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Measuring the Level of Agreement on the Development of Sustainable Framework for TVET Teacher Education Program in Malaysia

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Abstract: TVET Teacher Education program in Malaysia has been established to produce TVET teachers who can meet the criteria of the 21st Century. This study is the first to investigate the agreement level of lecturers in the TVET teacher education program on the development of the related sustainable framework. We developed a questionnaire to assess the level of agreement on the domain and elements needed for the sustainable framework for the TVET Teacher Education program in Malaysia. We then conducted a survey involving 117 TVET Teacher Education programs lecturers in all Malaysia public universities. The data were analysed using Descriptive Analysis involving the mean score and standard deviation. The result indicates the lecturers perceived the Role of Government [M=6.11; SD = .697] as the highest domain important to developing the sustainable framework and the Criteria of Sustainable Management System [M=5.72; SD= .843] as the lowest agreed on the importance of the domain. Moreover, the entire sustainable framework perceived a high level of agreement from the respondent. It is believed that with this sustainable framework of the TVET Teacher Education program, the criteria of Malaysian TVET teacher produced can be tailored to the need of future education. We recommended that the replication of this study from different teacher education programs in Malaysia ensure all teachers in Malaysia are qualified and versatile with future education.

Keywords: Perception study, education curriculum, sustainable standard, development framework

1. Introduction

When it comes to education and technology, the Malaysian Government in improving TVET has made various efforts. Accordingly, the TVET-TE Program needs to be revised so that the training provided for the future TVET teachers may be able to help the country to achieve its mission and vision to be a developed country with high income by providing high-quality TVET teachers. This, at the same time, will revamp the perception of the opportunity that TVET may provide especially economically. The Malaysian Education Blueprint (Higher Education) also stated the need for the country to move the higher education system from a primary focus university education as the sole pathway to success towards the equal valued pathways between academic and TVET where TVET is also considered as a pathway to success (Ministry of Education Malaysia, 2015b). It is also an effort to fulfil the National Education Philosophy in producing a teacher that is intellectually, spiritually, emotionally and physically balanced and harmonious (Ministry of

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Education Malaysia, 2015c) that is in conjunction with the requirement of the 21st Century. The existing structure of the program must be adjusted based on current needs and researches done. Mohamad et al., (2019) for instance, suggested for the structured pedagogical method in TVET Teacher Education program should be planned as continuous short courses of teachers to maintain and strengthen the pedagogical delivery instead of courses related to the content subject matter. This opens up various teaching and learning method that can be applied to the program.

In this educational program, the players are not only limited to teachers and students. Several other players or stakeholders influenced the development and performance of the program. Isaacs (2017) stated that to improve the perception of TVET; it needs to start with the studies into the stakeholders – the learners, graduates, employers, trainers, parents, and policymaker. The need to studies these stakeholders were mention in the majority of the national plan that involves the Government, institutions, and industries (Ministry of Education Malaysia, 2011, 2015b; Ministry of Higher Education Malaysia, 2018). Thus, it is crucial to identify the correct roles and needs for each of the stakeholders. Problems that relate to the stakeholder also have been studies worldwide. The industry, for instance, is facing issues such as bullying during the apprenticeship (Riggall et al., 2017), lack of understanding between the industry and institution and lack of industry experts that can cater to both the academic and skills aspect (Zaytseva et al., 2017) and irrelevant role of industries towards the postgraduate program (Frick et al., 2016). These issues need to be focused on so that the national plan for TVET can be achieved. A study by Yunos et al., (2017) also had emphasised the challenges faced by the stakeholders in sustaining the TVET Teacher Education program.

In this study, the sustainable framework of the TVET Teacher Education program was the primary variable that being tested. With all the changes and challenges that happen in the education system, especially TVET itself, it is logical to have a framework that induces the criteria of sustainability in education. As this study is part of broader research, the sustainable framework was successfully developed in the previous study. However, research on the agreement of those who will involve with this framework directly is still lacking. Thus, this study focus on confirming the level of agreement of TVET Teacher Education program lecturers on the domains and elements for the sustainable framework of the TVET Teacher Education program in Malaysia.

