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Meta-Analysis of Competency Challenges and Development for TVET Instructors: A Global and Malaysian Perspective

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Abstract

The Fourth Industrial Revolution (IR 4.0) is transforming industries globally, introducing advanced digital, physical, and biological technologies that significantly affect various sectors, including Technical and Vocational Education and Training (TVET). Competency challenges among TVET instructors have been widely identified in various countries, with specific issues such as lack of pedagogical training, insufficient industry experience, and limited exposure to Information and Communication Technology (ICT). This meta-analysis examines the key competency issues faced by TVET instructors globally, particularly in developing countries, and evaluates the necessity of developing robust competency profiles for instructors, with a focus on Malaysia. By analyzing previous studies on knowledge, skills, and attitudes (KSA), this research aims to identify gaps and propose solutions for effective competency development, particularly in the construction sector.

Keywords: TVET Instructors, Competency Challenges, Instructor Development, Meta-Analysis, Global Perspective, Malaysian Perspective

Introduction

The Fourth Industrial Revolution (IR 4.0) demands a re-evaluation of workforce competencies, particularly for educators in vocational training. The convergence of physical, digital, and biological worlds is reshaping industries and educational systems. According to the World Economic Forum (2017), these changes necessitate continuous development of professional competencies for TVET instructors to prepare future generations for emerging job markets. Several countries, including Malaysia, have invested significantly in developing the competencies of TVET instructors, recognizing the importance of lifelong learning and industry-relevant skills (Chai & Kong, 2017; Kramer & Tamm, 2018). However, there are significant gaps in the competencies of TVET instructors, especially in countries such as Cambodia, the Caribbean, Sudan, and Malaysia, which face challenges in industry experience, pedagogical skills, and ICT integration in teaching.

This meta-analysis aims to explore the competency challenges faced by TVET instructors and how the development of comprehensive competency profiles can address these issues. Specifically, this paper focuses on Malaysia's efforts to develop a competency framework and the gaps that remain, particularly within the construction sector.

Background of the Study

Methodology

A meta-analysis approach was employed to review existing studies on the competencies of TVET instructors globally and locally in Malaysia. Studies were selected based on their relevance to the competency elements of knowledge, skills, and attitudes (KSA) and the challenges faced by instructors in adapting to new educational demands in the context of IR 4.0.

Analysis

Theme	Description	Supporting References / Issues
1. Lack of Standardized Competency Framework and Training Structure	There is a significant absence of a unified, standardized competency framework for TVET instructors, especially in Malaysia. Most instructors lack formal pedagogical training, especially those who are fresh graduates or from technical backgrounds. There is also no national pre-service training center for TVET instructors.	Bauer (2007),Mahazani (2011) , Hassan et al. (2012), Wan Nooraini (2016), Mahazani & Noraini (2010), CIDB Act 520
2. Gaps in Knowledge, Skills, and Attitudes (KSA)	Instructors often lack critical components of competency, especially practical industry experience, teaching skills, and current knowledge. This results in theoretical, less engaging delivery of training and low student outcomes. Emotional and spiritual competencies (ESC) are also often overlooked.	Muhd Khaizer Omar et al. (2020), Mohd Nasir (2013), Ramlee Mustapha (2017), Yusof et al. (2015), Hanapi et al. (2014), A. Ismail & Hassan (2013)
3. Global Challenges and Best Practices in TVET Instructor Competency	Countries like Cambodia, Caribbean nations, Sudan, and Ghana face similar problems: lack of qualified instructors, limited exposure to ICT, lack of industry experience, and outdated teaching approaches. However, models such as PBL (Taiwan) and Competency-Based Training (Ghana, USA) offer successful frameworks.	Phin (2014), Herd & Richardson (2011) , Ahmed (2011) - Elizabeth Obinnim (2018 – Ghana) - Ron, Yi & Sheng (2011 – Taiwan) - Mahazani & Noraini (2010 – USA)
4. Need for Industry-Relevant and Future-Oriented Training	The Fourth Industrial Revolution (IR 4.0) demands a shift toward digital, technological, and interdisciplinary teaching approaches. Instructors must be equipped with up-to-date knowledge and skills to meet future job market demands, particularly in specific fields like construction. There is a need to align TVET training with NOSS and CIDB requirements.	- Forum Ekonomi Dunia (2017) - Chai & Kong (2017) - Kramer & Tamm (2018) - Kong et al. (2017) - CIDB Act 520 - Wan Nooraini (2016)

