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THE DEVELOPMENT OF TRAINERS' COMPETENCY MODEL FOR THE TECHNICAL AND VOCATIONAL EDUCATION IN AGRICULTURE, MALAYSIA

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Abstract: The unemployment status amongst graduates has been an unsolved global issue. Past research proved that whilst graduates of Malaysia local public skill training institutions having the firm basic skills, they are not competent in technical skills demanded by the industry and lack in soft skills like professionalism ethics, communication skills, teamwork, decision making and leadership. This problem needs to be looked in depth in training institutions which ideally shape future workforce with knowledge and skills utilizing the assistance of current existing trainers. Henceforth, this study is to identify the indicators needed in a trainer to produce graduates that are highly competent especially in agriculture field and thus, developing trainers' competency model of technical and vocational education with specification in agriculture field. This research underwent Delphi method involving nine experts. The research resulted with 10 indicators as requirements in trainers of agriculture field and the developed model is parallel to the designated values covering basic skills, cognitive skills, resource skills, information skills, interpersonal skills, system and technology skills, individual quality skills, entrepreneurial skills, professionalism skills and social skills and local value. This research implies such a requirement that trainers in agriculture field acquire all the skills to produce competitive agriculture graduates.

Keywords: Trainers, competency, model, agriculture, Delphi Method.

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INTRODUCTION

The 11th Malaysia Plan (RMKe-11) is known as the government's five-year plan as the final throttle in reaching towards the year 2030 vision. The main concern lies in the element of increasing productivity to reach the status of developed country with higher pay level in

2030. Productivity is known to be the basis of economic sector, thus acts as catalyst to the equilibrium wages as well as minimize the impact of economic uncertainties in the future. Government and private sectors will execute initiatives to make sure labour productivity increases from RM77,100 in 2015 to RM92,300 in 2030 (RMKe-11, 2016). 60% of the 1.5 million jobs that will be made available within the duration of RMKe-11 require the skills in regards of Technical and Vocational Education and Training (TVET) (Prasetianto & Maharddhika, 2025; Aziz, Maimun, Hamid, Masturin, & Efiyanti, 2025). Government will elevate the role of industry crossing the value chains, from student intake to curriculum development, delivery and job designation to make sure that graduates are making a workforce that fulfil the needs of the industry (Arif, Nor Abd Aziz, & Ma'arif, 2025; Hafizul Fahri Hanafi & Khairulanuar Samsudin, 2012; Saipunidzam Mahamad, Mohammad Noor Ibrahim, & Shakirah Mohd Taib, 2010). The question arose, are all TVET's stakeholders ready to face the challenge?

Past researches Jabatan Tenaga Manusia, (2012), Kementerian Sumber Manusia, (2011), Pusat Latihan Pengajar dan Kemahiran Lanjutan, (2007), Ramlee dan Abu, (2004) and Hussain, et al., (2024) found that despite having basic skills, graduates of Malaysia's public skills training institutions are still lacking competence in technical skills demanded by the industry, and are also lacking soft skills which includes professionalism ethics, communication skills, teamwork skills, decision making and leadership. Having said that, training institutions need to address the problem as they are accounted to produce knowledgeable and skilful future workforce who's in training by current existing trainers. This affects greatly to the big question of the root problem which warrants the need for the development of trainers' competency model to govern the production of highly competent and competitive agriculture graduates (Hussain, et al., 2023). Therefore, the objectives of the study are:

1. Design an indicator assessment model for Technical and Vocational Education and Training (TVET) in Malaysia.
2. Validate each designated indicator within the developed model.

RESEARCH METHODOLOGY

This research utilized quantitative design and supported by qualitative data using modified Delphi validated by the Confirmatory Factor Analysis (CFA) (Handayani, Anggara, Hapsari, & Lin, 2024; Huang & Hsin, 2023; Ismail Roesnita & A. N. Zainab, 2013). The Delphi experts are from all TVET platforms including Department of Skills Development (JPK), Malaysia Technical University (MTU), Manpower Department (JTM) and National Agriculture Training Council (NATC). The settings of this research encompass Agriculture Institutes of Peninsular Malaysia which are Agriculture Institute of Serdang, Selangor, Agriculture Institute of Bumbong Lima, Penang Island, Agriculture Institute of Kuala Lipis, Pahang, Agriculture Institute of Titi Gantong, Perak, Agriculture Institute of Ayer Hitam, Johore, Agriculture Institute of Semanggok, Sarawak, Agriculture Institute of Timbang Menggaris, Sabah and College of Agriculture, Bukit Tangga, Kedah. However, with the focus

of this research centering the agriculture field, trainers and lecturers as well as trainees of agriculture institutes and colleges are the main population and samples.