1.1 Malaysia TVET Teacher Education System

Teacher education in Malaysia is defined as teaching training that is done with the purpose to prepare the teacher with the knowledge, skill, attitude, and competency required to perform the teaching in a classroom with competence and effectiveness (Ministry of Education Malaysia, 2012). The teacher education programme was designed based on the National Education Philosophy and Teacher Education Philosophy to produce a teacher that is professional, competitive, presentable, honourable, practising good values, creative thinking and, technology literate. It is monitored by the Department of Teacher Education, Ministry of Education Malaysia through the Teacher Education Institution and Public Universities. Like any other teacher education programme, the TVET teacher education programme in Malaysia is abode by the same policy under the Malaysian Government. To be specific, there are only certain Public Universities that provide TVET Teacher Education Program nationally. Even though the Faculty of Education is widely available in most of the Public Universities, a specific program that produces TVET teachers is scarce. The available Teacher Education Institution does not provide a full study level for TVET teachers with only up to Bachelor Degree level while the Public Universities only provide TVET Teacher Education program at the higher study level beginning from Bachelor Degree.

On the other hand, the Ministry of Human Resource Malaysia under the Department of Skills Development had established a training centre that focused on the training of TVET instructor. The institution, Centre for Instructor and Advanced Skill Training (CIAST) aims to develop world-class instructors with the knowledge, competence, disciplines and responsiveness to the changes in environment and technologies. This includes producing instructors that meet the needs of national skills training institutions, enhancing instructors continuously as well as strengthening the international training and relationship (Department of Skills Development, 2019).

There are several training courses including the long term and short term. One of the training for the long term, the Vocational Training Officer Certificates aim to produce skilful trainer as needed by the nation. To enrol in this program, candidates must fulfil several requirements including possess an Advanced Diploma of Skills Malaysia (DLKM) or Diploma of Skills Malaysia (DKM) and passes in interviewed session. Graduates of this program may apply for a position as Vocational Trainer in any JPK Centre. The short-term courses provided by CIAST mainly focusing on the retraining of existing TVET instructors. Differ than teacher training program by the Ministry of Education, training program by CIAST requires candidates to have skills in related TVET field and will be trained on teaching technique that includes theory and practical. Both pre-service and in-service trainers can enrol in this program. Meanwhile, the Malaysian Education Blueprint published by the Ministry of Education Malaysia (2013) had also suggested several ways for teacher development. The peer review is seemed to be effective in increasing teacher performance. The “Teach for Malaysia” slogan is chosen to highlight the motivation of the teachers in supporting each other. The school-based professional development also needs to be increased to create a quality teacher.

After two years published, the Malaysian Education Blueprint (Ministry of Education Malaysia, 2013) has been revised and come out with the revised version that is specific for a higher learning institution, the Malaysian Education Blueprint for Higher Education (MBE (HE)) (Ministry of Education Malaysia, 2015b). In this revised version, ten (10) shifts of the higher education system have been outlined in the hope to spur continued excellence in the higher education system. Among the 10 shifts, the first four shifts focus on the outcomes for key stakeholders and the rest focusing on enablers for higher education ecosystem. Among the four shifts for the outcomes, the development of talent excellence of the teachers has been mention in the 2nd shift, talent excellence. The MEB (HE) aiming to attract, develop and retain the excellent talent of the teachers through a specialized pathway. This is due to the issue of insufficient specialization based on Higher Learning Institutions (HLI)'s strengths and focus area highlighted by the MEB (HE). Therefore, suggestions have been made for HLI to develop multi-track career pathways to inspire the teachers and provide the best practice guideline to support both public and private HLIs for a collaboration that will strengthen the talent development for both institutions.