Conclusion

There are numerous challenges in the competencies of TVET instructors in foreign countries. In Cambodia, instructors have low academic qualifications and do not undergo pedagogical training (Phin, 2014). In the Caribbean countries, TVET instructors have low academic qualifications, lack opportunities to follow pedagogical courses, limited exposure to the use of ICT in teaching, and no work experience in industry (Herd & Richardson, 2011). Similarly, TVET instructors in Sudan have limited training to enhance skills, little application of ICT in teaching, and no exposure to industry (Ahmed, 2011).

Among the competency challenges of TVET instructors in Malaysia are instructors in TVET programs who lack industry working experience, which results in their teaching delivery being based solely on instructional content and lacking skills in the field being taught (Ramlee Mustapha, 2017). Constraints faced by instructors due to limited exposure to teaching, lack of experience, and excessive workload cause instructors to be less varied in their teaching methods to attract their students' interest in learning (Yusof et al., 2015). Meanwhile, A. Ismail & Hassan (2013) state that instructors do not have work experience; at the same time, industry experts are not interested in teaching in TVET institutions because the salary scheme offered is not attractive. The quality of students failing to meet industry-required standards and weak teaching skills among the instructors are also noted (Hanapi et al., 2014).

A lack of instructor competency in TVET institutions can lead to further challenges that require new approaches to meet competency and employability. Competent TVET instructors will bring about development of the workforce needed in related fields and open up career opportunities. They will also foster dynamic growth and economic development. Therefore, there is a need to establish competency profiles among TVET instructors. One of the importance of such competency profiles is that they can help management in selecting, training, developing careers, and awarding service to staff aligned with the organization's objectives and strategic vision. Any investment made by organizations to produce competency profiles will yield returns not only for the involved staff but also for the organization as a whole in the long term (Rainer, 2009).

According to Mahazani Ali and Noraini Kaprawi (2010), in the United States, skill competency standards have been developed by the Manufacturing Skill Standards Council (MSSC), under the oversight of the National Skill Standards Board (NSSB). It classifies into two main competencies: information about the work and information about the worker. Information about the work describes what must be done by employees to carry out work efficiently. It includes critical job functions, main activities, and performance indicators. Information about the worker describes the knowledge and skills required by the individual to perform the work described by each critical job function together with its main activities and performance indicators. They classify three types of knowledge and skills: academic knowledge and skills, employability knowledge and skills, and technical knowledge and skills.

In Malaysia, a training centre for TVET instructors prior to entering service does not yet exist, and there is no competency profile framework for TVET instructors in Malaysia. The same is true among instructors of the Malaysia Construction Academy (Akademi Binaan Malaysia, ABM). Most of them are technical graduates. The majority are newly graduated and do not have knowledge and experience in the field of training. Bauer (2007) believes that though

there is a large amount of literature in the TVET domain, an accurate competency profile for TVET instructors that is based on both theory and empirical evidence still does not exist. Therefore, the instructor competency levels cannot be measured or analyzed, and their competency gaps cannot be identified.

