consider attributes such as high salary, job security, overseas opportunities, entrepreneurship, technology, work-life balance, and social or environmental contribution as important in shaping future career decisions. On the other hand, agricultural perception variables assess whether students view agriculture as modern and high-tech, socially respected, environmentally important, or aligned with their skills, while also capturing concerns such as low status, difficult working conditions, or rural location constraints. To complement the individual perception measures, an aggregate agriculture attitude index is constructed by combining responses across multiple perception items into a single composite measure. This index is estimated in two ways: first, as a percentage-based score that rescales responses into a 0–100 range for easier interpretation, and second, using Principal Component Analysis (PCA) as a robustness check to capture the common underlying variation across all perception indicators. Together, these approaches provide both item-specific and overall measures of students' attitudes towards agriculture.

The analysis is conducted using an identical set of control variables for each estimation, capturing student demographic and household socioeconomic characteristics and four indicators related to academic performance and subject exposure (i.e. class ranking, agriculture-related subjects, expected grades, and chosen educational stream). Throughout the results are reported as average marginal effects, allowing the findings to be interpreted as percentage-point differences in the probability of, say, holding a particular career preference or perception.

The methodology is not without its limitations, which are explained in Appendix Note B.

3.6 Robustness Analysis

As an additional robustness exercise, the study employs vignette analysis to complement the main regression results. Unlike the survey questions, which elicit respondents' stated preferences directly, the vignettes present students with hypothetical employment scenarios in which key job attributes are systematically varied while other characteristics remain constant. This approach enables the analysis to examine whether the TVET-specific advantages (or the lack thereof) identified in the main regressions prevail when students evaluate realistic job opportunities under common decision-making contexts. By reducing the influence of question framing and allowing occupational preferences to be assessed across standardised scenarios, the vignette analysis provides an independent validation of the primary econometric findings based on stated preference data. Consistency between the survey regressions and the vignette analysis strengthens confidence that the observed differences in career preferences reflect broader underlying attitudes towards agricultural employment rather than the specific wording or format of the survey questions.

4.0 From Education to Youth Career Aspiration: A Comparison of Non-TVET and TVET Upper Secondary Students

This section presents the main survey findings, comparing the characteristics and career-related perceptions and aspirations of non-TVET and TVET students. First sub-section 4.1 profiles the student respondents in terms of personal and family background by stream type. Then sub-section 4.2 examines patterns for key outcomes of interest by stream type. As clarified in the preceding section, the analysis compares non-TVET (Form Four, *SMK* students) and TVET (Year 1 *SVM*) students using respondents from Peninsular Malaysia only.

4.1 Profiles of Upper Secondary Students by Stream Types

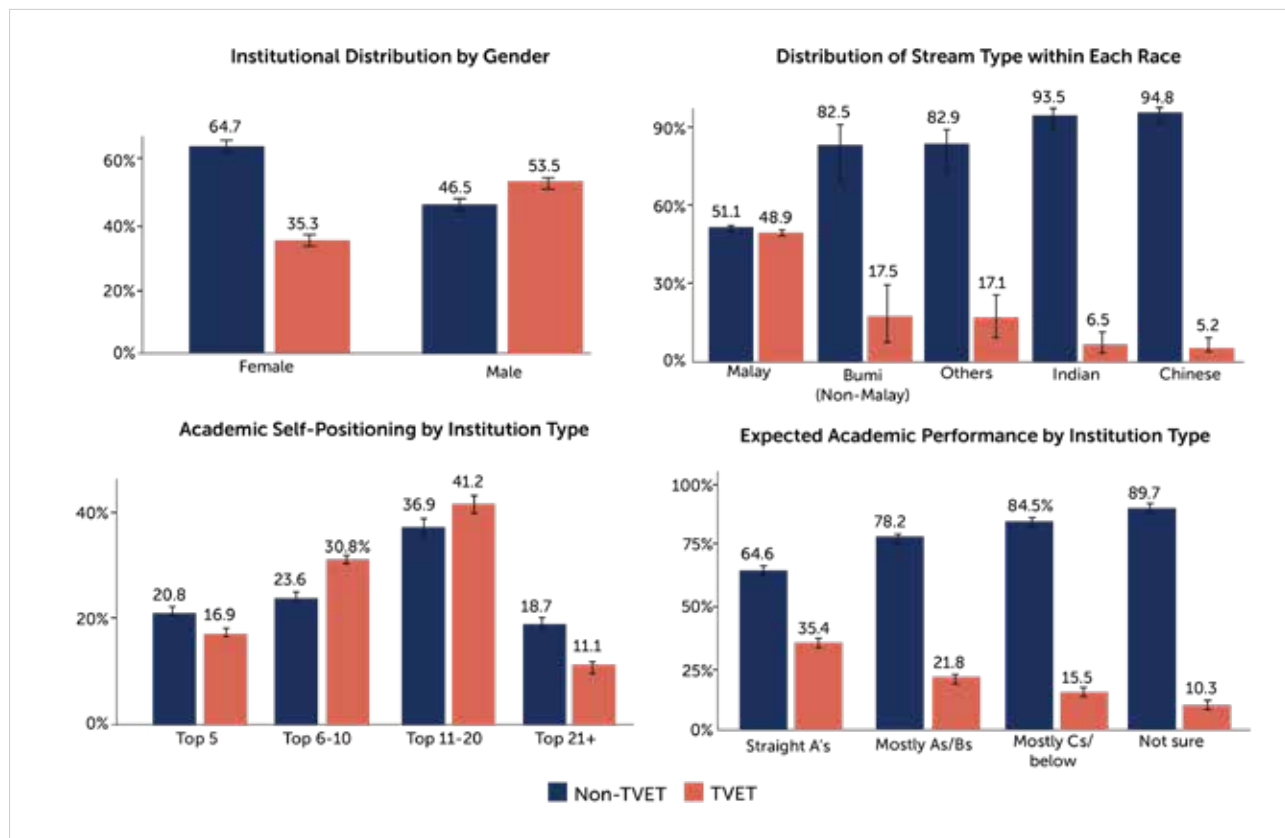
4.1.1 Demographic and Academic Profiles

Students from non-TVET and TVET institutions differ in three key demographic characteristics: gender, ethnicity, and academic self-perception (Figure 9).

The first noticeable difference is in gender composition. The non-TVET sample has a much higher share of females (64.7%) than the TVET sample (35.3%). This is consistent with the authors' understanding of the student population (though detailed population data is not available), with the continued predominance of male students in TVET programmes and female students more heavily represented in mainstream secondary education. This pattern aligns with international trends, where TVET education continues to attract a disproportionately higher share of male students (CEDEFOP, 2025; OECD, 2026). Vocational education remains closely associated with technical and STEM-related disciplines including engineering, automotive technology, electrical trades, and agriculture which have traditionally attracted greater male participation (OECD, 2024). Persistent gender stereotypes, parental expectations, and limited career guidance continue to position academic education as the more desirable pathway for female students, particularly for those aspiring to professional or university-based careers (Lam & Hassan, 2020; Omar & Mohd Desa, 2023). Together, these factors may have contributed to gendered educational choices well before labour market entry and may shape subsequent occupational segregation.

The second demographic difference relates to ethnic composition. While Malay students are spread fairly evenly between non-TVET and TVET, the Chinese, Indian, and other non-Malay Bumiputera respondents are predominately in non-TVET. Between 83 and 95% of non-Malays students are in the non-TVET stream.

Figure 9: Characteristics of Students by Stream Type



Source: Authors' based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia" survey. Q: Are you a male or female? & What is your race? (Respondent Background Information (top panel). Q: What is your class ranking (performance) in the last school final examination? & What grade are you expecting for your Year End examination? (Education of Respondent (bottom panel).

Lastly, students across the two education pathways exhibit distinct academic profiles. Based on their self-assessment, non-TVET students were more likely to place themselves among the highest-performing students in their class, with 20.8% ranking themselves in the top 5 compared with 16.9% of TVET students. In contrast, TVET students were more likely to view themselves as average performers, with 30.8% placing themselves between sixth and tenth in their class and 41.2% between eleventh and twentieth, compared with 23.6% and 36.9% of non-TVET students, respectively. Non-TVET students were also more likely to place themselves 21st or below in their class (18.7% compared with 11.1%), suggesting a greater dispersion in academic self-assessments, while TVET students tended to cluster around the middle of the performance distribution. These perceptions are broadly reflected in students' academic expectations. The observed differences may stem from a combination of cognitive ability, confidence as well as distinct¹⁰ orientations of the

¹⁰ For instance, mainstream secondary education (SMK) places greater emphasis on academic achievement and progression to higher education, whereas TVET prioritises technical competencies, practical skills, and industry readiness.

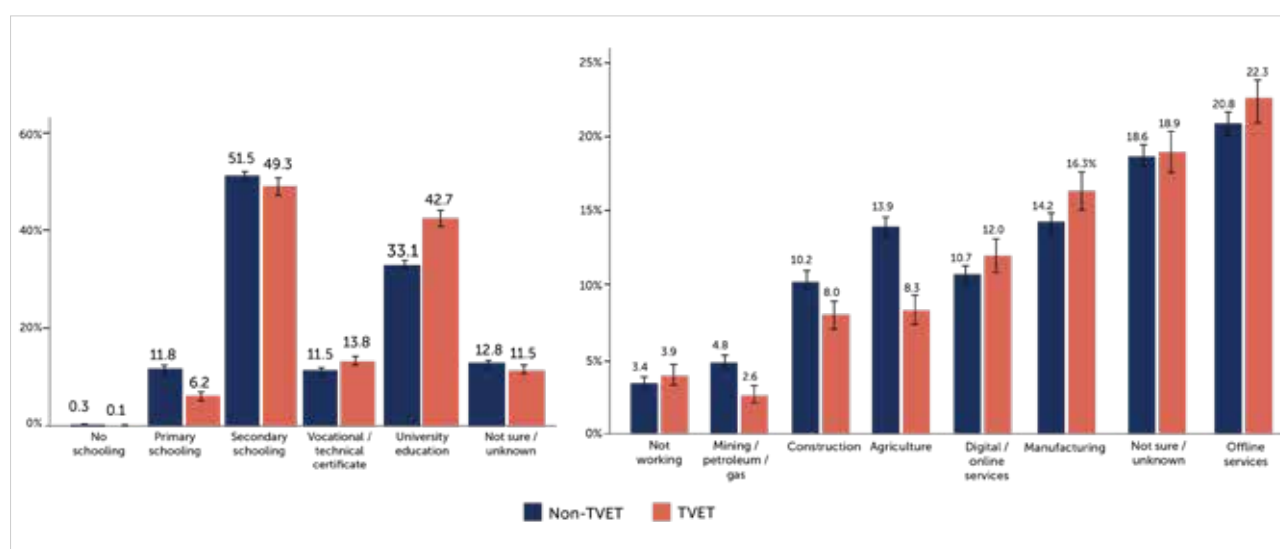
two academic pathways. Equally, favourable ratings of non-TVET students in academic self-assessment may reflect their better socioeconomic exposure, more favourable academic environment at home and greater academic orientation, compared to TVET stream respondents. However, as these measures are based on students' self-reported perceptions, they should be interpreted as reflecting perceived rather than objectively measured academic performance.

4.1.2 Parental Profiles of Students

Parents play an important role in shaping young people's educational experiences and career development. Exposure to different occupations, educational opportunities and perceptions of employment often originates from home. Examining parents' educational attainment and employment sectors therefore provides important context for understanding the differences in students' perceptions and aspirations across education pathways.

Parental educational attainment is broadly similar across both educational pathways, though TVET parents are marginally more educated (Figure 10). TVET students are more likely to have parents with vocational or technical qualifications (13.8% compared with 11.5% among non-TVET students) and university qualifications (42.7% compared with 33.1% among non-TVET students). Conversely, non-TVET students are more likely to have parents whose highest level of education is primary school (11.8% versus 6.2%). Slightly more than half of parents of non-TVET students (51.5%) and around half of parents of TVET students (49.3%) completed secondary education.

Figure 10: Parental Education and Occupational Backgrounds



Source: Authors' based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia" survey. Q: What is the highest level of education completed by your father and mother? (left panel) & What do your parents do for work? Select the main sectors of employment of your parents (right panel).

Parental employment also differs modestly, with non-TVET students more likely to come from parents working in the agriculture sector (Figure 10). Agriculture represents a modest share of parental employment overall, accounting for 13.9% of parents of non-TVET students and 8.3% of parents of TVET students. TVET students are slightly more likely to have parents employed in manufacturing and digital services, whereas non-TVET students are somewhat more likely to come from families engaged in agriculture, mining and construction. The offline service sector accounts for the largest share of parental employment among both non-TVET (20.8%) and TVET students (22.3%), followed by manufacturing (14.2% and 16.3% respectively) and parents whose employment sector is unknown (18.6% and 18.9% respectively).

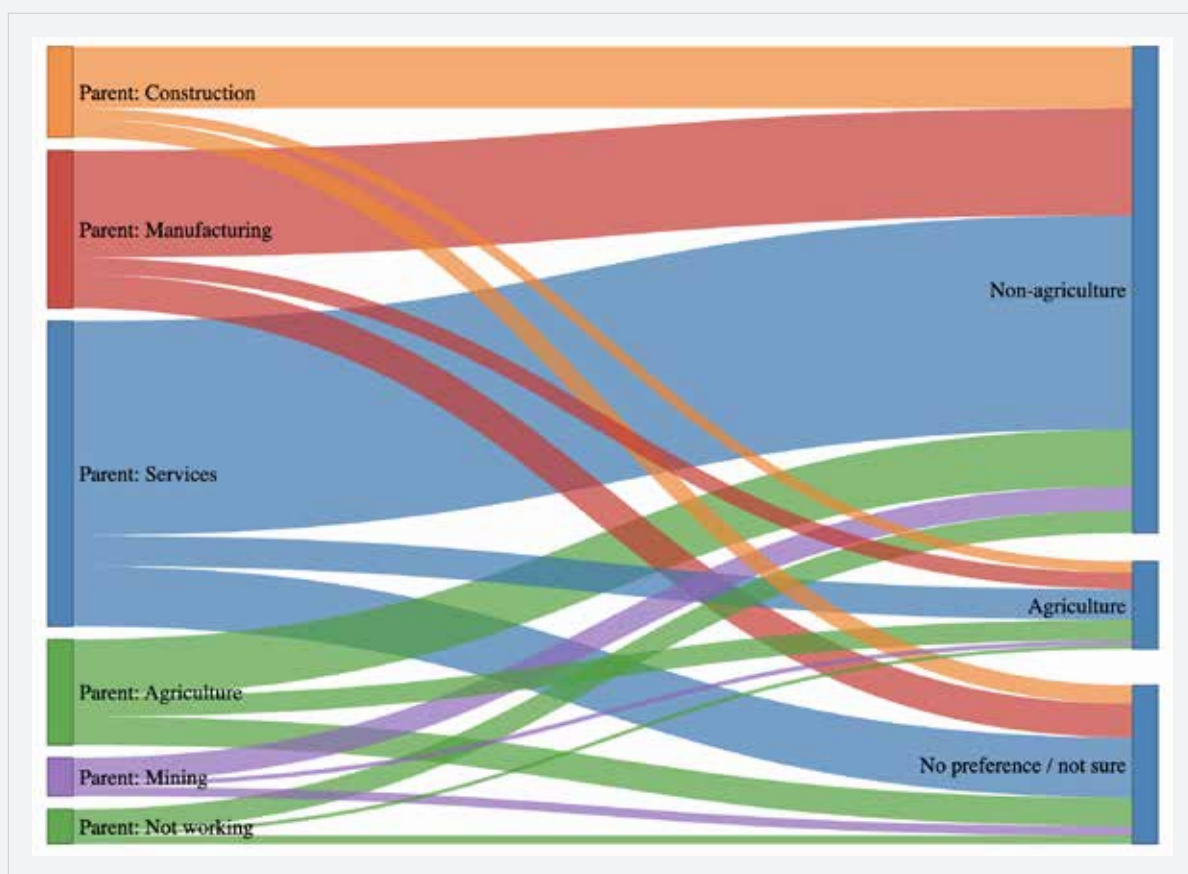
Although modest differences exist in parental education attainment and employment composition, students from both educational pathways are drawn from diverse family backgrounds rather than a single dominant socioeconomic profile.

Box 1: Do Children Want to Follow in their Parents' Footsteps?

Career aspirations are likely to be shaped not only by individual interests and educational experiences but also by the family environment in which young people are raised. Parents often influence children's career choices by shaping their exposure to different occupations, transmitting knowledge about particular industries, and influencing perceptions of career opportunities.

To explore the correlation between parents' reported employment sectors and students' ideal career aspirations, the below Sankey diagram visualises the magnitude of hypothetical intergenerational sector movements (Figure 11). The width of each connecting line is representative of flows from parents' occupations to students' aspirations.

Figure 11: Sankey Diagram of Parents' Employment Sector vs Students' Aspiration



Source: Authors' based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia" survey. Q: What do your parents do for work? Select the main sectors of employment of your parents. (For parents' side). & Thinking about the job you ideally wish to have from the previous question, would you prefer this job to be in...? (For students' side).

Overall, students overwhelmingly aspire to have careers that are different from their parents. Across all parental employment backgrounds, non-agricultural occupations remain the dominant aspiration, while relatively few respondents identify agriculture as their preferred career pathway.

Collectively, the relationship between parents' employment sector and students' career aspirations suggest greater occupational mobility than intergenerational continuity. The majority of students

(65.7% overall and 53.7% in agriculture) aspire to work outside agriculture, indicating that career preferences are shaped by broader perceptions of employment opportunities rather than simply following parental occupations. Only a relatively small share (19.5%) aspires to remain within agriculture.