2. Methodology

This study is a continuation of a previous study related to the development of a sustainable framework for the TVET Teacher Education program in Malaysia. In the previous study, the draft of the sustainable framework was developed with the consensus from the experts. As for this study, the aim is to get the agreement from different perspectives, which is the TVET Teacher Education program lecturers. This is a quantitative study using a survey method involving TVET Teacher Education program lecturers as respondent. We have developed the instrument beforehand and was tested for reliability and validity. It consists of four sections with eight domains and 22 elements. In order to acquire the level of agreement, the mean score and standard deviation value of each domain and elements were calculated using Winsteps 3.69.1.11.

2.1 Population and Sampling

In this study, the population was TVET Teacher Education program lecturers in TVET Teacher Education Program in the Public Universities (PUs). According to Mohamed (2014), due to time and other sources constraint in reaching the target population, and achieved target can be used for the study. For sampling purposes, data from each PUs with TVET Teacher Education program was referred from the MQA list program. The population does not include lecturers who were on sabbatical leave or study leave. In total, there were 175 TVET Teacher Education program lecturers (N=175) teaching in six PUs, meaning that the achieved population was TVET Teacher Education program. The number of lecturers was referred to the faculty's website, respectively. The sampling technique used for this population was stratified random sampling where the population was stratified into sub-sample according to the PUs. Each stratum or sub-sample was randomly chosen. This sampling technique was used as the framework of samplings, such as location and academic qualification, was heterogeneous (Mohamed, 2014). Through this sampling technique, each stratum in the population can be represented well. By referring to Krejcie and Morgan (1970), the number of samples needed for this study was n=117 TVET Teacher Education program lecturers.

2.2 Instrument

The validation of the instrument was done in the previous study through a pilot test. For the instrument to be reliable, the value of Cronbach's alpha has to be more than 0.70 to indicate high reliability. Hoyle *et al.*, (2002) explained the range of this coefficient alpha begins from zero to one where zero indicates complete unreliability and one indicate perfect reliability. According to Bond and Fox (2007), the value for Cronbach's alpha to be excellent is between 0.71-0.99. After a thorough analysis, it was reported the instrument to have the value of Cronbach Alpha 0.99, which indicates high reliability thus valid for real study.

The instrument consists of a seven-point Likert scale that instructs respondents to indicate the extent to which they agree with various statements regarding the domains and elements in the sustainable TVET Teacher Education program. There were four sections with 93 items. Section one consist of four domains and ten elements. It was focusing on the criteria that contributed to the sustainable TVET Teacher Education program. Section two consist of two domains and seven elements regarding the role of the institution. Section three consist of one domain with three elements on the role of the Government, and the final section consist of one domain with two elements related to the role of the industry. Table 1 shows the description of each section in the instrument.

2.3 Data Collection

The instruments were distributed to the respondent with two methods, which is through an online survey using Google Form and handout distribution to the respondent office. To avoid double response, a memo informing the respondent on the nature of the data collection was attached to the instrument. Thus, those who had given their response, whichever comes first, do not have to respond to the latter instrument. To increase the response rate, a gentle reminder was sent after a week of instrument distribution. This will encourage the respondent to open the email sent and thus answer the survey.

As noted by Fan & Yan (2010), to increase the response rate for an online survey, it is crucial to ensure that the respondents will open a web survey rather than eventually receive the survey notice rather than other factors.

Table 1 - The description of section in the instrument

Section	Description	Domain	Element	Item
Section One	Criteria for sustainable TVET-TE program	Criteria of Sustainable Curriculum	TVET oriented 21st century oriented	44
		Criteria of Sustainable Leadership	Knowledge Credibility	
		Criteria of Sustainable Management System	Funding and monetary Teamwork and collaboration Implementation	
		Criteria of Sustainable TVET-TE lecturer	Adaptable to changes Interactive skillset Intellectual in academic and technical	
Section Two	The role of institution for sustainable TVET-TE program	Role of Institution-TVET-TE Faculty	Partnership Administration Support	29
		Role of Institution-TVET-TE lecturer	Relationship with students Upgrade and reskilling Pedagogical and Classroom management Environment relationship	
Section Three	The role of government for sustainable TVET-TE program	Role of Government	Improve the training system for TVET-TE Improve the perception and treatment towards TVET Provide future education	11
Section Four	The role of industry for sustainable TVET-TE program	Role of Industry	Give advice in management of the TVET-TE program Provide training to the student and TVET-TE lecturer	9
Total				93