RESEARCH FINDINGS AND DISCUSSION

a. Design an indicator assessment model for Technical and Vocational Education and Training (TVET) in Malaysia.

Interviews were done with nine experts at initial round of the research using Delphi technique to indicate the important main competency indicators needed in agriculture trainers. Overall, ten important main indicators were established which are basic skills, cognitive skills, resource skills, information skills, interpersonal skills, system and technology skills, individual quality skills, entrepreneurial skills, professionalism skills and social skills and local value.

b. Validate each designated indicators within the developed model.

The validity of the agriculture trainers' competency indicators model was analysed using the Confirmatory Factor Analysis (CFA) in Analysis of Moment Structure (AMOS). This analysis was due to validate the suitability of the main indicators constructed for competency skills so that it can be built as assessment model of competencies required in agriculture trainers. For the CFA, all items must meet convergent validity of >0.60 value and reliability of construct of >0.60 (Hair *et al*., 2010). Apart from that, the accuracy of compatibility between elements and research data for the assessment model is asserted by CFA with the combination compatibility index or at least one Absolute Fit Indices and one Incremental Fit Indices (Baumgartner and Homburg, 1995, Hair *et al*, 2010, Zainudin, 2012). Table 1 shows the accepted compatibility model value that used by many researchers and the compatibility for the trainers' competency assessment model (Munaji, Rohaeti, Mutadi, Sumliyah, & Kodirun, 2025; Aldeek & Ayyoub, 2025;).

Table 1 Compatibility value for agriculture trainers' competency measurement model

Value of Compatibility Indicators	Compatibility Value Received	Last Model Achieved
Chisq/df	< 5.0	2.7
TLI	≥ 0.8	0.80
CFI	≥ 0.8	0.84
NFI	≥ 0.9	0.80

Table 2 shows the result for the construct reliability. All items showed exceeding values of predetermined factor weightage which is 0.60 and reliability value of 0.70.

Agriculture Trainers' Indicator	Indicator's Items	Factor Weightage (> 0.6)	Cronbach's Alpha (> 0.7)
Basic Skills	Reading: Ascertain, understand, and interpret written information in documents (manuals, graphs, tables) and ascertain task messages.	0.840	0.922
	Speaking: Organize ideas and communicate well in conveying verbal messages to audiences according to situations, as well as participate in conversations, discussions and presentations.	0.772	
Cognitive Skills	Creative/Innovative Thinking: Innovate new ideas, freely utilize imagination and connecting ideas and information in new means and capable of cooperating between non-compatible ideas and reconstruct information.	0.798	0.906
	Acknowledge Learning Techniques: Ascertain and utilizing affective learning techniques and practice new knowledge and skills in current and new situations.	0.872	
	Reasoning/Problem Solving: Look for terms or basics as connection between two or more objects and incorporating it in solving problems.	0.822	
Resources Skills	Time Management: Choose relevant activities, outcome related activities and prioritize activities according to time and schedule.	0.691	0.880
	Material and Utilities Management: Acquire, conserve, arrange and distribute materials and utilities for affective usage.	0.817	
	Risks Management: Determine, evaluate, analyse and manage risks.	0.789	
Information Skills	Acquire and Assess information: Determine data requirement, acquiring them from various resources and assess their suitability and accuracy.	0.872	0.921
	Interpret and Disseminate Information: Elect and analyse information and disseminate the result to others in verbal, writings, graphics, pictures or multimedia.	0.938	
	Using Computer for Information Processing:	0.812	

Interpersonal Skills	Utilizing computer to acquire, arrange, analyse and disseminate information.		0.927
	Customer Service: Work and communicate with costumers to fulfil their needs.	0.907	
	Conduct Discussion: Discuss to reach an agreement that involves change of specific information or solving contradicting ides.	0.845	
System Skills	Understanding System: Recognize how social system, organization and technology system work as well as effectively executing it.	0.685	0.896
	Select Technology: Evaluate the selection of technology by procedures, equipment, machines, computer or computer software to be used to generate required results.	0.768	
	Using Technology in Performing Tasks: Understand all work terms and procedures in operating machines including computers and its programs.	0.817	
	Maintenance and ascertain technological problems:		
	Prevent, ascertain and solve problems in machines, computer and other technological equipment.	0.819	
Individual Quality Skills	Self Confidence: Confident in self-capability and instil positive attitude, knowledgeable, skills and capability, aware of effects on others, acknowledge emotional capacity and capable of managing emotions.	0.806	0.942
	Integrity/Honesty: Trustworthy and show good ethics, reliable and avoid offenses that can jeopardize organization, self and others.	0.869	
	Work Safety: Awareness on self and group safety complying to procedures and practices as well as safety act.	0.790	
Entrepreneurial Skills	Product Commercial: Possess entrepreneurial skills in commercialize products (innovation, research and development) to gain wealth for self, others and nation.	0.861	0.863
Professionalism Skills	Cost Control: Possess cost control skills and implement quality work in accordance to cost and time.	0.609	0.792
	Emotion Agility: Possess ability in not just intelligence (IQ) but also emotional	0.654	

		intelligence (EQ) to well manage human.		
Social and Value	Skills Local	Local Culture: Ability to understand and respect cultural importance and good values in organization and community.	0.678	0.879
		Spiritual: Possess firm spiritual capability and ready to face challenges and obstacles.	0.864	