Correspondingly, the vast majority (76.4%) of students who identified agriculture as their ideal sector came from non-agriculture families. Children of services, construction and manufacturing in particular express greater interest in agriculture than those with agriculture parents.

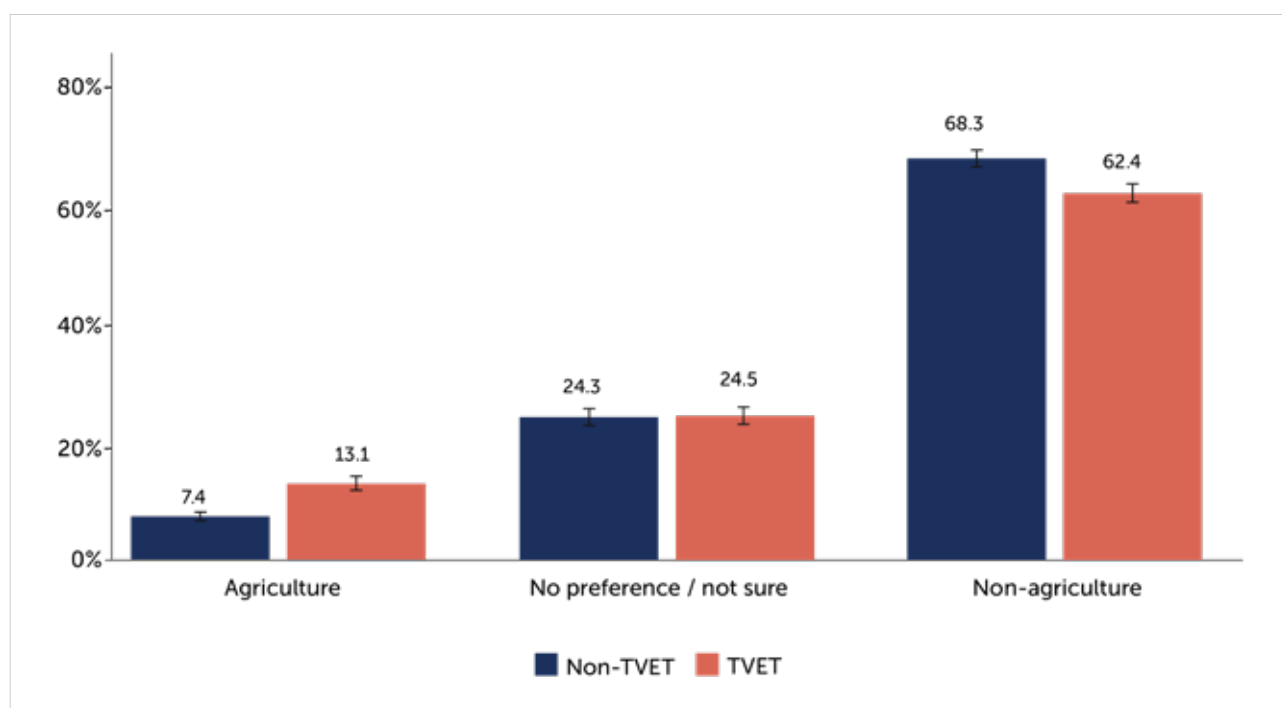
These findings suggest that parental occupation may provide exposure to particular industries but does not appear to be the primary determinant of career aspirations. Young people's aspirations are instead shaped by some combination of educational experiences, labour market expectations, and perceptions of career prospects, as considered elsewhere across this paper. Recruitment strategies overly focused on retention instead of attraction are missing the largest pool of potential candidates.

4.2 Evidence of Education Pathways' Influence on Interest in Agriculture Careers

Moving beyond the earlier discussion on socioeconomic and family related differences in student background by education stream, this section examines whether TVET students differ vis-à-vis non-TVET students in terms of interest in the agriculture sector and likelihood of choosing agriculture as a future career.

4.2.1 Interest in Agriculture as a Career Choice

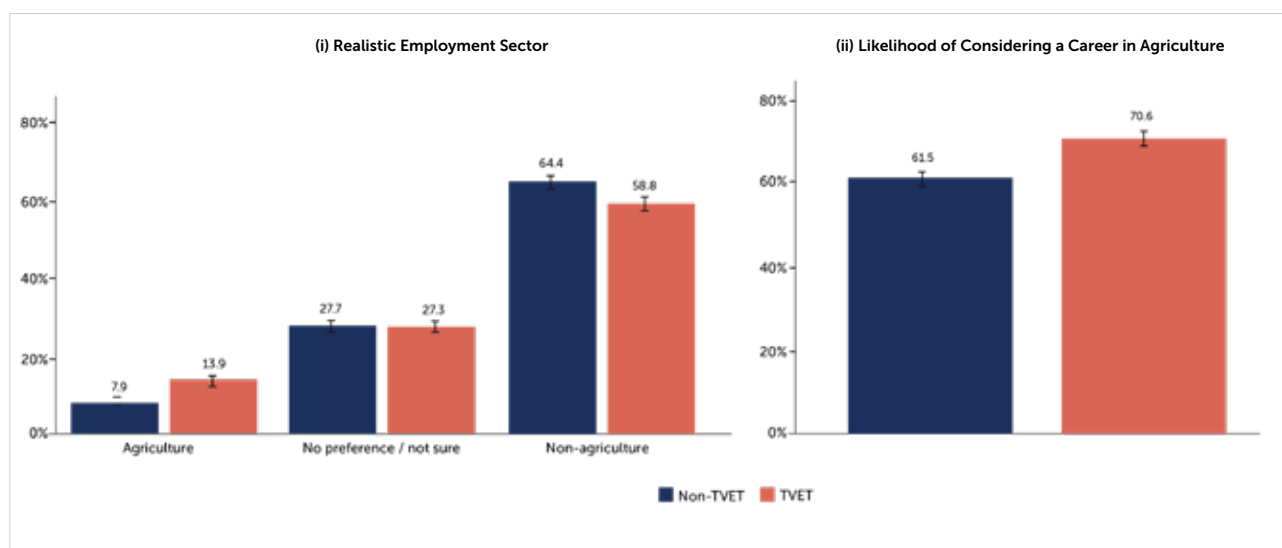
Approximately 68.3% of non-TVET students and 62.4% of TVET students preferred employment outside agriculture, making non-agricultural sectors the dominant career aspiration across both groups. TVET students were almost twice as likely to identify agriculture as their preferred sector (13.1%) compared with non-TVET students (7.4%). Around one-quarter of respondents from both groups indicated no clear sectoral preference (Figure 12).

Figure 12: Ideal Employment Sector by Education Pathway

Source: Authors' based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia" survey. Q: Now think again about your future. After completing your planned education or training, what kind of job would you ideally like to have?

Students' realistic employment expectations mirror a similar pattern (Figure 13). The majority continued to anticipate employment outside agriculture, with 64.4% of non-TVET and 58.8% of TVET students expecting to enter non-agricultural sectors. However, the proportion expecting to work in agriculture was slightly higher than the preferred sector for both groups, rising to approximately 8% among non-TVET and 14% among TVET students. This increase indicates that some students perceive agriculture as a more attainable employment option than their ideal aspirations would indicate, among those enrolled in TVET education.

Figure 13: Realistic Employment Sector and Likelihood of Considering a Career in Agriculture by Education Pathway



Source: Authors' based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia" survey. Q: When you think about your future, how likely are you to choose a job in agriculture?

Around seven out of ten TVET students surveyed reported that they would consider working in agriculture, compared with slightly more than six in ten of non-TVET students. Many students appear open to exploring opportunities. The gap between preferred employment sectors and willingness to consider agriculture further highlights the importance of understanding and shaping perceptions regarding career prospects, including employment working conditions, remuneration, and professional status.

These relationships were explored further through the study's first and most substantive regression analysis. The resulting econometric estimates allow for this relationship to be isolated statistically, identifying the strength of influence of TVET versus non-TVET streams on student views.

Across the regression models, TVET enrolment is consistently associated with stronger agricultural career orientation (Table 1). TVET students are 8.3 percentage points more likely to identify agriculture as their ideal employment sector than non-TVET students. TVET students are also 12.4 percentage points more likely to be open to entering an agriculture career. TVET enrolment is also associated with a 5.5 percentage point reduction in the probability of planning to enter the workforce or start a business immediately after school. Contrary to the industry-ready purpose of vocational training, TVET students are systematically more inclined to pursue tertiary education or advanced training opportunities rather than transitioning immediately into active employment.

Despite being more favourably disposed towards agricultural careers, TVET students are no different to non-TVET students in their strength of preference towards modern agriculture or agri-tech as an ideal job type. This reinforces the descriptive observation

that while the vocational stream successfully nurtures general agricultural career interest, it does not stimulate or channel youths toward modernised, high-tech agricultural roles any more than the academic track.

The observed differences in preferences between female and male students is significant. This is despite many such factors exerting significant influence themselves. For instance, female students are about 5 percentage points less likely to choose agriculture as an ideal sector, 6.4 percentage points less likely to be open to agriculture employment, and 2.5 percentage points less interested in modern agri-tech roles than male students. Females are also 9.1 percentage points less likely to transition immediately into the workforce than their male counterparts.

Meanwhile, Malay students display a 3.9 percentage point lower probability of selecting agriculture as their ideal sector and are 2.6 percentage points less likely to target agri-tech, although they are 6.6 percentage points more open to agriculture employment compared to students of other ethnicities. Having a father or mother employed in agriculture also has a positive association with a child's interest in agriculture careers.

Prior exposure to an agriculture-related subject emerges as one of the strongest predictors of sector interest, while top students are more likely to defer labour market entry. Students who have taken an agriculture subject are 12.1 percentage points more likely to choose agriculture as an ideal sector and are 24.6 and 10.8 percentage points respectively more open to agriculture careers generally and agri-tech careers specifically. By contrast, students who self-report high achievement (top 5 in the class and/or expecting straight-A's) and those in Science, Technology, Engineering, and Mathematics (STEM) streams are respectively 4.8 and 6.0 percentage points less likely to enter the labour force immediately.

Table 1: The Influence of TVET pathways on Agriculture Career Aspirations: Regression Estimates

Term	Ideal Sector: Agriculture	Agriculture likelihood (if >= 5 1 otherwise 0)	Modern agriculture: what kind of job would you ideally like to have? 1 if agri tech	Immediate entrant
TVET	0.083*** (0.034)	0.124*** (0.025)	0.009 (0.014)	-0.055*** (0.020)
Num. Obs.	7222	7222	7222	7222
Pseudo R2	0.166	0.054	0.107	0.053

*Note: The first numbered row provides the estimated coefficient or average partial effect of the TVET education pathway on career preferences. The second numbered row (in parentheses) provides the standard errors. *** indicates statistical significance at the 1% level; ** indicates statistical significance at the 5% level; * indicates statistical significance at the 10% level.*

The findings suggest that education pathways significantly influence the extent to which students view agriculture as a viable career option. While non-agriculture employment remains the dominant aspiration across both groups, TVET students consistently demonstrate stronger interest in agriculture and greater willingness to consider agricultural careers. This likely reflects the closer alignment between vocational education and practical, industry-oriented occupations, including those within the agri-food sector. At the same time, TVET students delay their entry into the workforce and are no more attracted to agri-tech jobs than non-TVET students. The relatively high willingness to consider agriculture across both groups suggests that there remains considerable potential to attract young people into the sector, provided that existing barriers and negative perceptions can be addressed.

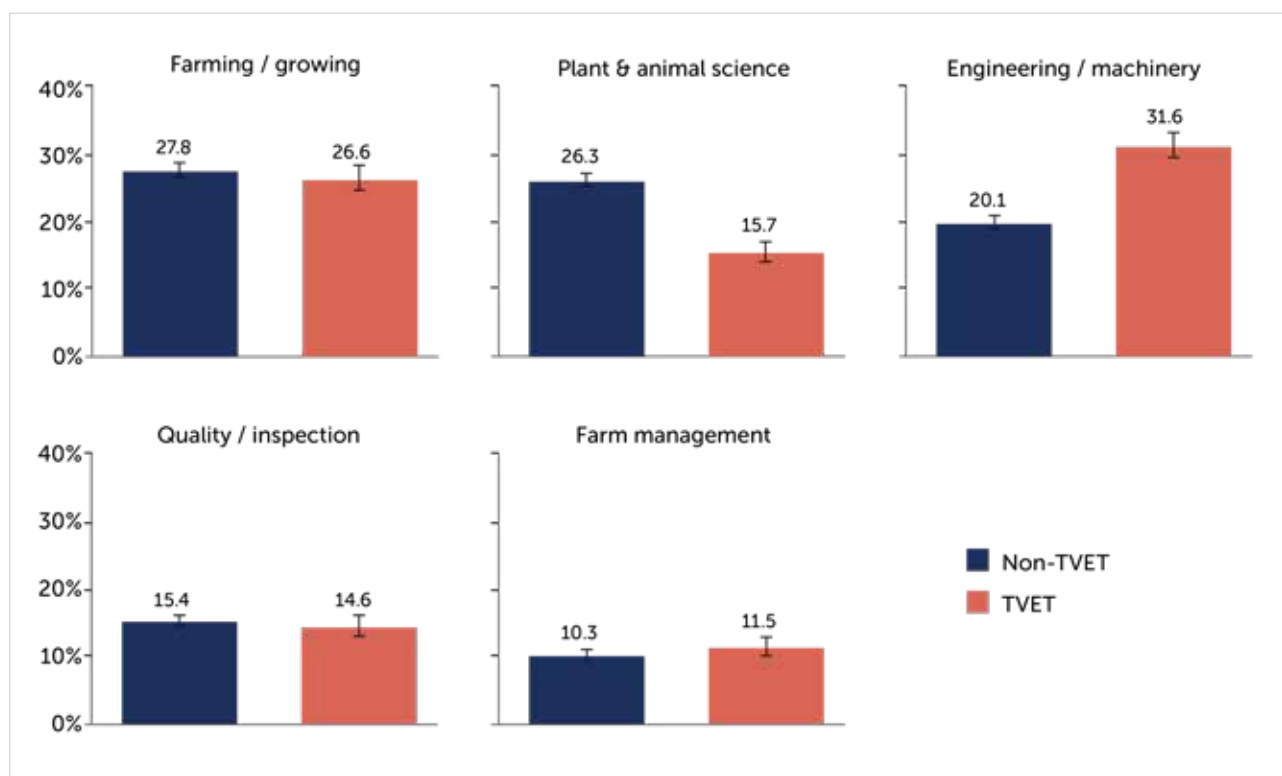
4.2.2 Career Preferences Within The Agriculture Sector

Students' willingness to pursue employment in agriculture depends on an understanding of occupations within the sector. Agriculture encompasses a diverse range of careers beyond primary production, including engineering, quality assurance, scientific research, and farm management. This section therefore examines the preferred occupations of students who indicated interest in the agriculture sector, and explores how within-agriculture sector preferences differ between non-TVET and TVET students (Figure 14).

Farming and crop production remains one of the most preferred agriculture career pathways among both groups, attracting approximately 27.8% of non-TVET and 26.6% of TVET students. This suggests that conventional agricultural production continues to hold strong appeal among students who are open to careers in the sector.

More pronounced differences emerge in specialised technical occupations, with TVET students demonstrating a stronger preference for technical occupations involving agricultural engineering and machinery. Approximately 31.6% of TVET students identified engineering and machinery-related careers as their preferred agricultural occupation, compared with 20.1% of non-TVET students. In contrast, non-TVET students expressed greater interest in plant and animal science careers, with around 26.3% preferring these occupations compared with 15.7% of TVET students.

Interest in farm management remains relatively low across both groups, attracting fewer than 12% of respondents. This may reflect young people's limited exposure to entrepreneurial or managerial roles within agriculture, as well as perceptions that farm ownership requires significant financial resources, land access, and experience. Similarly, interest in quality assurance and inspection roles is comparable between the two groups, with around 16% of respondents selecting these occupations.

Figure 14: Preferred Agriculture Occupation by Educational Pathway

Source: Authors' based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia: survey. Q: If you were ever to work in agriculture, which area of the agriculture sector are you most interested in working?"

Regression estimates confirm the statistical significance of these differences when accounting for other influences, with TVET students 3.4 percentage points more likely to prefer engineering and machinery and 6.6 percentage points less likely to prefer plant and animal science careers (Table 2). These differences likely reflect the differing emphasis of each education pathway. TVET programmes provide greater exposure to technical and applied skills, making engineering-related occupations more familiar and attainable, whereas non-TVET students may be more inclined towards science-based careers that align with further academic study.