2.4 Data Analysis Plan

It is important first to identify the respondents' agreement on the domains and elements developed in the previous phase. This to ensure that the respondent agreed with the domains and elements developed in the framework. Descriptive analysis was used to find the mean score and standard deviation. The interpretation used for mean score is modified from Landell (1997), which suggests the value of mean of 1.0 until 3.00 = low, 3.01 until 5.01 = medium and 5.02 until 7.00 = high. The mean score value and standard deviation were calculated using the IBM SPSS Statistic software.

3. Result and Analysis

3.1 Response Rate

One hundred seventy-five instruments were distributed for this survey and received 71% (n=125) response rate: 40 (32%) by online and 85 (68%) by handout. Data cleaning was done before analysing the data. According to Abd. Razak et al., (2012), the presence of out-of-range values has to be avoided by the data cleaning process so that the risk of creating extreme values of the data can be reduced. In this survey, out of 125 instruments return, eight instruments were dropped due to incomplete and consist of single value response, in which create extreme values. Therefore, only 117 instruments were used in the analysis process. This survey does not include any demographical data since the objective of this study does not require the analysis of this data. The results of the survey are presented in the following sections.

3.2 Level of Agreement Using Mean Score Value and Standard Deviation

To answer the objective of this study, the respondents' level of agreement were first determined through the mean score value. Based on the analysis, domain with the highest mean score was Role of Government [M=6.11; SD = .697], followed by Role of TVET-TE lecturer [M=6.09; SD=.702] and Role of Industry [M= 6.09; SD = .725]. The two latter domain was sharing the same mean value. The lower standard deviation value for the Role of TVET Teacher Education program lecturer indicates less diverse of the answer among the respondent. This shows that the respondent has a better agreement on the Role of TVET Teacher Education program lecturer compared to the Role of Industry. On the other hand, the lowest mean score value was the Criteria of Sustainable Management System [M=5.72; SD= .843]. Nevertheless, the entire domain indicated a high level of agreement from the respondent. Table 2 shows the mean score value for each domain in the framework.

Table 2 - Mean score value for each domain

No.	Domain	Mean Score	Standard Deviation	Level of Agreement
1	Role of Government	6.11	0.697	High
2	Role of Institution-TVET Teacher Education program lecturer	6.09	0.702	High
3	Role of Industry	6.09	0.725	High
4	Criteria of Sustainable TVET-TE lecturer	6.05	0.775	High
5	Criteria of Sustainable Leadership	5.99	0.873	High
6	Role of Institution- TVET Teacher Education Faculty	5.99	0.724	High
7	Criteria of Sustainable Curriculum	5.86	0.824	High
8	Criteria of Sustainable Management System	5.72	0.843	High

As for the elements, 22 elements have been tested in this survey. Among all, the most entirely agreed element to be in the sustainable framework is Upgrade and Reskilling under the domain Role of TVET Teacher Education program lecturer [M=6.23; SD= .788]. This is followed by Provide Training to the Student and TVET Teacher Education program lecturer [M=6.15; SD= .715] in the domain Role of Industry and Improve the training system for TVET Teacher Education [M= 6.15; SD = .764] from domain Role of Government. The lower standard deviation value for the element of Prove Training to the Student and TVET Teacher Education program lecturer indicates that the dispersion of the agreement among the respondent is smaller. As for the least agreed, the element from domain Criteria of Sustainable Management System, element Implementation indicated the lowest level of agreement from the respondent [M=5.72; SD = .897]. Nevertheless, all elements indicate a high level of agreement from the respondent. The mean score analysis for each element was presented in the following Table 3. Overall, all elements indicate a high level of agreement based on the mean score interpretation by Landell (1997).