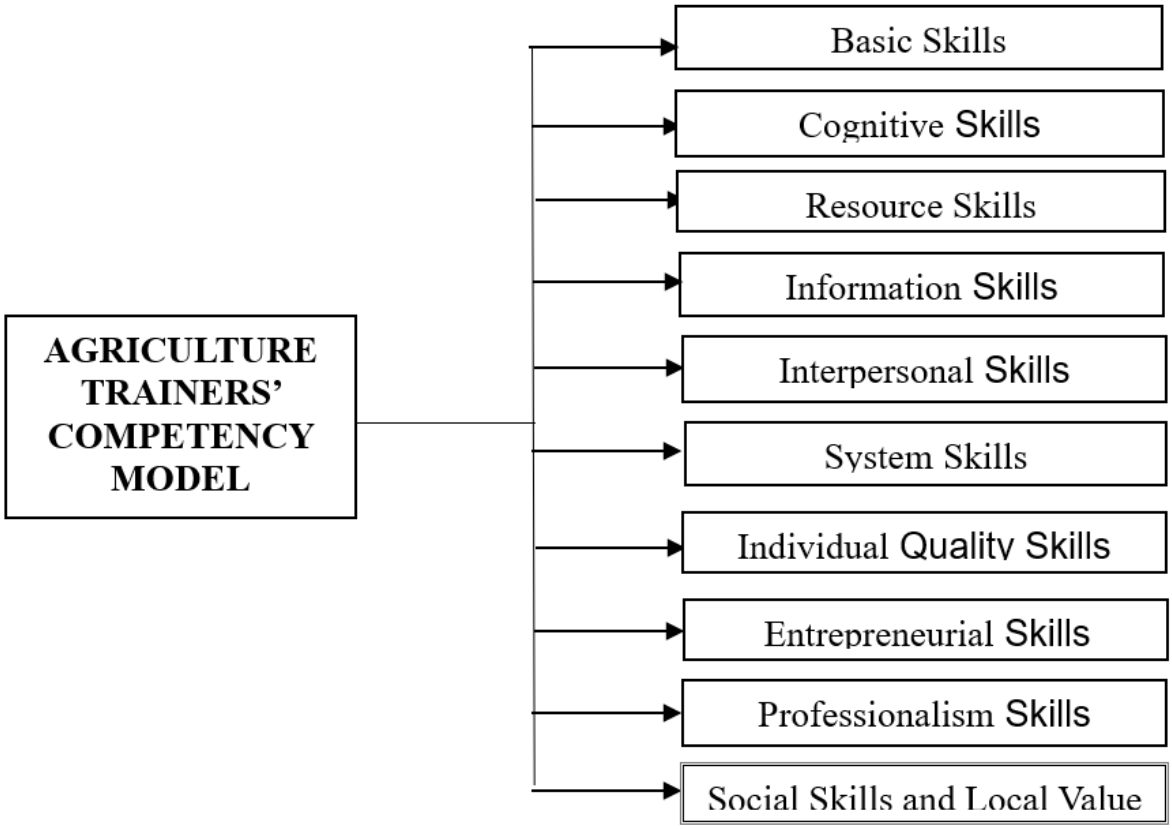

Figure 1 Agricultural Trainers' Competency Model

DISCUSSION

With the development of the trainers' competency model in TVET especially in agriculture field, it is assured to produce more competent and competitive graduates with heightened soft skills. The result of the study excerpted 10 indicators as requirements in trainers of agriculture field to produce competent graduates. Further having competent and competitive graduates, it can help in developing economic sector by levitating skilled workers' productivity in which is demanded by public and private sectors. This in other words, fulfil Malaysia's government plan in creating broader human capital possessing various skills apart from technical skills. Apart from that, the developed model of trainers' competency can be used in other fields provided that the courses offered are compatible.

CONCLUSION

Malaysia to this date has never had TVET Trainers' Competency Model. Hence, with the development of such model, it is hoped to be an important reference to the competency standard of TVET trainers especially in agriculture field. The role of trainers is important in the production of highly competent graduates which then contribute to the nation. Malaysia needs skilful workers to support the nation's development towards 2030 Vision. With the K-economy and globalization, the needs of human capital in professional and semi-professional as well as highly skilled and knowledgeable labours increases.

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