**Table 2: The Influence of TVET Pathways on Career Preferences
Within the Agriculture Sector: Regression Estimates**

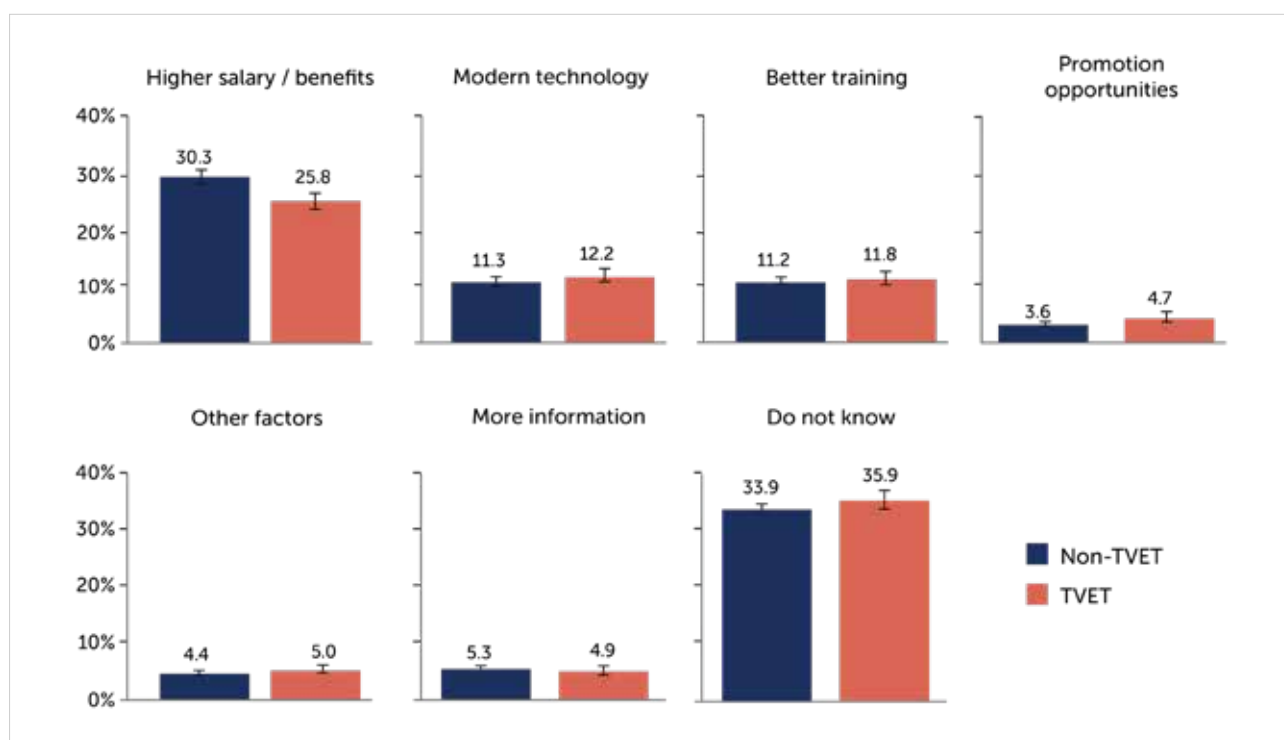
Term	Farming / growing	Farm management	Plant & animal science	Engineering / machinery	Quality / inspection
TVET	0.023 (0.015)	0.011 (0.011)	-0.066*** (0.013)	0.034*** (0.013)	0.009 (0.014)
Num. Obs.	7222	7222	7222	7222	7222
Pseudo R2	0.027	0.038	0.043	0.077	0.014

Note: see Table 1

Together, these findings suggest that attracting young people into agriculture requires more than increasing awareness of the sector. There is a need to broaden understanding of the diverse professional opportunities available within modern agriculture, particularly among students who continue to associate the sector primarily with traditional farming.

4.2.3 Job Attributes Influencing Interest in Agriculture Careers

This section examines student's subjective appraisal of job-related factors that could increase youth interest in agriculture. Students' assessment of job characteristics around agriculture careers may shape their perceptions in real life in ways that may be detached from reality. If so, this creates opportunities for targeted intervention to increase interest. In this study instrument, students were asked to identify the single factor that is most likely to encourage them to consider an agricultural career (Figure 15).

Figure 15: Factors that would Increase Interest in Agriculture Careers by Education Pathways

Source: Authors' based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia: survey. Q: Would any of the following make you more interested in pursuing work in agriculture?"

Approximately one-third of respondents did not identify any factor that would increase their interest in agriculture (33.9% of non-TVET and 35.9% of TVET students). This suggests that a substantial proportion of young people remain uncertain about what would make agriculture an attractive career or may not view the sector as a realistic employment option.

Across both education pathways, higher salaries or benefits are the most frequently selected factors that would increase interest in agriculture careers. Nearly one-third of non-TVET students (30.3%) and over one-quarter of TVET students (25.8%) identified improved remuneration as the primary incentive. Exploring this further through regression analysis, TVET students are 5.2 percentage points less likely to report "Higher salary/benefits" as the primary catalyst to boost their interest in agriculture (Table 3). Economic returns are nonetheless central to young people's career decision-making and improving the financial attractiveness of agricultural employment remains a key lever to raising interest.

Table 3: The Differences in Job Attributes that would Increase Interest in Agriculture Careers across Education Pathways: Regression Estimates

	Higher salary / benefits	Better training	Modern technology	Promotion opportunities	More information	Do not know
TVET	-0.052** (0.022)	0.022** (0.007)	-0.006 (0.009)	0.007 (0.007)	0.004 (0.006)	0.010 (0.026)
Num. Obs.	7222	7222	7222	7222	7222	7222
Pseudo R2	0.018	0.011	0.010	0.020	0.010	0.028

Note: see Table 1

Beyond financial incentives, students highlighted the importance of modernising the sector's capabilities and image. Around 11–12% of respondents from both groups identified modern technology and better training opportunities as the factors most likely to increase their interest. Young people appear attracted to agriculture when it is presented as an innovative, technology-driven industry that offers opportunities for skills development and career progression, rather than being associated solely with traditional farming.

Other factors appear less important to attracting new entrants. Only around 5% of respondents indicated that greater access to information about agricultural careers would be the most important influence on their decision, while promotion and career advancement opportunities were selected by fewer than 3.6% of non-TVET and 4.7% of TVET students. Although these factors appear less influential individually, career guidance, family engagement, and clear professional pathways still shape students' perceptions of agriculture careers.

While exhibiting a modest difference in raw responses, TVET students were found to be statistically significantly more likely to cite training opportunities as a potential incentive than non-TVET students. Regression estimates found TVET students are 2.2 percentage points more likely to cite "Better training" as a key driver of interest in agriculture (Table 3).

The findings show that increasing youth participation in agriculture will require more than simply improving awareness of the sector. While competitive salaries remain the strongest incentive, students also value opportunities to work with modern technologies and acquire relevant skills. Together with earlier findings on career aspirations and perceptions, these results indicate that policies aimed at attracting young people into agriculture should focus on strengthening both the economic attractiveness and the professional image of agricultural careers, while providing clearer pathways for career development.

4.2.4 Perception of Agriculture as a Career

Youth's career aspirations are influenced not only by their educational background but also by how they perceive the agriculture sector. Perceptions regarding the nature of agriculture work, career prospects, social status, and parental support shape whether agriculture is viewed as an attractive and viable long-term career.

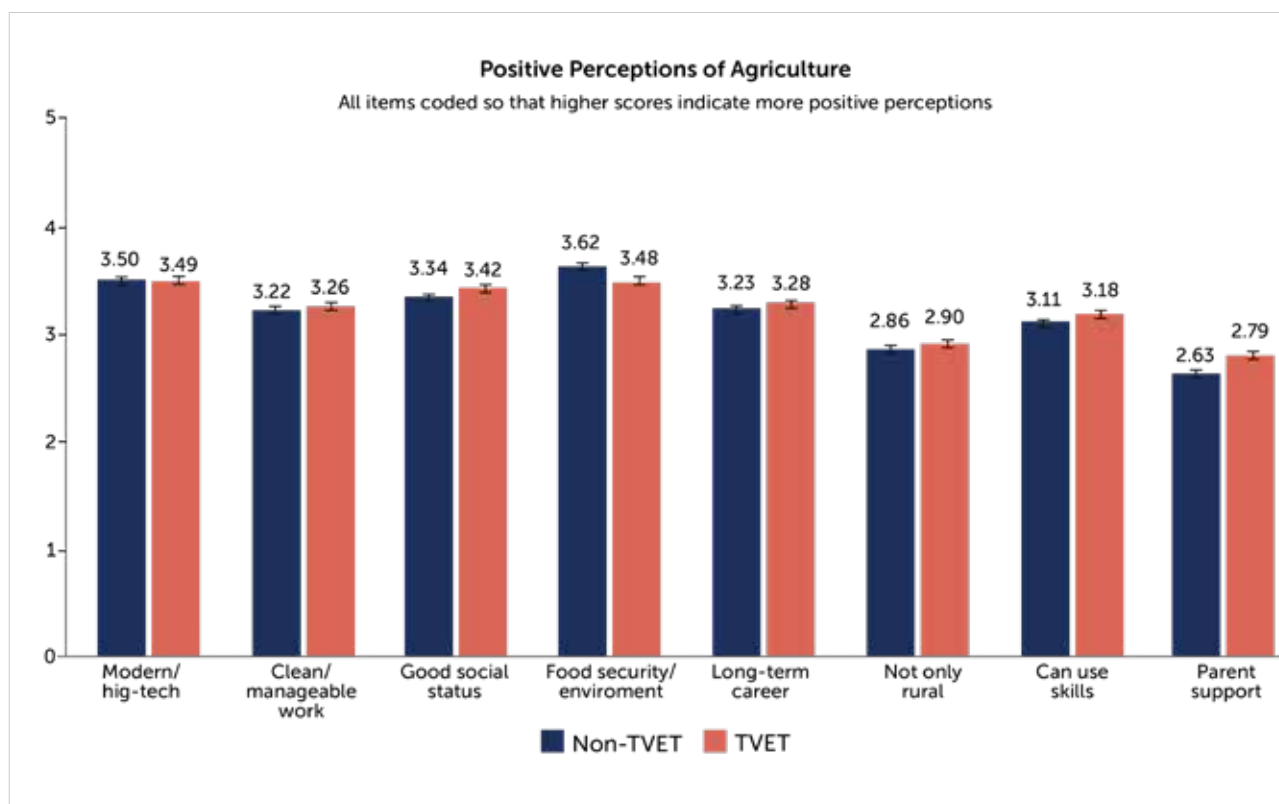
Perceptions of technological advancement in agriculture are similar across TVET and non-TVET. Awareness of the technological transformation of agriculture (including adoption of digital technologies, automation, and precision farming) does not differ by education pathway. Yet, at only around half of all respondents (51.3%) being aware, there remains significant scope to raise awareness among Malaysian youth.

Compared to non-TVET students, TVET students surveyed are significantly less likely to associate agriculture with traditionally negative characteristics or stereotypes. They are less likely to perceive agriculture as hard and dirty work, a low-status occupation, a temporary rather than long-term career, or as a sector that is confined primarily to rural areas. Greater exposure to practical and industry-oriented learning within TVET programmes may contribute to a more realistic and less stereotypical understanding of modern agricultural careers.

TVET students consistently hold more favourable perceptions of agriculture across most attitudinal dimensions (Figure 16). TVET students were more likely than non-TVET students to view agriculture as clean and manageable work (3.26 vs. 3.22), to regard it as a profession with good social status (3.42 vs. 3.34), a long-term career (3.28 vs. 3.23), one in which their skills can be utilised (3.18 vs. 3.11), and to believe that their parents would support an agriculture career (2.79 vs. 2.63). They were also slightly more likely to view agriculture as extending beyond rural areas (2.90 vs. 2.86)¹¹.

¹¹. In almost all of these 5 attributes, the respective confidence intervals do not overlap, indicating high confidence that a difference exists.

Figure 16: Students' Perception of Agriculture Careers by Education Pathway



Source: Authors' based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia" survey. Q: Please indicate how much you agree or disagree with the statements below about jobs in the agriculture sector, (1 = Strongly disagree | 5 = Strongly agree).

Note: Original scores are reverse coded in the case of negatively worded statements.

The largest difference between the two groups relates to parental support. Nevertheless, overall parental support remains relatively low, with fewer than one in five respondents (17.9%) agreeing that their parents would encourage an agriculture career. This suggests a need to shift parental perceptions alongside those of students.

TVET students are slightly less likely than non-TVET students to associate agriculture with supporting food security and environmental sustainability in this survey, although the difference is relatively modest. This suggests that TVET students' more positive views on agriculture as a career path are not linked to concerns over sustainable access of food for the society nor environmental significance, which in turn suggests campaigns appealing to these government objectives are less likely to attract TVET students to the sector.

To further test whether perceptions differences are driven by education pathways, accounting for the influence of demographic and other factors, an additional regression analysis is conducted using constructed attitude indices. Two alternative measures of student perceptions towards agriculture careers are created: (1) a composite attitude index (CAI), which combines responses to eight survey statements relating to perceptions of agriculture, including income potential, technology, social status, working conditions,

career prospects, rural lifestyles, the relevance of existing skills, and parental support. Responses were coded with higher values consistently represent more favourable perceptions of agriculture and are averaged to produce a score ranging from 0 to 100.; and (2) a Principal Component Analysis (PCA), which summarises the common variation across the same set of attitude statements into a single data-driven measure of overall attitudes towards agriculture.

TVET students are found to have significantly more positive attitudes towards agriculture careers under the CAI (Table 4). TVET enrolment is associated with about a 1.6 point higher index rating, equivalent to around 0.15 standard deviations¹² relative to the overall distribution of attitudes. This suggests that TVET students hold more favourable perceptions of agricultural careers than comparable non-TVET students. TVET students are also found to have more positive attitudes under the PCA measure, but the difference is not statistically significant.

Table 4: OLS regression estimate of TVET exposure on attitude towards agriculture

	D1 attitude index, 0-100 -	D1 attitude index, PCA -
TVET	1.568*** (0.306)	0.061 (0.050)
Num. Obs.	7228	7228
R2 Adj.	0.045	0.032
B1-B4 controls	Yes	Yes

Note: see Table 1

The regression estimates provide further evidence that vocational pathways exert a positive influence on agricultural career perceptions and that this is not explained by differences in the backgrounds of students.

The findings indicate that educational pathways are associated with young people's perceptions of agricultural careers. Compared with non-TVET, TVET students surveyed generally hold fewer negative stereotypes about agricultural work, perceive stronger alignment between their skills and employment opportunities in the sector, and report greater parental support for agriculture careers. These more favourable perceptions likely contribute to the higher willingness among TVET students to consider employment in agriculture observed in the previous section. Nonetheless, the persistently low levels of parental support and the fact that only half of respondents perceive agriculture as a modern, high-tech industry suggest that significant perceptual barriers remain. Addressing these

¹² The attitude index has an average score of 55.1 and a standard deviation of 10.6. Therefore, an increase of 1.6 index points is equivalent to approximately 15% of the typical variation in attitudes observed across students. A standard deviation is a measure of how much attitudes vary across students. An increase of 0.15 standard deviations indicates that TVET students have modestly more favourable attitudes towards agricultural careers than comparable non-TVET students after accounting for other observed characteristics.

barriers will be critical if Malaysia is to strengthen youth participation in the agricultural workforce.

Box 2: How '3D' Do Students Think Agriculture is?

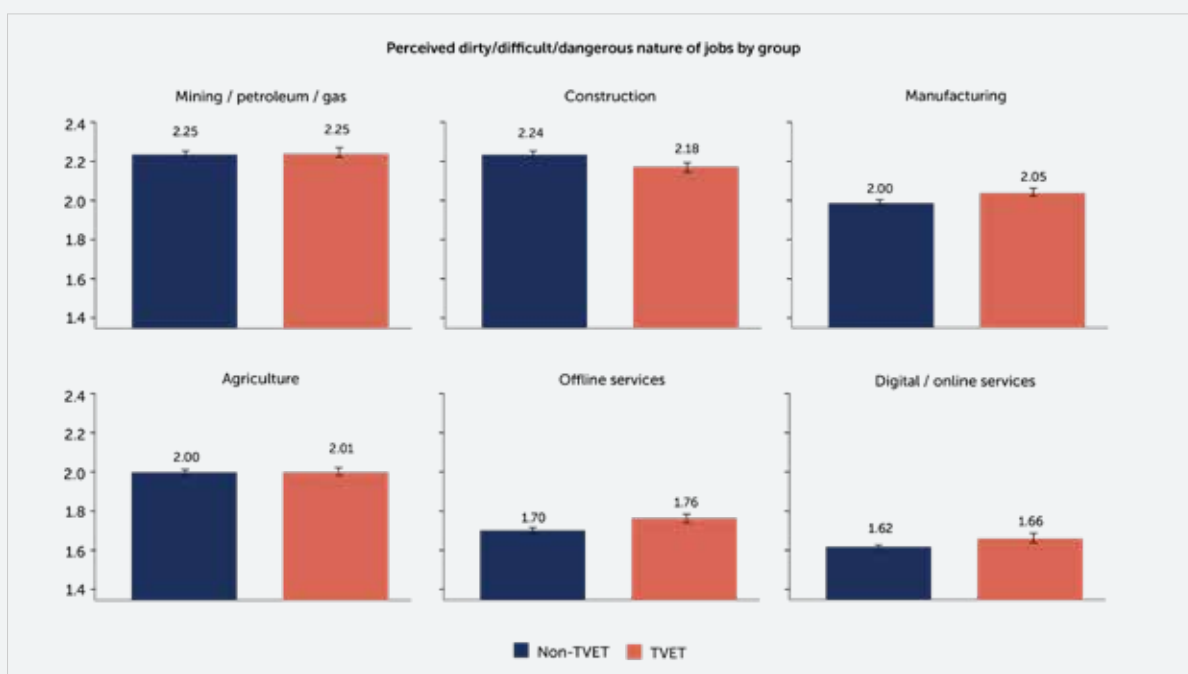
Anecdotal, a common concern for agricultural recruiters is that work in the sector is considered '3D': dirty, dangerous, and difficult. Results of the survey provide some evidence surrounding this perception.