Table 3 - Mean score for elements

No.	Domain	Element	Mean Score	SD	Interpretation
1	Role of Government	Improve the training system for TVET-TE	6.15	.764	High
		Improve the perception and treatment towards TVET	6.14	.711	High
		Provide future education	6.08	.779	High
2	Criteria of Sustainable Leadership	Knowledge	6.08	.931	High
		Credibility	5.89	.897	High
3	Role of Industry	Give advice in management of the TVET-TE program	6.06	.784	High
		Provide training to the student and TVET-TE lecturer	6.15	.715	High
4	Criteria of Sustainable TVET-TE lecturer	Adaptable to changes	6.05	.988	High
		Interactive skill set	5.98	.846	High
		Intellectual in academic and technical	6.12	.789	High
5	Role of Institution-TVET-TE Faculty	Partnership	6.02	.764	High
		Administration	5.95	.834	High
		Support	5.99	.761	High
6	Role of Institution-TVET-TE lecturer	Relationship with students	6.02	.802	High
		Upgrade and reskilling	6.23	.788	High

Table 3 - Continue

No.	Domain	Element	Mean Score	SD	Interpretation
6	Role of Institution-TVET-TE lecturer	Pedagogical and Classroom management	6.09	.746	High
		Environment relationship	6.05	.723	High
7	Criteria of Sustainable Curriculum	TVET oriented	5.89	.878	High
		21 st century oriented	5.83	.872	High
8	Criteria of Sustainable Management System	Funding and monetary	5.51	1.01	High
		Teamwork and collaboration	6.04	.953	High
		Implementation	5.72	.897	High

4. Discussion

To the best of our knowledge, our survey, which involves the domains and elements for the sustainable framework of the TVET Teacher Education program is the first to provide the level of agreement by investigating the mean agreement perceived by the TVET Teacher Education program lecturers across Public Universities in Malaysia. For both the domains and elements, we found a high level of agreement among the survey respondents. The highest agreed on the domain in this framework was identified to be the Role of Government and followed by the Role of the TVET Teacher Education program lecturers and Role of Industry. As for the elements, surprisingly the top three highest agreed element does come from this top three domain, which is Upgrade and Reskilling from the domain of Role of TVET Teacher Education program lecturers, Provide Training system to student and lecturer from domain Role of Industry and finally Improving Training System for the program from the domain of Role of Government

As one of the main stakeholders in the TVET Teacher Education system, the Government has to play major roles in ensuring the program's sustainability. Research by Bizenjo (2020) has reported on the effect due to the lack of performance of the Government in the education sector, whereby an increasing number of low-cost private schools has been observed due to the poor performance by government institutions. This leads to the private sector involvement to fill the prevent vacuum. The Government in other parts of the world needs to take a lesson from this before question aroused on how they would like to pursue their role as the provider of education in the presence of the private sector. Siddiky & Uh (2020), in their research, proposed the Government employ a public-private partnership approach in order to reduce its overall responsibility, provide demand-driven training, and ensure quality, transparency, accountability and efficiency in TVET. This role of the Government will contribute towards the involvement of others in sustaining the program. Moreover, the study suggested forming an employment policy in line with the approach to induce the partnership. Furthermore, the survey respondents had agreed on the Government's essential role to provide training for the system. For this, the Government is suggested to choose the best training provider. This is agreed by Ir et al. (2020) as the research had proposed the Government provide IR4.0 courses and training for lecturers and provide state-of-the-art facilities for teaching and learning technology to improve their readiness regarding the matter. The training must meet the requirement of the industries with the latest knowledge and equipment. This to avoid TVET-TE lecturers attending training that are low quality and merely wasting the money and time of the teachers and Government.