Comparing across the education pathways, there is very little difference in perceptions of '3D' working conditions across sectors between non-TVET and TVET students (Figure 17). Mining, petroleum and gas, followed by construction, are consistently perceived as the most '3D' sectors (scoring 2.26 to 2.22), while service-based industries are viewed as the least '3D' (scoring 1.63 to 1.73).

Agriculture occupies the middle of the distribution, with almost identical ratings among non-TVET (2.00) and TVET (2.01) students. It is perceived to be no more 3D than manufacturing, which received similar ratings.

The findings suggest that concerns regarding the '3D' nature of agriculture work alone are unlikely to explain young people's relatively low interest in agriculture careers. Although the nature of the agriculture sector continues to be perceived as more '3D' than service-sector employment, it is viewed similarly to manufacturing and substantially less 3D than mining or construction.

Figure 17: Perceived '3D'ness of Employment Sectors by Educational Pathway



Source: Authors' based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia: survey. Q: When you think of jobs in the following sectors, how dirty, difficult and dangerous ('3D') do you think they are?"

4.3 Insights from Agriculture Career Vignettes

The survey included hypothetical job-choice vignettes to elicit responses to relatable real-world choices. Respondents were presented with six agriculture job offers that varied systematically across four key attributes: location, monthly pay, use of technology, and physical demands. They were to imagine their future selves as recent *SPM*, *SKM* or *SVM* graduates who are seeking their first full-time job in agriculture. Each respondent evaluated one job offer at a time and answered a question to indicate how likely (on a 10-point likert scale) they would be to accept the position if it were offered to them. By systematically varying key job characteristics, the vignette isolates the relative importance of different employment attributes influencing young people's willingness to pursue careers in agriculture. Responses were analysed using regression models to examine whether education pathway (TVET versus non-TVET) influenced these preferences (Appendix table B1 and table B2 provides descriptive analysis of vignette responses).

The robustness analysis explores how the likelihood of a student accepting a hypothetical job offer varies with job attributes and educational pathways, over and above the influence of student background characteristics (as included in all other regression exercises in this study). As each student responded to six hypothetical jobs, the dataset has over 84,000 stacked choice-level observations. The first regression (ordinary least squares or OLS) examines education pathway (TVET affiliation) and job attributes (location, pay, technology intensity, and physical demands) separately alongside background controls. The second regression explores the interaction between gender, educational pathway and job attributes (with a TVET x attribute x female baseline).

The results of the first regression suggest some attributes; pay, technological advancement and the geographic location that influence student perceptions of agricultural jobs to differing degrees. Increasing pay from the lowest to the highest level raises the average likelihood of accepting an agriculture job by just over three points on the 0 to 10 acceptance scale, making it the most influential job attribute. Increasing the level of technology raises job acceptance by around 0.8 points, while moving from the least to the most physically demanding job reduces acceptance by just over one point. Changing the job location from the most rural to the most urban setting reduces acceptance by around one-quarter of a point, indicating that location has the smallest influence on students' job decisions.

The results also lend further support to TVET stream students being significantly more predisposed to agricultural jobs, while adding further information as to why. Holding job characteristics and other student characteristics constant, TVET students rate agriculture jobs around one point higher on the 0 to 10 acceptance scale than comparable non-TVET students. Compared with non-TVET students, TVET students surveyed are around 40% less responsive to increases in pay, around 50% less responsive to improvements in technology, and around 45% less deterred by physically demanding work when evaluating agricultural jobs. This suggests that vocational education may shape how students evaluate agricultural employment, making them more accepting of its practical characteristics.

The results of the second regression highlight a gendered dimension to job attribute influence on offer acceptance. The interaction term estimates show that male TVET students are more accepting of physical demands than female TVET students. Female TVET students conversely place a greater premium on high technology roles. These patterns demonstrate that while the TVET pathway broadly prepares youth to accept the realities of the agriculture sector, female vocational students remain highly sensitive to the physical strains of the job, signalling that labour-saving technologies are essential preconditions for successfully retaining young women in the modern agricultural workforce.

Overall, the vignette findings lend further support to those of the thematic survey analysis, providing additional evidence to support the below discussion.

5.0 Discussion: Understanding the TVET-Agriculture connection

This section situates seven empirical findings against available secondary evidence, helps identify empirical gaps in the existing scholarship and offers supplementary evidence on these gaps drawing upon further data.

5.1 Situating the Results Against Available Secondary Evidence

The empirical findings of this study offer a nuanced framework for understanding how education tracking, early curricular choices, and structural labour market conditions shape the agricultural career orientation of Malaysian youth.

The first finding relates to a significant institutional premium associated with technical and vocational education and training pathways. Even after rigorously controlling for individual demographics, household income, and parental employment profiles, enrolment in a TVET track emerges as a strong, positive predictor of both openness to an agricultural career and a stated preference for agriculture as an ideal employment sector. This provides a crucial counter-force to the stark intergenerational rupture documented in the study by Shaharudin & Abu Rahim (2020), which established that almost all in-school and tertiary youth from agricultural households actively leave the sector, resulting in a severe drain of baseline familial talent. The empirical results indicate that while family lineage frequently fails to transmit agricultural interest across generations, TVET operates as an independent, path-defying institutional mechanism that successfully cultivates sector interest among youth who did not inherit it. Recent assessments of Malaysian TVET cohorts by Abdul Aziz et al. (2025) highlight that career choices within these streams are heavily driven by intrinsic interest and a desire for alignment with fields of study. The practical exposure and structured mentorship embedded within these programs, as documented by Amin et al. (2025), actively expand students' openness to the sector, successfully advancing the core human capital objectives outlined in the National TVET Policy 2030.

The second core finding relates to the absence of evidence that TVET exposure supports a preference for modern agriculture or agri-tech occupations. While vocational training builds a broad openness to the agriculture sector, it fails to steer students toward emerging high-technology or Agriculture 4.0 roles. This finding reflects a persistent curriculum-industry mismatch where vocational institutions struggle to keep pace with rapid industrial digitisation; a systemic lag noted globally by the The World Bank, ILO, and UNESCO (2023) and documented locally by Ahmad and Rosnan (2024). Outdated institutional infrastructure and constrained funding frequently limit the hands-on deployment of cutting-edge tools like drone technology, automated Internet of Things (IoT) monitoring, and data analytics within training centers, as highlighted by Wahab et al. (2024).

The third core finding is that TVET students are significantly less likely to report an intention to enter the workforce immediately after completing school compared to their non-TVET peers. Rather than serving as a terminal qualification that accelerates immediate employment, vocational tracking in Malaysia increasingly functions as a stepping stone for further educational accumulation. This behavioural pattern is highly consistent with micro-level data from Foo et al. (2021), which indicates that polytechnic and secondary TVET students, despite frequently originating from low-income households, maintain exceptionally high educational aspirations and heavily prioritise pursuing higher qualifications post-graduation. From a structural standpoint, this educational credentials is directly facilitated by the government's own institutional architecture. Frameworks like the Malaysian Technical University Network (MTUN) Advanced TVET 2030 initiative, detailed by Edlyn (2024), have established highly visible vertical pathways allowing seamless articulation from secondary vocational certificates through community colleges and polytechnics to degree- and postgraduate-level study at technical universities. While this vertical articulation represents a significant achievement for educational mobility, it creates an unintended short-term consequence for the agriculture sector. The strong tendency of TVET graduates to delay labour market entry to pursue higher credentials creates a direct-entry labour vacuum, worsening immediate youth workforce deficits in food production and primary industries.

The fourth core finding establishes that prior exposure to agriculture-related subjects in school stands out as one of the strongest and most stable predictors of future agricultural career orientation. Students with subject exposure are substantially more likely to identify agriculture as their ideal employment sector, demonstrate a strong general openness to the sector, and explicitly select agri-tech occupations. This finding highlights the importance of specialist pathways exposing students to agricultural skills and knowledge as a precursor to agricultural careers. Under the *Kurikulum Standard Sekolah Menengah* reforms, agriculture was intentionally repositioned as a formal STEM elective alongside mainstream sciences like Biology and Physics, a curricular shift discussed by Tey et al. (2019). Modern pedagogical strategies utilised within this curriculum, specifically project-based learning, succeed by connecting classroom theory with practical, real-world applications, which Nawi & Ruslan (2025) note explicitly exposes students to the scientific and practical skills valued by industry. This curricular exposure serves as an effective mechanism for building occupational awareness, breaking down negative

stereotypes before they solidify, and opening career pathways across both conventional and technological tracks.

The fifth core finding reveals a stark divergence in occupational identities based on educational pathways among the specific subset of youth who express an interest in entering the agricultural sector. TVET students demonstrate a strong preference for engineering and machinery-related agricultural careers, whereas non-TVET students show greater interest in plant and animal science careers. This occupational split matches the structural composition of the public TVET system, where Hamid (2023) notes that roughly 62.8% of all graduates are concentrated within engineering, manufacturing, and construction programmes. The heavy institutional emphasis on hands-on technical training shapes students' professional identities around mechanics, automation, and applied technology. Conversely, general education students are exposed to an academic, biology-heavy curriculum that aligns more naturally with professional agricultural science, research, and tertiary laboratory roles. Thus, while both education streams generate interest in the agricultural sector, they channel youth into entirely different segments of the future workforce.

The sixth core finding demonstrates that across both streams, financial incentives represent the single most critical factor determining the attractiveness of an agricultural career. This finding reflects the broader economic realities of the Malaysian youth labor market, where young workers employed in agriculture face a clear wage penalty, earning an average monthly wage of RM1,763 compared to an overall national youth average of RM1,844 across all sectors (Shaharudin & Abu Rahim, 2020). The persistent earning deficit associated with agricultural employment explains why youth prioritise higher salaries and employment benefits as a non-negotiable prerequisite for entering the sector, proving that perceptions of career viability are driven primarily by structural job quality rather than a generic aversion to physical labor.

The seventh core finding highlights that contemporary youth career aspirations are characterised by high levels of potential occupational mobility rather than intergenerational continuity. The vast majority of students, including those from active agricultural households, aspire to secure employment outside their parents' economic sectors. The majority of students across all parental employment backgrounds aspire to careers outside their parents' sectors (agriculture, manufacturing, construction, services, and mining), with non-agricultural occupations remaining the dominant career preference. This pattern is also evident among students from agricultural families, where only a minority expresses aspirations to continue in agriculture despite having greater exposure to the sector. Given that, contrary to popular belief, the majority of sample youths expressing an interest in agricultural careers actually come from families in non-agriculture sectors has important implications for the design of campaigns targeting youths predisposed to careers in agriculture.

Overall, the findings suggest that students' career aspirations are shaped by a combination of educational experiences, exposure, and perceptions of future career opportunities, rather than being determined primarily by parental occupation. This finding expands

upon aggregate national trends documented by the KRI (2024), which noted a macro-level structural shift among youth away from inherited family occupations and toward expanding urban and services industries. While prior macro-level research relied on aggregate data, this analysis provides direct, micro-level empirical validation by linking individual student career aspirations directly to their own parents' specific employment profiles. The results demonstrate that parental employment in agriculture functions merely as a passive source of early childhood exposure rather than a deterministic driver of career selection. Youth actively construct their career paths based on institutional educational tracks, perceived financial returns, and structural job quality.

6.0 Recommendations

The findings point to a central challenge in strengthening Malaysia's youth agricultural workforce: increasing youth participation requires more than improving perceptions of the sector. While many students recognise the importance of agriculture, career decisions are shaped by the quality of employment opportunities, exposure to relevant pathways, and the availability of skills that align with future industry needs. The recommendations therefore focus on strengthening the talent pipeline across key stages, including education exposure, TVET alignment, career transitions, and workforce participation. Together, these measures aim to support the Ministry of Agriculture and Food Security (*Kementerian Pertanian dan Keterjaminan Makanan, KPKM*), MOE, and the National TVET Council (*Majlis TVET Negara, MTVET*) in building a more skilled, inclusive, and future-ready agricultural workforce.

Recommendation 1: Strengthen agricultural education through earlier exposure and stronger school-industry linkages between education pathways

KPKM should strengthen agricultural career exposure across both general education and TVET pathways, across MOE and other ministries coordinated by *MTVET*, by recognising that students enter the sector through different routes. Given the strong association between agriculture subject exposure and students' career aspirations, agriculture should be embedded more consistently through STEM learning, career guidance, project-based learning, and experiential activities that demonstrate its links to science, technology, sustainability, innovation, and entrepreneurship. However, these pathways should be designed differently: TVET students should be supported towards technical and industry-oriented agricultural careers, while non-TVET students should be exposed to agriculture opportunities in science, research, management, and innovation. In line with ongoing efforts to better coordinate agricultural TVET across ministries, MOE should collaborate with *KPKM* to expand access to industry placements and agricultural training facilities, and with the Ministry of Higher Education (*Kementerian Pendidikan Tinggi, KPT*), including Malaysian Technical University Network universities, polytechnics, and community colleges, as well as other relevant ministries, to establish clearer progression pathways into agriculture-related tertiary education and careers. Stronger connections between schools, TVET institutions, and agriculture stakeholders would help students better

understand that modern agriculture offers diverse career pathways beyond conventional farming.

Recommendation 2: Ensure agricultural TVET qualification remains responsive to industry needs

MOE, KPKM, together with MTVET, should strengthen the industry-led review of agricultural TVET qualifications to ensure that programmes offered through the PVMA and KV continue to provide students with the foundational competencies required for entry into the agricultural workforce while supporting progression to higher-level technical training. As agricultural qualifications under the National Occupational Skills Standards (NOSS), including the *Program Latihan Kemahiran Pertanian Kebangsaan (PLKPK)*, are already developed in consultation with industry, the review process should adopt a more forward-looking approach by systematically identifying and project emerging workforce needs and technological developments, rather than only focusing primarily on current occupational requirements reactively.

This requires more structured engagement with agricultural-sector employers, industry associations, technology providers, and relevant government agencies to ensure that foundational curricula remain responsive to evolving industry practices and provide clear pathways for students to acquire more specialised skills through higher-level TVET and industry-based training. Strengthening this review process would improve the relevance of agricultural TVET qualifications with global trends while ensuring graduates are better prepared for the changing demands of Malaysia's agricultural sector.

Recommendation 3: Expand entry pathways for youth beyond traditional agricultural backgrounds.

Many potential entrants do not come from farming backgrounds, suggesting that future workforce strategies should focus not only on retaining existing agricultural communities but also on attracting new entrants into the sector. Government programmes, entrepreneurship schemes, and training opportunities should therefore reduce entry barriers by creating clearer routes for youth without family connections to agriculture. Existing initiatives, such as Agropreneur NextGen, can be better linked with schools and TVET institutions to introduce students to agricultural entrepreneurship and available support mechanisms. By broadening access to these opportunities, Malaysia can encourage more youth to view agriculture as an open career pathway rather than one limited to those with existing family or community connections to the sector.

Recommendation 4: Develop evidence-based campaigns to promote agricultural careers.

KPKM in collaboration with the Ministry of Communications of Malaysia (*Kementerian Komunikasi*) and relevant agencies, should develop targeted youth-focused campaigns that reflect the factors shaping students' career decisions. Given that students place strong emphasis on income potential, job prospects, and opportunities for skills development, campaigns should prioritise showcasing clear career pathways, earning potential, and the technical competencies required for modern agriculture occupations. This should include highlighting diverse roles beyond traditional farming, such as agrotechnology, agricultural engineering, research, entrepreneurship, and digital agriculture, alongside examples of successful young Malaysians in the sector. Messages on agriculture's contribution to food security, sustainability, and national development should complement these efforts by reinforcing the broader societal value of agricultural careers. By presenting agriculture as a sector that offers both economic opportunities and meaningful contributions, these campaigns can help bridge the gap between students' recognition of agriculture's importance and their willingness to pursue it professionally.

7.0 Conclusion

Malaysia faces persistent and elevated youth unemployment and underemployment together with a shortage of agriculture workforce. This mismatch points to structural challenges for new entrants to the workforce. In this context, educational pathways can influence both the provision of needed skills and knowledge, but also shape perceptions of underappreciated career paths.

A related contextual challenge is an urgent need to modernise the national agriculture workforce amid an ageing farming population, heavy reliance on low-skilled foreign labor, and growing food security concerns. While TVET has been widely championed as the primary policy lever to drive this modernisation, national strategy has traditionally been pursued with a limited empirical understanding of youth interests and how they are shaped by education pathways. This report was designed to fill this evidence gap by carefully documenting the aspirations, career drivers, and sectoral perceptions of young Malaysians before they enter the labour market. By focusing on youth who are actively navigating the educational streaming system, this study provides the empirical baseline necessary to transform vocational tracking from a passive education stream into an active, highly skilled, and self-sustaining gateway for agricultural modernisation.

The findings highlight a number of empirical patterns that help better understand the current TVET-agriculture nexus in Malaysia. The evidence suggests TVET independently boosts agriculture interest and positive sector attitudes, proving that TVET can make agricultural recruitment more inclusive and attract youth from urban and non-farming families. Yet, TVET exposure is not found to be more likely to channel students toward modernised, high-technology agriculture roles compared to the mainstream academic track. This disconnect is further complicated by mismatched transition timelines, as

TVET graduates systematically intend to delay immediate employment to pursue further education, while academic (non-TVET) students — who possess no technical preparation — are exiting the pipeline early and entering the labour market immediately after school.

These structural transition frictions are also found to be rooted in demographic realities and cultural perceptions. The agriculture pipeline is highly gendered; female vocational students experience a severe choice penalty when confronted with traditional physical labour, yet they respond enthusiastically to automated technology. This is particularly informative because surveyed youth do not harbour an exceptional aversion to physical labour, while remaining sensitive to structural deficits in social status, career progression, and gender-inclusive environments. This neglect consequently allows social stigmas and parental discouragement to solidify before academic streaming occurs.

Building on these empirical insights, this study proposes a policy framework that leverages education pathways and targeted technological modernisation. Rather than relying on traditional agriculture lineages, the main recommendation is that national agencies recognise TVET institutions as the primary avenue for broad-based youth recruitment, supported by a modernised NOSS curriculum centered on precision agriculture.

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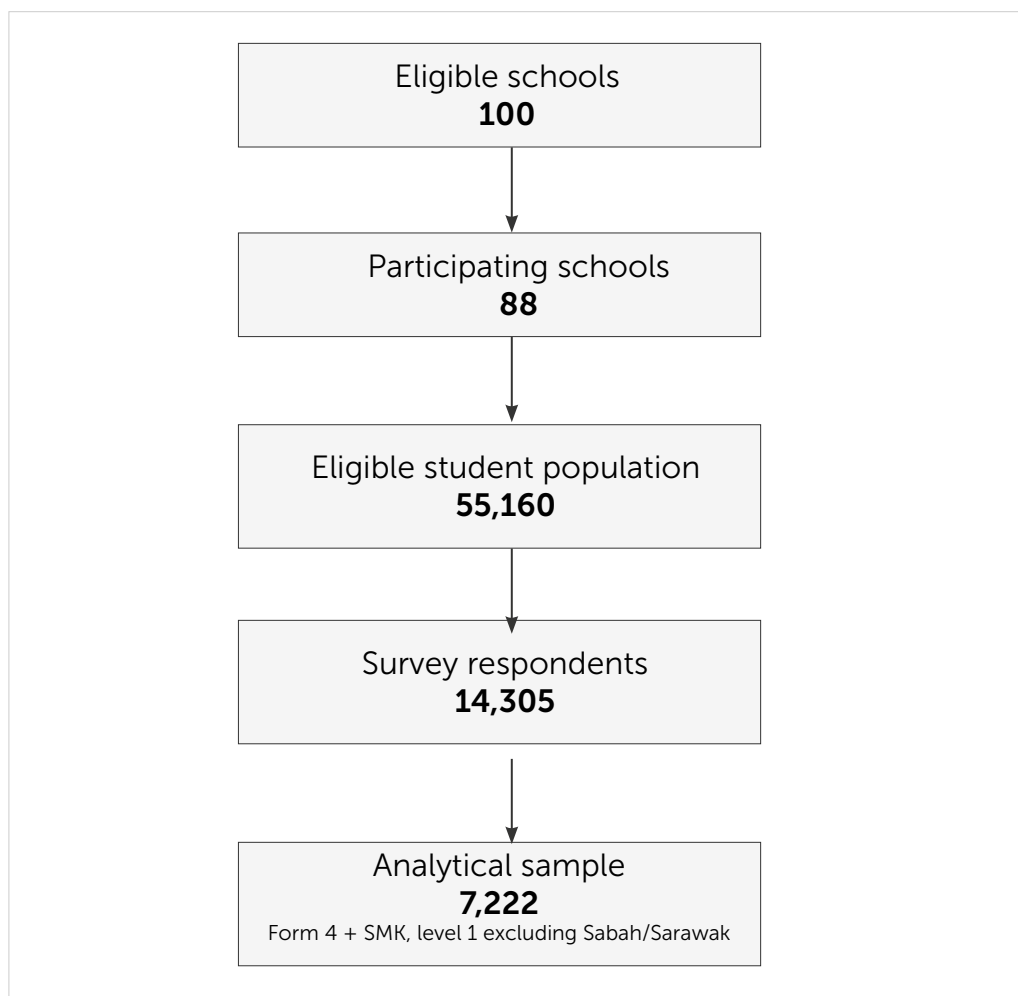
Appendix

Table A1.1: Survey Response Rates by Education Stream

Stream	Eligible Students	Respondents	Response Rate
TVET	13,995	3,366	24.05%
Non-TVET	41,165	10,939	26.57%
Total	55,160	14,305	25.93%

Source: Authors' own calculation from LeapEd's population data in comparison to the survey data.

Figure A1: Summary of Survey Respondents and Sample School Selection Process

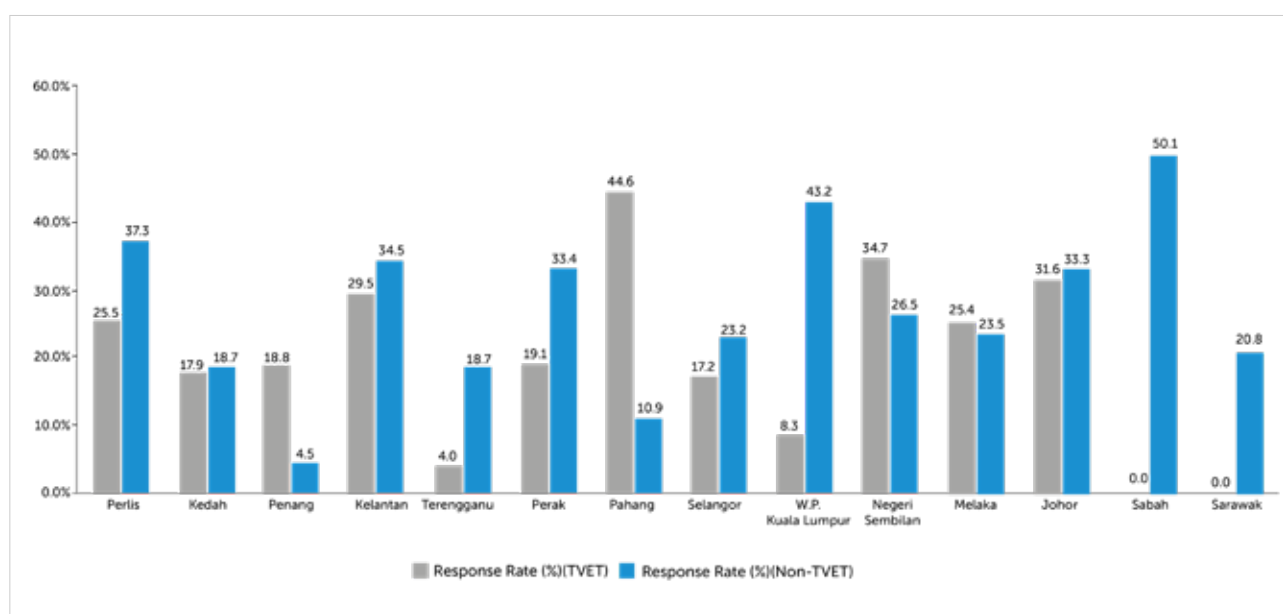


Source: Authors' own illustration.

Table A1.2: Survey Participation by State and Education Stream

State	Eligible (TVET)	Respondents (TVET)	Eligible (Non-TVET)	Respondents (Non-TVET)	Response Rate (%) (TVET)	Response Rate (%) (Non-TVET)
Perlis	597	152	2,200	821	25.5%	37.3%
Kedah	1,652	296	1,914	357	17.9%	18.7%
Penang	1,578	297	1,118	50	18.8%	4.5%
Kelantan	1,562	461	2,313	797	29.5%	34.5%
Terengganu	654	26	2,908	544	4.0%	18.7%
Perak	614	117	3,256	1,088	19.1%	33.4%
Pahang	1,548	690	2,637	288	44.6%	10.9%
Selangor	740	127	6,502	1,506	17.2%	23.2%
W. P. Kuala Lumpur	1,371	114	2,144	926	8.3%	43.2%
Negeri Sembilan	1,092	379	3,116	825	34.7%	26.5%
Melaka	1,777	451	1,444	340	25.4%	23.5%
Johor	810	256	4,013	1,336	31.6%	33.3%
Sabah	0	0	1,644	823	-	50.1%
Sarawak	0	0	5,956	1,238	-	20.8%
Total	13,995	3,366	41,165	10,939	24.1%	26.6%

Source: Authors' calculations based on the final survey dataset or LeapEd Data Collection

Figure A2: Survey Response Rates by State

Source: Authors' calculations based on the final survey dataset.

Appendix Note B: Limitation of the Study

While the survey provides valuable insights into students' career aspirations and perceptions towards agriculture, several limitations should be acknowledged. First, the study primarily focuses on student-level characteristics and educational pathways. Although the inclusion of school fixed effects controls for unobserved, time-invariant differences across schools, it does not allow the analysis to identify which specific institutional features contribute to the observed differences between TVET and non-TVET students. These features may include institutional resources, access to facilities, career guidance, industry linkages, teacher quality and pedagogical approaches, or opportunities for agriculture-related practical learning. Consequently, while these school-level factors do not threaten the validity of the estimated relationship between education pathways and agriculture aspirations, the analysis cannot disentangle the mechanisms through which different school environments shape students' perceptions and career preferences. Future research incorporating richer school-level information could help identify these mechanisms and inform more targeted policy interventions.

Second, differences between TVET and non-TVET students should not be interpreted as the causal effect of TVET participation alone, as they may partly reflect selection processes that occur before students enter these educational pathways. The survey does not fully capture the factors influencing students' decisions to enrol in TVET institutions, including household preferences, admission considerations, prior academic experiences or exposure to different types of TVET programmes.

Third, the TVET sample represents selected institutions and pathways, and may not capture the full diversity of TVET provision in Malaysia. This reflects the study's sampling design rather than differential response rates alone. In Peninsular Malaysia, vocational colleges (KVs) were paired with nearby secondary schools to facilitate comparisons across educational pathways. In Sabah and Sarawak, however, the quantitative component of the study was limited to LeapEd Trust Schools only. To maintain comparable case selection and support fieldwork logistics, the research team sought vocational colleges located within the same districts or surrounding catchment areas as the selected Trust Schools. As no vocational colleges were located within these catchment areas, the sample from Sabah and Sarawak comprises only secondary schools. Consequently, the TVET sample does not fully represent the geographic and institutional diversity of TVET provision across Malaysia.

Last but not least, the number of respondents varies across states because participating schools differ substantially in enrollment size. For example, schools in Selangor have considerably larger eligible student populations than many schools in other states, resulting in a larger number of respondents from Selangor despite a common sampling approach. These features should be considered when interpreting state-level comparisons and the generalisability of the findings. Other forms of TVET institutions and programmes may attract students with different socioeconomic backgrounds, motivations, and career aspirations.

Table B1: Vignette Offer Means (Likelihood of Accepting the Job Offers)

Dimensions	Job Offer A	Job Offer B	Job Offer C	Job Offer D	Job Offer E	Job Offer F
Location	City/Urban area	City/Urban area	Rural area	Rural area	Small town or semi-urban area	Small town or semi-urban area
Monthly Pay	Moderate	Low	High	High	Moderate	Low
Use of Technology	High-level	Low-level	Medium-level	High-level	Low-level	Medium-level
Physical Demand of the Job	Low	Low	High	Medium	Medium	High

Source: Authors based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia" survey (Section 2, Question A-F)

Table B2: Vignettes Offer Means (Likelihood of Accepting the Job Offer)

Job offer	Location	Pay	Technology	Physical	Non-TVET mean	TVET mean	P-value
A	Urban / near city	Moderate	High	Low	4.88	5.03	0.00***
B	Urban / near city	Low	Low	Low	3.66	4.36	0.00***
C	Rural + housing	High	Medium	High	5.02	5.31	0.00***
D	Rural + housing	High	High	Medium	5.61	5.60	0.81
E	Semi-urban + housing	Moderate	Low	Medium	4.37	4.81	0.00***
F	Semi-urban	Low	Medium	High	3.51	4.35	0.00***
No. of observations					10955	3368	

Source: Authors calculations based on "Education to Aspiration: Youth Employment Preferences and Choices in Malaysia" survey (Section 2, Question A-F)

Table C1: Variable Names and Definitions

Variable Name	Definition
Aspiration/Attitude-related Outcome variables	
Immediate entrant	1 = student plans to look for a job or start own business after current education; 0 = otherwise
Ideal sector: Agriculture	1 = ideal job sector is agriculture; 0 = non-agriculture or no preference/not sure
Agriculture likelihood	1 = agriculture job likelihood score is 5 or above; 0 = below 5
Modern agriculture / agri-tech ideal job	1 = agriculture/agritech selected as ideal job type; 0 = otherwise
Student Background variables	
TVET	1 = TVET student; 0 = Non-TVET student
Female	1 = female; 0 = male
Malay	1 = Malay; 0 = non-Malay
Migrant	1 = birth state differs from current state; 0 = same state
Parent edu: No schooling	1 = highest education is no schooling; 0 = otherwise
Parent edu: Primary	1 = highest education is primary; 0 = otherwise
Parent edu: Secondary	1 = highest education is secondary; 0 = otherwise
Parent edu: Vocational / technical	1 = highest education is vocational/technical; 0 = otherwise
Parent edu University	1 = highest education is university; 0 = otherwise
Parent edu: Unknown	1 = highest education is unknown/not sure; 0 = otherwise
Father in agriculture	1 = father works in agriculture; 0 = otherwise
Mother in agriculture	1 = mother works in agriculture; 0 = otherwise
Top 5 in class	1 = student reports being in top 5 of class; 0 = otherwise
Agriculture-related subject	1 = student taken agriculture-related subject; 0 = otherwise
Straight-A student	1 = student expects straight-As; 0 = otherwise

Table C2: Summary Statistics on Selected Indicators by Stream Type

Variable	Non-TVET (%)	TVET (%)	P value
Aspiration/Attitude-related Outcome variables			
Immediate entrant	24.1	16	0
Ideal sector: Agriculture	7.4	13.1	0
Agriculture likelihood	61.5	70.6	0
Modern agriculture / agri-tech ideal job	6.7	6.5	0.68
Student background variables			
TVET	0	100	0.00
Female	54.7	36.3	0.00
Malay	85.2	98.5	0.00
Migrant	21.9	28.9	0.00
Parent education: No schooling	0.7	0.2	0.01
Parent education: Primary	3.6	1.8	0.00
Parent education: Secondary	40.8	32.9	0.00
Parent education: Vocational / technical	7	9.5	0.00
Parent education: University	35.2	42.9	0.00
Parent education: Unknown	12.7	12.6	0.95
Father in agriculture	11.7	7.2	0.00
Mother in agriculture	2	1.8	0.56
Top 5 in class	20.8	16.9	0.00
Agriculture-related subject	7	3.7	0.00
Straight-A student	27.1	40.7	0.00
School location: state			
Perlis	8.7	4.5	0.00
Kedah	3.7	8.8	0.00
Penang	0.8	8.8	0.00
Kelantan	9.9	13.7	0.00
Terengganu	6.1	0.8	0.00
Perak	13.5	3.5	0.00
Pahang	2.5	20.5	0.00

Variable	Non-TVET (%)	TVET (%)	P value
School location: state			
Selangor	14.5	3.8	0.00
W. P. Kuala Lumpur	8.9	3.4	0.00
Negeri Sembilan	9.9	11.3	0.06
Melaka	4.4	13.4	0.00
Johor	17.1	7.6	0.00
No. of observations	4089	3133	

Note: p-values corresponding to the test of difference of mean values are based on chi-square stats.

Table C3: Summary Statistics for the Supplementary Outcome Variables by Stream Type

Variable	Non-TVET (%)	TVET (%)	P value
Agriculture likelihood	4.3	4.91	0
Importance: High salary	3.88	3.85	0.3099
Importance: Job security	3.53	3.58	0.1195
Importance: Big city	3.34	3.4	0.0154
Importance: Overseas work	3.09	3.23	0
Importance: Own business	2.89	3.08	0
Importance: Technology	3.26	3.4	0
Importance: Work-life balance	3.74	3.75	0.7397
Importance: Help society/environment	3.24	3.28	0.2259
Importance: Indoor work	3.25	3.16	0.0002
Importance: Outdoor work	2.33	2.46	0
Agriculture is modern/high-tech	3.5	3.49	0.561
Agriculture is hard/dirty	2.78	2.74	0.1385
Agriculture has low social status	2.66	2.58	0.0003
Agriculture supports food security/environment	3.62	3.48	0
Agriculture is temporary/not a career	2.77	2.72	0.0376
Agriculture jobs are rural	3.14	3.1	0.1309
Skills usable in agriculture	3.11	3.18	0.0076
Parents support agriculture jobs	2.63	2.79	0
No. of observations	4089	3133	

Note: (1) p-values corresponding to the test of difference of mean values are based on t-stats. (2) All measures are on a 1–5 agreement scale.