The next domain perceived to be necessary by the survey respondent is the role of the TVET Teacher Education program lecturer. Being the lecturer themselves, they must be aware of the importance of their contribution to the program's sustainability. TVET-TE lecturers not only have to teach the job related-skill, but they also need to enforce values in teaching and learning to produce K-workers in the industry. The value-driven talents with positive attitude and mindsets will become industries' requirement from the training institution (Ministry of Education Malaysia, 2015a). The importance of enforcing values among students has been recommended as good teaching practice by Du Toit-Brits (2019), whereby educators need to transform their learning environment through self-directed learning activities, including motivating the student in both learning and manners, share the love of the subject with students and implementing teaching approaches that encourage students to take their responsibility in learning. Overall, with the integration of 21st Century elements, it is evident that the role of TVET educators has to change. As mention by (Jan, 2017), in this new era, the teachers are facilitators of learning. The focus has to change towards developing higher-order thinking skills, effective communication, collaboration, and other skills that the students need in the 21st Century. As for the teachers themselves, Ir et al. (2020), in their research, has identified the level of readiness among the TVET lecturers in embracing the IR4.0 to be moderate and they have pertaining high responsibility and tolerance in carrying their task. This is in line with the most agreed elements by the survey respondent whereby TVET Teacher Education program lecturers must upgrade and reskill themselves. World Economic Forum (2016) had emphasised the importance of reskilling and upskilling in all industries to meet future job skills. This continuous professional development is essential to sustain the performance of TVET-TE lecturers. Thus, to have a sustainable framework, the role of TVET Teacher Education program lecturers has to be modified towards the global educational movement.

The third agreed domain is The Role of Industry. Among the role of the industry includes providing information to the stakeholders regarding the industries themselves. Being the sole stakeholder involved in the real world of work, input from the industry is crucial in managing the TVET-TE program. The input includes the current trend and situation in the industry. It will contribute to the curriculum development process as well since the curriculum has to be tailored to industrial needs. This is agreed by many whereby input from the industries will lead to an industry-driven curriculum that will fulfil industrial needs (Economic Plan Unit, 2017; Ministry of Education Malaysia, 2015b; Obwoye, 2016; UNESCO, 2015). The survey respondents also agreed on the element of providing training to the students and lecturers by the industries as the most important element in the sustainable framework. For this, the industries are suggested to participate or lead master classes and seminars on specific technologies, work with certain equipment (Zaytseva et al., 2017). They should suggest providing a mock-up interview to prepare the TVET-TE students for their job hunting. All this will contribute to producing well-prepared graduates to survive in the real world of a work situation. To further support this argument, research by Alias et al. (2020) had as well suggested the new model of institution-industry partnership whereby it is believed this model can enhance the occupational competence of the graduates as it can lead towards mutually beneficial partnership. However, Frick, Mckenna and Muthama (2016) disagree with the involvement of industries in the curriculum for higher education level by stating this as the death of PhD. They argued that due to the nature of PhD., which is to create creative freedom among the students, being closely aligned to the industry's needs and wants might close the door to critique the industries of any ethical issues or misconduct. As for TVET teachers, working closely with industries will provide opportunities including changes in expertise, job and training opportunity as well as the latest information sharing without compromising the educational aspect. Hence, the role of industries need to be included in the sustainable framework as their contribution to the program is essential.

5. Conclusion

In this paper, we study the level of agreement among the TVET Teacher Education program lecturers on the domains and elements for developing a sustainable framework for the TVET Teacher Education program in Malaysia. The level of agreement reported being high for all the domains and elements, making the developed sustainable framework agreed upon by the practitioner. This study has its limitation as it only caters to the agreement from a single perspective: the TVET Teacher Education program lecturers. This opens up a new research opportunity to replicate this study from a different perspective involving the stakeholders in this system. On the other hand, this study has its strength as the instrument in this research was carefully developed tailored to the nature of this study. It was thus making this research relevant and reliable. In the hope of the researchers, the outcome of this study may contribute to the TVET Teacher Education system in general by providing the insight of TVET Teacher Education program lecturers towards sustaining the program.

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