Table C4: Summary Statistics on FORM 3 (SMK) and Sabah & Sarawak

Variable	Form 3 students in non-TVET schools (%)	Sabah and Sarawak (%) students of FORM 4 in non-TVET schools
Outcome variables		
Immediate entrant	25.4	24.3
Ideal sector: Agriculture	6.2	9.5
Agriculture likelihood	64	71
Modern agriculture / agri-tech ideal job	6	9.4
Student background variables		
TVET	0	0
Female	52.7	54.7
Malay	80.4	78.2
Migrant	22	9.5
Parent education: No schooling	0.7	0.7
Parent education: Primary	3.8	6.2
Parent education: Secondary	37.8	49.8
Parent education: Vocational / technical	8.9	5.9
Parent education: University	33.7	22.5
Parent education: Unknown	15.1	14.9
Father in agriculture	12.3	18.6
Mother in agriculture	2.8	5
Top 5 in class	19.9	19.2
Agriculture-related subject	0.4	8
Straight-A student	20.6	17.9
No. of observations	5887	945

Regression Table D1: Determinants of Agricultural Career Preferences and School-to-Work Transitions

term	Ideal Sector: Agriculture					Agriculture likelihood (if >= 5 1 otherwise 0)					Modern agriculture: what kind of job would you ideally like to have? 1 if agri tech					Immediate entrant				
	Baseline	+ B1-B4 controls	Birth-state FE	With Sabah/Sara wak	Full sample	Baseline	+ B1-B4 controls	Birth-state FE	With Sabah/Sara wak	Full sample	Baseline	+ B1-B4 controls	Birth-state FE	With Sabah/Sara wak	Full sample	Baseline	+ B1-B4 controls	Birth-state FE	With Sabah/Sara wak	Full sample
TVET	0.083* (0.043)	0.083** (0.034)	0.084** (0.034)	0.084** (0.035)	0.078** (0.033)	0.109*** (0.026)	0.124*** (0.025)	0.121*** (0.024)	0.124*** (0.024)	0.106*** (0.024)	0.018 (0.033)	0.009 (0.014)	0.008 (0.013)	0.007 (0.015)	0.001 (0.015)	-0.078*** (0.020)	-0.055*** (0.020)	-0.052*** (0.019)	-0.051** (0.020)	-0.050*** (0.017)
Female	-0.052*** (0.010)	-0.048*** (0.009)	-0.048*** (0.009)	-0.049*** (0.008)	-0.044*** (0.006)	-0.058*** (0.014)	-0.064*** (0.014)	-0.064*** (0.014)	-0.069*** (0.013)	-0.057*** (0.012)	-0.026*** (0.007)	-0.025*** (0.006)	-0.025*** (0.006)	-0.028*** (0.006)	-0.035*** (0.005)	-0.081*** (0.011)	-0.091*** (0.010)	-0.092*** (0.010)	-0.088*** (0.010)	-0.105*** (0.008)
Malay	-0.021 (0.025)	-0.039** (0.020)	-0.038* (0.020)	-0.038** (0.016)	-0.029*** (0.010)	0.079** (0.036)	0.066** (0.033)	0.068** (0.032)	0.055** (0.026)	0.070*** (0.024)	-0.011 (0.018)	-0.026** (0.013)	-0.029** (0.012)	-0.018* (0.011)	-0.011 (0.007)	0.004 (0.032)	0.002 (0.031)	0.000 (0.031)	-0.009 (0.025)	-0.020 (0.014)
Migrant	0.000 (0.007)	-0.003 (0.007)	-0.005 (0.009)	-0.004 (0.007)	-0.005 (0.006)	0.016 (0.013)	0.017 (0.013)	0.027** (0.013)	0.014 (0.013)	0.009 (0.011)	0.005 (0.007)	0.002 (0.007)	0.000 (0.007)	0.003 (0.007)	-0.005 (0.005)	-0.038*** (0.014)	-0.035** (0.014)	-0.027* (0.015)	-0.032** (0.014)	-0.026** (0.011)
Parent education: Primary	0.024 (0.057)	0.015 (0.057)	0.014 (0.057)	0.050 (0.054)	0.011 (0.035)	0.099 (0.095)	0.113 (0.096)	0.113 (0.095)	0.081 (0.086)	0.073 (0.060)	-0.012 (0.055)	-0.026 (0.055)	-0.030 (0.057)	-0.025 (0.050)	-0.042 (0.037)	0.023 (0.078)	0.038 (0.076)	0.042 (0.076)	0.044 (0.067)	0.002 (0.055)
Parent education: Secondary	-0.015 (0.056)	-0.021 (0.052)	-0.022 (0.052)	-0.007 (0.046)	-0.036 (0.034)	0.016 (0.086)	0.029 (0.087)	0.029 (0.087)	-0.005 (0.079)	0.010 (0.053)	-0.061 (0.053)	-0.070 (0.053)	-0.074 (0.055)	-0.049 (0.047)	-0.051 (0.032)	-0.036 (0.074)	-0.024 (0.073)	-0.020 (0.072)	0.001 (0.065)	-0.049 (0.049)
Parent education: Vocational / technical	-0.004 (0.055)	-0.014 (0.051)	-0.016 (0.051)	0.010 (0.046)	-0.022 (0.035)	-0.005 (0.087)	0.001 (0.090)	0.000 (0.089)	-0.017 (0.080)	-0.018 (0.055)	-0.027 (0.056)	-0.040 (0.057)	-0.044 (0.058)	-0.020 (0.050)	-0.031 (0.034)	-0.070 (0.074)	-0.054 (0.072)	-0.050 (0.072)	-0.041 (0.065)	-0.097** (0.048)
Parent education: University	-0.032 (0.057)	-0.039 (0.052)	-0.040 (0.052)	-0.019 (0.046)	-0.046 (0.034)	-0.089 (0.087)	-0.067 (0.089)	-0.065 (0.089)	-0.093 (0.079)	-0.091* (0.054)	-0.065 (0.054)	-0.073 (0.055)	-0.078 (0.056)	-0.053 (0.049)	-0.056* (0.033)	-0.139* (0.073)	-0.118* (0.072)	-0.113 (0.071)	-0.104 (0.064)	-0.159*** (0.050)
Parent education: Unknown	-0.051 (0.058)	-0.061 (0.054)	-0.062 (0.054)	-0.037 (0.048)	-0.058* (0.033)	0.010 (0.089)	0.017 (0.091)	0.018 (0.090)	-0.007 (0.081)	0.029 (0.056)	-0.061 (0.054)	-0.072 (0.055)	-0.077 (0.056)	-0.055 (0.049)	-0.059* (0.034)	-0.044 (0.075)	-0.033 (0.073)	-0.028 (0.072)	-0.015 (0.064)	-0.084* (0.048)
Father in agriculture	0.062*** (0.012)	0.059*** (0.011)	0.058*** (0.011)	0.059*** (0.009)	0.052*** (0.007)	0.077*** (0.028)	0.070** (0.028)	0.067** (0.028)	0.072*** (0.023)	0.062*** (0.016)	0.044*** (0.011)	0.036*** (0.010)	0.036*** (0.010)	0.039*** (0.008)	0.040*** (0.006)	0.019 (0.017)	0.015 (0.017)	0.013 (0.017)	0.025 (0.016)	0.047*** (0.012)
Mother in agriculture	0.040* (0.022)	0.051** (0.022)	0.050** (0.022)	0.042** (0.018)	0.048*** (0.012)	0.069 (0.046)	0.073 (0.047)	0.075 (0.047)	0.067* (0.039)	0.073*** (0.027)	0.002 (0.019)	0.008 (0.020)	0.010 (0.020)	0.011 (0.016)	0.017 (0.011)	0.027 (0.023)	0.013 (0.024)	0.012 (0.024)	0.004 (0.020)	0.024 (0.017)
Top 5 in class	-0.007 (0.013)	-0.007 (0.013)	-0.007 (0.013)	-0.011 (0.012)	-0.014 (0.008)	-0.063*** (0.017)	-0.063*** (0.017)	-0.062*** (0.015)	-0.062*** (0.012)	-0.062*** (0.008)	0.011 (0.008)	0.011 (0.008)	0.012 (0.007)	0.009* (0.005)	-0.036*** (0.014)	-0.036*** (0.013)	-0.036*** (0.013)	-0.047*** (0.014)	-0.054*** (0.009)	
Agriculture-related subject		0.121*** (0.028)	0.120*** (0.028)	0.121*** (0.024)	0.113*** (0.022)	0.246*** (0.035)	0.244*** (0.035)	0.244*** (0.032)	0.251*** (0.035)	0.108*** (0.018)	0.105*** (0.018)	0.108*** (0.016)	0.107*** (0.018)	0.107*** (0.018)	0.107*** (0.018)	0.022 (0.042)	0.021 (0.042)	0.021 (0.042)	0.036 (0.038)	0.049 (0.037)
Straight-A student	-0.003 (0.007)	-0.003 (0.007)	-0.003 (0.007)	-0.003 (0.007)	-0.001 (0.005)	-0.012 (0.015)	-0.012 (0.015)	-0.014 (0.014)	-0.023** (0.011)	-0.003 (0.007)	-0.004 (0.007)	-0.004 (0.007)	-0.004 (0.007)	-0.003 (0.005)	-0.003 (0.005)	-0.048*** (0.014)	-0.047*** (0.014)	-0.049*** (0.013)	-0.045*** (0.010)	
B4/B2 stream: STEM		0.013 (0.013)	0.013 (0.014)	0.004 (0.013)	-0.002 (0.008)	-0.055*** (0.020)	-0.052*** (0.019)	-0.061*** (0.018)	-0.077*** (0.013)	0.010 (0.007)	0.010 (0.007)	0.013* (0.007)	0.009** (0.004)	0.009** (0.004)	0.009** (0.004)	-0.060*** (0.013)	-0.059*** (0.013)	-0.067*** (0.012)	-0.088*** (0.009)	
B4/B2 stream: Unknown		-0.007 (0.028)	-0.011 (0.027)	-0.004 (0.027)	-0.004 (0.024)	0.079 (0.073)	0.078 (0.073)	0.056 (0.054)	0.015 (0.054)	0.014 (0.041)	0.014 (0.041)	0.014 (0.042)	0.014 (0.042)	0.012 (0.030)	-0.020 (0.024)	-0.035 (0.062)	-0.041 (0.060)	-0.004 (0.059)	-0.003 (0.055)	
School state: Perlis	0.006 (0.046)	0.010 (0.044)	-0.032 (0.045)	0.013 (0.042)	0.017 (0.022)	0.117*** (0.032)	0.136*** (0.032)	0.124*** (0.033)	0.139*** (0.033)	0.150*** (0.036)	0.031** (0.014)	0.031** (0.013)	0.015 (0.021)	0.030** (0.013)	0.033*** (0.010)	0.008 (0.034)	0.028 (0.027)	-0.047 (0.035)	0.028 (0.026)	-0.025* (0.014)
School state: Kedah	-0.032 (0.024)	-0.039 (0.027)	-0.048 (0.032)	-0.034 (0.026)	-0.023 (0.020)	0.013 (0.043)	0.039 (0.041)	0.010 (0.041)	0.043 (0.042)	0.064 (0.042)	0.009 (0.017)	0.012 (0.015)	-0.003 (0.017)	0.010 (0.015)	0.013 (0.010)	-0.010 (0.050)	0.012 (0.052)	0.009 (0.057)	0.016 (0.053)	-0.029 (0.039)
School state: Penang	-0.040* (0.024)	-0.048* (0.027)	-0.061** (0.027)	-0.043* (0.027)	-0.035* (0.024)	-0.019 (0.073)	-0.024 (0.073)	-0.009 (0.054)	-0.021 (0.054)	0.007 (0.041)	0.012 (0.041)	0.014 (0.042)	0.011 (0.042)	0.013 (0.042)	0.021 (0.042)	-0.039 (0.062)	-0.022 (0.060)	-0.014 (0.059)	-0.022 (0.059)	-0.096*** (0.055)

	(0.023)	(0.025)	(0.026)	(0.024)	(0.020)	(0.045)	(0.045)	(0.044)	(0.045)	(0.052)	(0.020)	(0.019)	(0.024)	(0.019)	(0.017)	(0.030)	(0.028)	(0.040)	(0.027)	(0.019)
School state: Kelantan	0.180*	0.169	0.209	0.171	0.117	0.136***	0.137***	0.177***	0.141***	0.167***	0.036**	0.027*	0.013	0.026*	0.029***	0.014	0.029	0.020	0.029	-0.042
	(0.109)	(0.107)	(0.130)	(0.106)	(0.078)	(0.052)	(0.051)	(0.057)	(0.051)	(0.050)	(0.016)	(0.016)	(0.018)	(0.016)	(0.010)	(0.033)	(0.032)	(0.043)	(0.032)	(0.027)
School state: Terengganu	0.048	0.038	0.048	0.040	0.020	0.140***	0.138***	0.082	0.141***	0.132***	0.066**	0.056**	0.043	0.054**	0.051***	0.043	0.049	0.063	0.051	-0.016
	(0.042)	(0.043)	(0.058)	(0.041)	(0.021)	(0.046)	(0.047)	(0.054)	(0.047)	(0.036)	(0.031)	(0.023)	(0.028)	(0.023)	(0.016)	(0.035)	(0.034)	(0.046)	(0.035)	(0.041)
School state: Perak	0.150	0.072*	0.071*	0.074**	0.033	0.115**	0.103**	0.093*	0.104**	0.088*	0.125	0.064**	0.099***	0.067**	0.051**	0.033	0.045	0.040	0.045	-0.023
	(0.102)	(0.038)	(0.036)	(0.038)	(0.024)	(0.051)	(0.041)	(0.049)	(0.041)	(0.051)	(0.104)	(0.031)	(0.038)	(0.033)	(0.023)	(0.046)	(0.044)	(0.038)	(0.044)	(0.032)
School state: Pahang	-0.033	-0.041	-0.040	-0.036	-0.021	0.028	0.035	0.017	0.036	0.071	0.012	0.013	0.019	0.013	0.037	0.030	0.044*	0.028	0.046*	-0.020
	(0.026)	(0.028)	(0.026)	(0.026)	(0.025)	(0.046)	(0.043)	(0.037)	(0.044)	(0.051)	(0.020)	(0.018)	(0.022)	(0.018)	(0.023)	(0.029)	(0.025)	(0.033)	(0.026)	(0.023)
School state: Selangor	0.003	-0.006	-0.002	-0.004	0.008	0.030	0.037	0.030	0.037	0.067	0.033***	0.024*	0.021	0.026**	0.027***	0.017	0.027	0.037	0.029	-0.033**
	(0.028)	(0.028)	(0.031)	(0.027)	(0.017)	(0.043)	(0.041)	(0.039)	(0.041)	(0.047)	(0.013)	(0.013)	(0.015)	(0.013)	(0.008)	(0.031)	(0.028)	(0.036)	(0.027)	(0.015)
School state: Negeri Sembilan	-0.026	-0.031	-0.032	-0.028	-0.019	0.003	0.007	-0.040	0.009	0.026	-0.000	-0.003	-0.009	-0.002	0.009	0.018	0.038	0.039	0.039	-0.029*
	(0.023)	(0.023)	(0.021)	(0.022)	(0.017)	(0.060)	(0.052)	(0.057)	(0.052)	(0.062)	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)	(0.032)	(0.026)	(0.042)	(0.025)	(0.015)
School state: Melaka	-0.034	-0.042*	-0.054**	-0.038*	-0.033*	-0.025	-0.007	-0.026	-0.006	0.013	0.001	0.001	-0.011	0.000	0.008	0.016	0.031	0.084**	0.034	-0.043*
	(0.022)	(0.023)	(0.025)	(0.022)	(0.018)	(0.046)	(0.044)	(0.060)	(0.045)	(0.044)	(0.018)	(0.016)	(0.015)	(0.017)	(0.012)	(0.027)	(0.025)	(0.042)	(0.025)	(0.023)
School state: Johor	0.012	-0.014	-0.022	-0.010	-0.003	0.072*	0.060*	0.010	0.062*	0.057	0.038*	0.013	0.006	0.013	0.020**	0.018	0.032	0.029	0.033	-0.037**
	(0.026)	(0.021)	(0.025)	(0.020)	(0.017)	(0.037)	(0.034)	(0.042)	(0.035)	(0.038)	(0.021)	(0.014)	(0.017)	(0.014)	(0.008)	(0.029)	(0.027)	(0.033)	(0.027)	(0.014)
School state: Sabah				0.026	0.032**				0.159***	0.157***				0.025	0.026***				0.025	-0.015
				(0.027)	(0.016)				(0.032)	(0.046)				(0.015)	(0.007)				(0.027)	(0.013)
School state: Sarawak				0.041	0.039**				0.125***	0.145***				0.053***	0.054***				-0.001	-0.059*
				(0.028)	(0.018)				(0.034)	(0.040)				(0.015)	(0.009)				(0.038)	(0.030)
Num.Obs.	7436	7222	7222	8161	14006	7436	7222	7222	8161	14006	7436	7222	7222	8161	14006	7436	7222	7222	8161	14006
AIC	4211.4	3994.9	4013.9	4540.5	7167.1	9246.4	8874.9	8875.6	9958.2	17205.1	3463.9	3199.8	3215.9	3746.4	6281.7	7237.5	6986.5	6988.4	7955.7	14100.8
BIC	4370.4	4187.6	4316.8	4750.7	7393.5	9405.4	9067.7	9178.6	10168.5	17431.5	3623.0	3392.6	3518.9	3956.6	6508.1	7396.5	7179.3	7291.4	8165.9	14327.3
Pseudo R2	0.133	0.166	0.169	0.157	0.121	0.039	0.054	0.057	0.054	0.053	0.055	0.107	0.111	0.104	0.081	0.042	0.053	0.057	0.056	0.065

Regressions Table D2: Agricultural Perception Index and Principal Component Analysis

term	D1 attitude index, 0-100 - Baseline	D1 attitude index, 0-100 - + B1-B4 controls	D1 attitude index, PCA - Baseline	D1 attitude index, PCA - + B1-B4 controls
TVET	1.662*** (0.294)	1.568*** (0.306)	0.079 (0.048)	0.061 (0.050)
Female	-0.110 (0.251)	-0.065 (0.260)	-0.137*** (0.041)	-0.083* (0.043)
Malay	0.958** (0.455)	0.667 (0.456)	0.246*** (0.075)	0.213*** (0.075)
Migrant	0.421 (0.288)	0.388 (0.290)	0.203*** (0.047)	0.190*** (0.048)
Parent education: Primary	0.281 (1.939)	0.093 (1.928)	0.245 (0.317)	0.241 (0.316)
Parent education: Secondary	1.098 (1.811)	0.891 (1.800)	0.421 (0.296)	0.387 (0.295)

Parent education:	0.518	0.201	0.253	0.202
Vocational / technical	(1.852)	(1.841)	(0.303)	(0.302)
Parent education:	1.115	0.914	0.533*	0.469
University	(1.814)	(1.803)	(0.297)	(0.296)
Parent education:	0.040	-0.233	0.292	0.268
Unknown	(1.834)	(1.823)	(0.300)	(0.299)
Parent occupation: Father in agriculture	1.736***	1.605***	0.086	0.056
	(0.428)	(0.429)	(0.070)	(0.070)
Parent occupation: Mother in agriculture	0.202	0.539	-0.104	-0.070
	(0.908)	(0.915)	(0.149)	(0.150)
School state: Perlis	1.809***	1.717**	-0.044	-0.052
	(0.679)	(0.689)	(0.111)	(0.113)
School state: Kedah	0.266	-0.015	-0.223*	-0.316***
	(0.706)	(0.716)	(0.116)	(0.117)
School state: Penang	-0.004	-0.215	-0.574***	-0.606***
	(0.777)	(0.804)	(0.127)	(0.132)
School state: Kelantan	4.153***	3.656***	0.211**	0.148
	(0.612)	(0.617)	(0.100)	(0.101)
School state: Terengganu	1.965**	1.552*	-0.087	-0.126
	(0.802)	(0.799)	(0.131)	(0.131)
School state: Perak	3.595***	2.386***	0.213**	0.054
	(0.633)	(0.641)	(0.104)	(0.105)
School state: Pahang	-1.108*	-1.341**	-0.474***	-0.575***
	(0.641)	(0.648)	(0.105)	(0.106)
School state: Selangor	1.098*	0.805	0.144	0.082
	(0.621)	(0.624)	(0.102)	(0.102)
School state: Negeri Sembilan	-0.704	-1.043*	-0.211**	-0.293***
	(0.612)	(0.618)	(0.100)	(0.101)
School state: Melaka	-0.524	-0.719	-0.256**	-0.341***
	(0.653)	(0.654)	(0.107)	(0.107)

School state: Johor	1.112*	0.260	0.024	-0.105
	(0.593)	(0.597)	(0.097)	(0.098)
Top 5 in class		0.773**		0.064
		(0.317)		(0.052)
Have taken Agriculture-related subject		5.462***		0.462***
		(0.553)		(0.091)
Straight-A student		0.480*		0.063
		(0.268)		(0.044)
Chosen stream: STEM		0.454*		0.245***
		(0.275)		(0.045)
Chosen stream: Unknown		-1.551		0.115
		(1.462)		(0.240)
Num.Obs.	7442	7228	7442	7228
R2 Adj.	0.030	0.045	0.022	0.032
Std.Errors	Clustered SE	Clustered SE	Clustered SE	Clustered SE
School state fixed effects	Yes	Yes	Yes	Yes
School state reference	W. P. Kuala Lumpur	W. P. Kuala Lumpur	W. P. Kuala Lumpur	W. P. Kuala Lumpur
Sample restriction	No Sabah/Sarawak; Form 4/Level 1 only	No Sabah/Sarawak; Form 4/Level 1 only	No Sabah/Sarawak; Form 4/Level 1 only	No Sabah/Sarawak; Form 4/Level 1 only
B1-B4 controls	No	Yes	No	Yes

Regressions Table D3: Regression Results for Perceptions of different sectors as Dirty, Dangerous, and Difficult (3D)

Term	Agriculture		Mining		Manufacturing		Construction		Digital / Online Services		Offline Services	
	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls
TVET	0.004 (0.019)	0.004 (0.017)	-0.028 (0.023)	-0.045* (0.024)	0.025* (0.014)	0.018 (0.015)	-0.077*** (0.021)	-0.084*** (0.022)	0.031** (0.013)	0.040*** (0.014)	0.010 (0.011)	0.012 (0.013)
Female	0.034*** (0.009)	0.031*** (0.010)	0.001 (0.013)	0.016 (0.012)	-0.020** (0.010)	-0.014 (0.009)	0.016 (0.011)	0.020* (0.011)	-0.015* (0.009)	-0.025*** (0.009)	-0.017** (0.009)	-0.019** (0.009)
Malay	-0.013 (0.015)	-0.016 (0.014)	0.044 (0.028)	0.044 (0.027)	-0.003 (0.016)	-0.001 (0.016)	0.053** (0.023)	0.051** (0.023)	-0.040** (0.019)	-0.041** (0.018)	-0.025* (0.013)	-0.025* (0.014)
Migrant	0.009 (0.011)	0.008 (0.011)	0.036*** (0.014)	0.031** (0.013)	-0.003 (0.010)	-0.005 (0.010)	0.022* (0.012)	0.024* (0.013)	-0.014 (0.009)	-0.014 (0.010)	-0.012* (0.007)	-0.013* (0.007)
Parent education: Primary	0.099 (0.061)	0.099 (0.062)	0.063 (0.089)	0.061 (0.091)	0.024 (0.074)	0.029 (0.074)	0.039 (0.065)	0.040 (0.066)	-0.046 (0.084)	-0.040 (0.082)	0.025 (0.073)	0.027 (0.073)
Parent education: Secondary	0.077 (0.054)	0.077 (0.054)	0.053 (0.083)	0.046 (0.085)	-0.034 (0.070)	-0.036 (0.070)	0.017 (0.058)	0.015 (0.060)	-0.113 (0.077)	-0.108 (0.075)	-0.037 (0.069)	-0.037 (0.068)

Parent education: Vocational / technical	0.067 (0.056)	0.066 (0.057)	0.056 (0.084)	0.050 (0.086)	-0.008 (0.071)	-0.003 (0.071)	0.038 (0.060)	0.038 (0.061)	-0.120 (0.077)	-0.113 (0.076)	-0.023 (0.071)	-0.020 (0.070)
Parent education: University	0.083 (0.053)	0.081 (0.054)	0.110 (0.083)	0.093 (0.086)	-0.018 (0.071)	-0.019 (0.071)	0.068 (0.062)	0.063 (0.063)	-0.123 (0.079)	-0.116 (0.077)	-0.049 (0.071)	-0.049 (0.070)
Parent education: Unknown	0.067 (0.052)	0.067 (0.052)	0.041 (0.082)	0.035 (0.084)	-0.042 (0.073)	-0.041 (0.073)	0.006 (0.066)	0.001 (0.067)	-0.124 (0.078)	-0.119 (0.077)	-0.048 (0.072)	-0.045 (0.071)
Father in agriculture	0.022 (0.016)	0.022 (0.016)	-0.037* (0.020)	-0.040** (0.020)	-0.016 (0.015)	-0.014 (0.016)	-0.009 (0.021)	-0.008 (0.021)	0.008 (0.013)	0.008 (0.014)	0.012 (0.011)	0.011 (0.012)
Mother in agriculture	0.015 (0.034)	0.023 (0.035)	-0.019 (0.056)	-0.018 (0.058)	0.005 (0.036)	0.011 (0.036)	-0.062 (0.038)	-0.050 (0.039)	-0.002 (0.031)	0.000 (0.031)	0.006 (0.024)	0.010 (0.025)
Top 5 in class		0.006 (0.013)		0.013 (0.018)		-0.005 (0.013)		-0.005 (0.013)		-0.002 (0.010)		-0.010 (0.008)
Agriculture-related subject		0.047 (0.031)		0.004 (0.030)		-0.007 (0.021)		0.029 (0.033)		0.005 (0.020)		0.006 (0.018)
Straight-A student		0.024** (0.010)		0.022* (0.013)		-0.008 (0.010)		0.024** (0.011)		0.004 (0.008)		0.008 (0.009)
B4/B2 stream: STEM		-0.007 (0.011)		0.068*** (0.016)		0.015 (0.010)		0.016 (0.014)		-0.036*** (0.010)		-0.010 (0.011)
B4/B2 stream: Unknown		0.077 (0.053)		-0.025 (0.082)		0.085 (0.070)		0.028 (0.071)		-0.023 (0.048)		0.025 (0.064)
School state: Perlis	-0.060*** (0.017)	-0.066*** (0.017)	-0.068 (0.045)	-0.080* (0.044)	0.028 (0.025)	0.016 (0.023)	-0.096*** (0.022)	-0.110*** (0.020)	0.011 (0.026)	0.014 (0.026)	0.018 (0.017)	0.021 (0.020)
School state: Kedah	-0.022 (0.015)	-0.021 (0.016)	0.004 (0.046)	-0.029 (0.046)	0.049** (0.022)	0.042** (0.020)	-0.038 (0.029)	-0.048 (0.030)	0.026 (0.028)	0.038 (0.029)	0.038** (0.016)	0.041** (0.018)
School state: Penang	-0.021 (0.033)	-0.021 (0.026)	-0.025 (0.044)	-0.036 (0.040)	0.035 (0.028)	0.038 (0.034)	0.011 (0.030)	-0.001 (0.027)	0.034 (0.034)	0.043 (0.034)	0.043 (0.035)	0.052 (0.036)
School state: Kelantan	-0.094*** (0.032)	-0.099*** (0.033)	-0.184*** (0.067)	-0.203*** (0.068)	-0.041 (0.031)	-0.043 (0.032)	-0.181*** (0.046)	-0.188*** (0.048)	-0.013 (0.024)	-0.006 (0.024)	0.012 (0.025)	0.013 (0.026)
School state: Terengganu	-0.026 (0.024)	-0.033 (0.024)	-0.104** (0.047)	-0.116** (0.047)	0.041 (0.027)	0.037 (0.028)	-0.095*** (0.024)	-0.102*** (0.027)	0.086*** (0.032)	0.086*** (0.031)	0.047** (0.019)	0.048** (0.019)
School state: Perak	-0.012 (0.041)	-0.022 (0.030)	-0.053 (0.050)	-0.076 (0.048)	0.022 (0.015)	0.019 (0.016)	-0.028 (0.037)	-0.039 (0.034)	0.034 (0.023)	0.041* (0.023)	0.011 (0.012)	0.012 (0.012)
School state: Pahang	-0.043* (0.022)	-0.040* (0.022)	-0.058 (0.041)	-0.077* (0.041)	0.056*** (0.020)	0.054*** (0.019)	-0.090*** (0.025)	-0.097*** (0.026)	0.025 (0.018)	0.034* (0.019)	0.047*** (0.017)	0.047*** (0.018)
School state: Selangor	-0.035** (0.014)	-0.035** (0.016)	-0.023 (0.054)	-0.042 (0.054)	0.005 (0.021)	0.000 (0.020)	0.001 (0.044)	-0.002 (0.046)	-0.000 (0.028)	0.005 (0.029)	0.008 (0.021)	0.008 (0.022)
School state: Negeri Sembilan	-0.031** (0.015)	-0.032* (0.018)	-0.067 (0.049)	-0.090* (0.047)	0.023 (0.020)	0.016 (0.020)	-0.047* (0.026)	-0.055* (0.030)	0.034 (0.029)	0.043 (0.029)	0.030** (0.014)	0.033** (0.015)
School state: Melaka	-0.056** (0.023)	-0.058** (0.023)	-0.087 (0.053)	-0.107** (0.054)	-0.001 (0.025)	-0.002 (0.025)	-0.057 (0.047)	-0.062 (0.047)	0.042* (0.022)	0.049** (0.022)	0.053*** (0.020)	0.055*** (0.020)
School state: Johor	-0.052*** (0.017)	-0.059*** (0.019)	-0.030 (0.040)	-0.052 (0.039)	0.010 (0.013)	0.007 (0.012)	-0.022 (0.020)	-0.032 (0.021)	0.018 (0.020)	0.025 (0.021)	0.009 (0.014)	0.010 (0.015)

Num.Obs.	7436	7222	7436	7222	7436	7222	7436	7222	7436	7222	7436	7222
AIC	7278.1	7087.7	9892.9	9592.6	7060.2	6822.5	9488.1	9230.0	5523.0	5356.0	4989.9	4852.4
BIC	7437.1	7280.5	10051.9	9785.4	7219.2	7015.3	9647.1	9422.8	5682.0	5548.7	5149.0	5045.2
Pseudo R2	0.007	0.009	0.015	0.018	0.010	0.010	0.021	0.022	0.013	0.017	0.011	0.013

Regression Table D4: Determinants of Preferred Areas of Employment within the Agriculture Sector

Term	Farming / growing		Farm management		Plant & animal science		Engineering / machinery		Quality / inspection		Not interested	
	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls
TVET	0.006 (0.017)	0.023 (0.015)	0.006 (0.012)	0.011 (0.011)	-0.059*** (0.011)	-0.066*** (0.013)	0.057*** (0.016)	0.034*** (0.013)	0.001 (0.014)	0.009 (0.014)	-0.013 (0.022)	-0.011 (0.019)
Female	0.047*** (0.009)	0.039*** (0.010)	-0.045*** (0.008)	-0.053*** (0.007)	0.060*** (0.008)	0.069*** (0.009)	-0.165*** (0.013)	-0.148*** (0.013)	0.005 (0.008)	0.001 (0.008)	0.086*** (0.011)	0.075*** (0.010)
Malay	0.025 (0.019)	0.019 (0.019)	0.007 (0.013)	0.006 (0.013)	0.001 (0.016)	0.003 (0.016)	-0.011 (0.016)	-0.004 (0.015)	-0.005 (0.013)	-0.009 (0.013)	-0.020 (0.027)	-0.017 (0.026)
Migrant	0.008 (0.010)	0.011 (0.010)	-0.002 (0.009)	-0.002 (0.009)	0.019** (0.009)	0.019** (0.009)	-0.011 (0.010)	-0.015 (0.009)	-0.000 (0.008)	-0.001 (0.008)	-0.015 (0.013)	-0.011 (0.013)
Parent education: Primary	0.054 (0.071)	0.066 (0.067)	0.044 (0.033)	0.044 (0.032)	-0.034 (0.067)	-0.048 (0.072)	-0.020 (0.068)	-0.024 (0.066)	-0.029 (0.070)	-0.030 (0.069)	-0.029 (0.096)	-0.023 (0.095)
Parent education: Secondary	0.040 (0.060)	0.048 (0.056)	0.056** (0.026)	0.055** (0.026)	0.010 (0.067)	0.002 (0.072)	-0.011 (0.065)	-0.013 (0.063)	-0.065 (0.070)	-0.063 (0.069)	-0.047 (0.083)	-0.046 (0.082)
Parent education: Vocational / technical	-0.003 (0.064)	0.007 (0.059)	0.074** (0.030)	0.073** (0.030)	0.041 (0.070)	0.034 (0.075)	0.011 (0.065)	0.007 (0.064)	-0.039 (0.072)	-0.039 (0.072)	-0.103 (0.088)	-0.098 (0.087)
Parent education: University	0.004 (0.063)	0.019 (0.058)	0.049* (0.026)	0.050* (0.026)	0.069 (0.068)	0.052 (0.073)	-0.009 (0.065)	-0.018 (0.063)	-0.086 (0.070)	-0.082 (0.069)	-0.046 (0.085)	-0.042 (0.084)
Parent education: Unknown	0.042 (0.064)	0.051 (0.059)	0.041 (0.028)	0.044 (0.028)	0.011 (0.066)	0.004 (0.071)	-0.041 (0.065)	-0.047 (0.063)	-0.099 (0.069)	-0.095 (0.069)	0.029 (0.086)	0.029 (0.085)
Father in agriculture	0.024 (0.015)	0.021 (0.016)	0.038*** (0.010)	0.039*** (0.009)	-0.002 (0.017)	-0.006 (0.017)	-0.023 (0.016)	-0.020 (0.016)	0.005 (0.013)	0.003 (0.013)	-0.059*** (0.021)	-0.051** (0.021)
Mother in agriculture	0.010 (0.030)	0.012 (0.030)	0.000 (0.018)	0.003 (0.018)	-0.046 (0.037)	-0.047 (0.040)	0.035 (0.029)	0.030 (0.029)	-0.026 (0.026)	-0.023 (0.026)	0.012 (0.037)	0.007 (0.038)
Top 5 in class		-0.031** (0.015)		0.012 (0.007)		0.031*** (0.010)		-0.011 (0.012)		0.002 (0.011)		-0.008 (0.015)
Agriculture-related subject		0.064*** (0.017)		0.031 (0.019)		0.025* (0.015)		-0.087** (0.037)		0.040*** (0.015)		-0.133*** (0.049)
Straight-A student		-0.025** (0.010)		0.010 (0.006)		0.009 (0.010)		0.001 (0.010)		-0.008 (0.008)		0.011 (0.011)
B4/B2 stream: STEM		-0.061***		-0.028***		0.061***		0.070***		-0.016		-0.038***

		(0.012)		(0.008)		(0.011)		(0.012)		(0.011)		(0.013)
B4/B2 stream: Unknown		-0.057		-0.052*		0.026		0.020		-0.019		0.072
		(0.038)		(0.029)		(0.054)		(0.047)		(0.034)		(0.060)
School state: Perlis	0.024	0.045	-0.018	-0.015	-0.003	-0.016	0.042	0.030	0.007	0.011	-0.045	-0.049
	(0.041)	(0.032)	(0.012)	(0.012)	(0.025)	(0.028)	(0.039)	(0.035)	(0.017)	(0.019)	(0.032)	(0.034)
School state: Kedah	-0.023	0.002	-0.009	-0.001	-0.033	-0.060**	0.035	0.008	0.003	0.010	0.023	0.037
	(0.039)	(0.034)	(0.011)	(0.012)	(0.026)	(0.030)	(0.026)	(0.019)	(0.016)	(0.019)	(0.044)	(0.046)
School state: Penang	-0.033	-0.017	0.003	0.012	-0.009	-0.018	0.044	0.026	-0.029	-0.025	0.028	0.025
	(0.037)	(0.030)	(0.021)	(0.021)	(0.028)	(0.033)	(0.028)	(0.020)	(0.021)	(0.022)	(0.037)	(0.033)
School state: Kelantan	0.074*	0.085**	0.033**	0.035*	-0.028	-0.049	-0.052*	-0.065***	0.057	0.063	-0.086**	-0.072*
	(0.041)	(0.038)	(0.017)	(0.018)	(0.030)	(0.034)	(0.029)	(0.025)	(0.038)	(0.040)	(0.043)	(0.043)
School state: Terengganu	0.027	0.033	0.011	0.010	-0.010	-0.019	-0.003	-0.010	0.020	0.020	-0.042	-0.031
	(0.042)	(0.035)	(0.011)	(0.011)	(0.029)	(0.034)	(0.038)	(0.033)	(0.013)	(0.015)	(0.033)	(0.037)
School state: Perak	0.045	0.048*	0.065**	0.062**	-0.019	-0.041	-0.005	-0.011	0.006	0.002	-0.084**	-0.055**
	(0.036)	(0.028)	(0.033)	(0.026)	(0.027)	(0.028)	(0.035)	(0.020)	(0.019)	(0.017)	(0.040)	(0.028)
School state: Pahang	-0.013	0.014	0.013	0.022	-0.016	-0.039	0.011	-0.011	-0.001	0.002	0.006	0.013
	(0.039)	(0.035)	(0.016)	(0.016)	(0.025)	(0.029)	(0.030)	(0.024)	(0.019)	(0.021)	(0.029)	(0.029)
School state: Selangor	-0.022	-0.013	0.020	0.022*	-0.016	-0.028	0.025	0.007	-0.005	-0.003	0.000	0.016
	(0.036)	(0.031)	(0.013)	(0.013)	(0.023)	(0.026)	(0.023)	(0.019)	(0.016)	(0.016)	(0.029)	(0.026)
School state: Negeri Sembilan	-0.049	-0.030	-0.008	-0.006	0.003	-0.013	0.006	-0.015	0.005	0.007	0.041	0.050*
	(0.037)	(0.029)	(0.012)	(0.013)	(0.023)	(0.025)	(0.028)	(0.021)	(0.015)	(0.017)	(0.031)	(0.028)
School state: Melaka	-0.058*	-0.040	0.002	0.006	-0.028	-0.049*	0.002	-0.015	0.013	0.016	0.073***	0.083***
	(0.032)	(0.027)	(0.011)	(0.011)	(0.023)	(0.028)	(0.027)	(0.021)	(0.016)	(0.017)	(0.027)	(0.026)
School state: Johor	-0.027	-0.016	0.020	0.021	-0.018	-0.040	0.040	0.028	0.000	-0.001	-0.010	0.014
	(0.033)	(0.028)	(0.014)	(0.015)	(0.027)	(0.028)	(0.025)	(0.019)	(0.013)	(0.014)	(0.024)	(0.025)
Num.Obs.	7436	7222	7436	7222	7436	7222	7436	7222	7436	7222	7436	7222
AIC	7296.9	7059.8	3987.5	3859.4	6048.3	5860.6	6502.0	6222.6	4984.4	4868.8	8889.4	8585.3
BIC	7455.9	7252.6	4146.5	4052.2	6207.4	6053.3	6661.1	6415.4	5143.4	5061.6	9048.5	8778.0
Pseudo R2	0.019	0.027	0.031	0.038	0.032	0.043	0.069	0.077	0.012	0.014	0.022	0.026

Regression Table D5: Determinants of Factors that Increase Interest in Agricultural Employment

Term	More information		Higher salary / benefits		Better training		Modern technology		Promotion opportunities		Convince parents		Do not know	
	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls	Baseline	+ B1-B4 controls
TVET	0.004	0.004	-0.047**	-0.052**	0.017**	0.022***	-0.003	-0.006	0.007	0.008	0.015	0.019**	0.008	0.010
	(0.006)	(0.006)	(0.023)	(0.022)	(0.007)	(0.007)	(0.008)	(0.009)	(0.008)	(0.007)	(0.010)	(0.008)	(0.029)	(0.026)
Female	0.000	0.002	-0.018*	-0.010	-0.029***	-0.030***	-0.012	-0.008	-0.015***	-0.015***	-0.006	-0.012**	0.079**	0.069***
	(0.006)	(0.006)	(0.011)	(0.010)	(0.008)	(0.008)	(0.008)	(0.008)	(0.005)	(0.005)	(0.007)	(0.006)	(0.014)	(0.014)

Malay	-0.004 (0.012)	-0.004 (0.012)	-0.034 (0.024)	-0.041* (0.023)	-0.006 (0.011)	-0.004 (0.012)	0.024 (0.016)	0.024 (0.016)	0.004 (0.013)	0.007 (0.013)	0.002 (0.012)	-0.004 (0.011)	0.017 (0.034)	0.025 (0.032)
Migrant	0.007 (0.006)	0.007 (0.006)	-0.003 (0.012)	-0.006 (0.012)	-0.008 (0.009)	-0.008 (0.009)	0.006 (0.009)	0.004 (0.009)	0.000 (0.005)	0.001 (0.005)	0.000 (0.006)	0.000 (0.007)	-0.003 (0.012)	0.001 (0.012)
Parent education: Primary	0.041*** (0.011)	0.042*** (0.011)	-0.065 (0.084)	-0.074 (0.086)	-0.068 (0.077)	-0.063 (0.076)	0.043 (0.047)	0.043 (0.049)	0.034 (0.048)	0.038 (0.048)	-0.040 (0.051)	-0.041 (0.050)	0.058 (0.092)	0.059 (0.092)
Parent education: Secondary	0.056*** (0.005)	0.057*** (0.005)	-0.005 (0.074)	-0.014 (0.077)	-0.096 (0.070)	-0.094 (0.069)	0.052 (0.042)	0.052 (0.044)	-0.020 (0.043)	-0.019 (0.042)	-0.076 (0.050)	-0.073 (0.048)	0.091 (0.076)	0.094 (0.075)
Parent education: Vocational / technical	0.049*** (0.007)	0.051*** (0.007)	0.013 (0.076)	0.001 (0.078)	-0.113 (0.070)	-0.114 (0.069)	0.082** (0.042)	0.081* (0.043)	-0.013 (0.044)	-0.013 (0.044)	-0.073 (0.051)	-0.068 (0.049)	0.057 (0.079)	0.065 (0.077)
Parent education: University	0.046*** (0.004)	0.046*** (0.004)	0.032 (0.076)	0.014 (0.079)	-0.109 (0.071)	-0.105 (0.070)	0.078* (0.042)	0.075* (0.044)	-0.026 (0.044)	-0.024 (0.043)	-0.100** (0.050)	-0.094* (0.049)	0.079 (0.080)	0.090 (0.079)
Parent education: Unknown	0.050*** (0.008)	0.051*** (0.008)	-0.035 (0.076)	-0.042 (0.079)	-0.131* (0.070)	-0.126* (0.068)	0.029 (0.043)	0.027 (0.044)	-0.020 (0.042)	-0.018 (0.041)	-0.097* (0.050)	-0.095* (0.049)	0.205** (0.080)	0.206*** (0.079)
Father in agriculture	0.008 (0.008)	0.008 (0.008)	0.020 (0.019)	0.014 (0.019)	0.002 (0.012)	0.001 (0.013)	0.005 (0.014)	0.004 (0.014)	0.001 (0.009)	0.002 (0.009)	0.018** (0.008)	0.014* (0.008)	-0.064** (0.024)	-0.054** (0.023)
Mother in agriculture	0.009 (0.014)	0.011 (0.015)	-0.094** (0.043)	-0.090** (0.044)	-0.003 (0.027)	-0.016 (0.029)	0.007 (0.026)	0.012 (0.026)	0.020 (0.014)	0.022 (0.014)	0.034** (0.013)	0.033** (0.014)	-0.030 (0.038)	-0.027 (0.037)
Top 5 in class		-0.006 (0.007)		0.027** (0.013)		0.003 (0.009)		0.009 (0.008)		0.001 (0.007)		0.004 (0.007)		-0.039** (0.017)
Agriculture-related subject		-0.000 (0.015)		0.053** (0.021)		0.005 (0.012)		0.004 (0.013)		0.002 (0.012)		0.045*** (0.009)		-0.162*** (0.047)
Straight-A student		0.002 (0.005)		0.025* (0.013)		-0.016** (0.008)		0.008 (0.009)		-0.008 (0.005)		-0.006 (0.005)		-0.006 (0.015)
B4/B2 stream: STEM		0.005 (0.006)		0.035** (0.015)		-0.005 (0.010)		0.027*** (0.009)		0.005 (0.006)		-0.020** (0.008)		-0.054*** (0.017)
B4/B2 stream: Unknown		-0.012 (0.028)		0.021 (0.083)		-0.013 (0.051)		0.039 (0.056)		-0.038*** (0.004)		0.038 (0.050)		-0.036 (0.078)
School state: Perlis	0.009 (0.011)	0.010 (0.011)	-0.011 (0.031)	-0.020 (0.033)	-0.023** (0.011)	-0.018 (0.012)	-0.019 (0.015)	-0.024 (0.016)	-0.005 (0.014)	-0.003 (0.014)	0.036*** (0.012)	0.038*** (0.013)	0.017 (0.041)	0.020 (0.037)
School state: Kedah	-0.002 (0.011)	-0.003 (0.011)	-0.084*** (0.022)	-0.098*** (0.024)	-0.012 (0.015)	-0.010 (0.016)	0.003 (0.017)	-0.010 (0.016)	-0.007 (0.011)	-0.008 (0.011)	0.021 (0.014)	0.025 (0.016)	0.087* (0.049)	0.108** (0.049)
School state: Penang	-0.022* (0.013)	-0.020 (0.014)	-0.045* (0.023)	-0.052** (0.024)	-0.007 (0.012)	-0.006 (0.013)	0.006 (0.020)	-0.009 (0.025)	-0.001 (0.011)	0.001 (0.011)	0.013 (0.017)	0.017 (0.016)	0.062 (0.041)	0.070** (0.035)

School state: Kelantan	0.005 (0.011)	0.001 (0.012)	0.008 (0.061)	0.001 (0.058)	0.000 (0.014)	0.005 (0.014)	-0.006 (0.011)	-0.015 (0.013)	-0.001 (0.017)	-0.002 (0.017)	0.045*** (0.016)	0.043*** (0.013)	-0.047 (0.072)	-0.031 (0.070)
School state: Terengganu	0.035* (0.019)	0.037* (0.020)	-0.150*** (0.036)	-0.159*** (0.038)	0.033* (0.017)	0.035** (0.017)	0.019 (0.020)	0.016 (0.021)	-0.012 (0.016)	-0.012 (0.016)	0.029*** (0.009)	0.026*** (0.009)	0.056 (0.042)	0.066 (0.042)
School state: Perak	-0.011 (0.012)	-0.013 (0.013)	-0.027 (0.035)	-0.049 (0.035)	-0.005 (0.015)	-0.003 (0.015)	0.015 (0.022)	0.005 (0.021)	-0.015* (0.009)	-0.016* (0.009)	0.065*** (0.024)	0.050*** (0.010)	-0.016 (0.062)	0.024 (0.047)
School state: Pahang	0.004 (0.013)	0.003 (0.014)	-0.095*** (0.028)	-0.113*** (0.030)	-0.018 (0.013)	-0.012 (0.013)	-0.004 (0.015)	-0.012 (0.016)	0.002 (0.012)	-0.001 (0.012)	0.039*** (0.012)	0.049*** (0.011)	0.072* (0.042)	0.084** (0.039)
School state: Selangor	0.013 (0.014)	0.012 (0.015)	-0.034** (0.016)	-0.049*** (0.016)	-0.016 (0.017)	-0.014 (0.018)	-0.020 (0.012)	-0.024* (0.012)	-0.012 (0.017)	-0.011 (0.018)	0.033** (0.013)	0.032** (0.013)	0.041 (0.041)	0.055 (0.040)
School state: Negeri Sembilan	-0.015 (0.011)	-0.015 (0.011)	-0.038* (0.022)	-0.053** (0.025)	-0.029** (0.012)	-0.026** (0.012)	-0.021 (0.014)	-0.028** (0.012)	-0.013 (0.011)	-0.013 (0.011)	0.011 (0.007)	0.012 (0.008)	0.105** (0.047)	0.117*** (0.045)
School state: Melaka	0.001 (0.015)	-0.001 (0.015)	-0.092*** (0.023)	-0.106*** (0.025)	0.008 (0.016)	0.009 (0.016)	-0.015 (0.012)	-0.026** (0.013)	-0.005 (0.013)	-0.007 (0.013)	0.015** (0.006)	0.018*** (0.006)	0.092** (0.038)	0.110*** (0.037)
School state: Johor	0.007 (0.010)	0.005 (0.011)	-0.008 (0.023)	-0.028 (0.024)	-0.011 (0.013)	-0.009 (0.012)	-0.011 (0.017)	-0.021 (0.017)	0.002 (0.010)	0.000 (0.010)	0.019* (0.011)	0.017* (0.009)	0.007 (0.046)	0.038 (0.042)
Num.Obs.	7436	7222	7436	7222	7436	7222	7436	7222	7436	7222	7436	7222	7436	7222
AIC	2974.4	2933.3	8891.5	8640.4	5105.5	4983.3	5457.8	5328.2	2536.9	2476.6	2641.6	2518.3	9418.4	9057.6
BIC	3133.4	3126.1	9050.5	8833.2	5264.6	5176.1	5616.8	5521.0	2695.9	2669.4	2800.6	2711.1	9577.4	9250.4
Pseudo R2	0.010	0.010	0.014	0.018	0.010	0.011	0.007	0.010	0.017	0.020	0.048	0.062	0.021	0.028

Regression Table D6: Effects of Job Attributes on Agricultural Employment Preferences

Variable	Likelihood of accepting (How likely would you ACCEPT this job?) 0-10	
	Full Controls (including + B1-B4)	Full Controls + TVET × Female
Location level (rural → urban)	-0.061*** (0.012)	-0.061*** (0.012)
Pay level (low → high)	0.776*** (0.014)	0.776*** (0.014)
Technology level (low → high)	0.197*** (0.008)	0.197*** (0.008)
Physical demands level (low → high)	-0.270*** (0.015)	-0.270*** (0.015)
TVET × location level	-0.019 (0.022)	-0.004 (0.027)
TVET × pay level	-0.322*** (0.027)	-0.320*** (0.033)
TVET × technology level	-0.102*** (0.016)	-0.120*** (0.019)
TVET × physical demands	0.122*** (0.028)	0.170*** (0.032)
TVET × location level × female		-0.041 (0.039)
TVET × pay level × female		-0.007 (0.048)
TVET × Technology Level × female		0.050* (0.028)
TVET × physical demands × female		-0.131*** (0.049)
TVET × female		0.111 (0.275)
TVET student	1.158*** (0.155)	1.127*** (0.185)
Female student	-0.441*** (0.029)	-0.407*** (0.031)
Malay ethnicity	0.093** (0.043)	0.092** (0.043)
Parent occupation: Father works in agriculture	0.277*** (0.045)	0.278*** (0.045)
Parent occupation: Mother works in agriculture	0.202** (0.089)	0.206** (0.089)
Parent education: Primary	0.160 (0.203)	0.156 (0.203)
Parent education: Secondary	0.042 (0.189)	0.036 (0.189)
Parent education: Vocational / technical	0.037 (0.195)	0.033 (0.195)
Parent education: University	-0.173 (0.190)	-0.178 (0.190)
Parent education: Unknown	-0.020 (0.191)	-0.025 (0.191)
School state: Perlis	0.297*** (0.073)	0.289*** (0.073)
School state: Kedah	0.047 (0.084)	0.031 (0.084)
School state: Penang	-0.096 (0.114)	-0.093 (0.114)
School state: Kelantan	0.782***	0.776***

	(0.073)	(0.073)
School state: Terengganu	0.447*** (0.086)	0.440*** (0.086)
School state: Perak	0.192*** (0.070)	0.189*** (0.070)
School state: Pahang	0.088 (0.078)	0.072 (0.079)
School state: Selangor	0.228*** (0.064)	0.221*** (0.064)
School state: Negeri Sembilan	-0.083 (0.074)	-0.088 (0.074)
School state: Melaka	-0.144* (0.081)	-0.155* (0.081)
School state: Johor	0.069 (0.065)	0.062 (0.065)
School state: Sabah	0.373*** (0.075)	0.367*** (0.075)
School state: Sarawak	0.540*** (0.071)	0.533*** (0.071)
Top 5 in class	-0.126*** (0.037)	-0.125*** (0.037)
Studies agriculture-related subject	0.669*** (0.080)	0.672*** (0.080)
Expected straight-As	-0.061* (0.034)	-0.059* (0.034)
STEM pathway	-0.110*** (0.030)	-0.121*** (0.030)
STEM pathway unknown	0.049 (0.174)	0.038 (0.175)
(Intercept)	3.235*** (0.215)	3.233*** (0.214)
Num.Obs.	84138	84138
R2	0.116	0.116
R2 Adj.	0.116	0.116



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