This study is conducted because of several research gaps which are expected to provide justifications for the basis of the research problem. Most of the previous studies find that aspects of knowledge, skills, and attitudes (KSA) are the main elements in forming competency among instructors. One study by Muhd Khaizer Omar, Farah Nadia Zahar, and Abdullah Mat Rashid (2020), titled *"Knowledge, Skills and Attitudes as Predictors in Determining Teachers' Competency in Malaysian TVET Institutions"*, distributed a survey to 150 TVET teachers in three selected vocational colleges in Selangor. The questionnaire was adapted from earlier studies and a pilot study was conducted to ensure that the questionnaire matched the intended objectives. The study's findings showed that knowledge, skills, and attitudes play a large role in ensuring teacher competency. Consistent with the findings, teacher knowledge was found to be the most critical factor in illustrating TVET teacher effectiveness. The results also showed that a holistic disposition of teacher in terms of knowledge, skills, and attitude empowered inclusively and can achieve effective teacher competency. The need for developing a skilled workforce is not only based on knowledge but also on discovering students' skills and attitude potentials especially when entering a work environment.

Mohd Nasir (2013) conducted a study entitled *"Peranan, Kompetensi dan Elemen Teras Untuk Jurulatih Program Latihan Khidmat Negara"*. This study aims to identify roles, competencies, and core competency elements among trainers of the National Service Training Program (PLKN). This framework of study uses the Competency Model for Trainers by Barbazette (2005). Data were obtained using questionnaires as the main data source and focus group discussions. The respondents of the study consisted of trainees and trainers of PLKN as well as human resource development practitioners. The study findings revealed that the most important competencies for trainers were intellectual roles (mean = 3.88), management (mean = 3.72), social (mean = 3.61), and technical (mean = 3.46). Based on 28 competencies under knowledge, skills, and attitude (KSA); 11 competency items were at a high level, and 17 items were at moderate levels. Out of 20 emotional and spiritual competencies (ESC); 5 items were at high level, and the remaining 15 at moderate level. The findings indicate that ESC competencies are very important and need to be given attention by PLKN trainers in line with KSA competencies.

Both of these studies use quantitative methods and produce findings that show the importance of knowledge, skills, and attitudes (KSA) among institutional instructors. Therefore, the researchers propose to conduct studies to develop new competency elements. The researchers also suggest using qualitative methods because qualitative methods are seen as primary when someone uses both qualitative and quantitative methods. This is evidenced in the study by Ron, Yi, and Sheng (2011) titled *"The Effect of Problem-Based Learning on Enhancing Students' Workforce Competence"*, which explains that after the international financial tsunami, the Taiwanese Government implemented several policies to reduce unemployment to respond to changing global economic environments and to adjust and reorganize the domestic industrial structure. As a result, Taiwan's TVET system changed

significantly. Therefore, Problem-Based Learning, commonly used and approved in medical education, was applied in this study to the practical monograph course in business management education in a TVET institute, based on active research using qualitative approaches. Data on students' learning were collected during classroom participation, teacher teaching journals, and semi-structured interviews. The quantitative part used questionnaire surveys as a secondary method and a pre- and post-test group design as a quasi-experimental method.

Also, qualitative studies provide deep impact in exploring issues. This is aligned with a study by Elizabeth Obinnim (2018) entitled *"The Impact of Competency Models on TVET Instructors in Apparel Pattern Making Processes in Ghana: A Qualitative Study"*. The aim of this study is to examine competency models and the teaching of apparel pattern making in Ghana. It identifies the origins and introduction of competency-based training in Ghana and explores the existing gap between the competencies needed for successful teaching and the challenges affecting instructor competencies. This study uses a qualitative approach. The study population is technical university instructors in Ghana. Thus sampling techniques were used to select 23 samples from four technical universities. The main empirical finding shows that instructors' approaches to pattern making have changed accordingly to accommodate the unique competencies needed for pattern making instruction and learning to be effective in various technical universities. To improve training performance, it is suggested that real industry work environments be replicated in institutional settings or by giving more opportunities for collaboration and using the workplace as a learning site.

Wan Nooraini (2016) states that it is very appropriate for these instructors to be exposed to the latest knowledge and skills in line with current and future demands. Hence this study is conducted to ensure quality teaching and learning (PdP) and training assessment are produced via instructor competency elements that will be discussed in this study in line with global TVET developments. Therefore this study is expected to identify competency elements that are suitable to overcome problems of instructors who have no industry work experience and no expertise in the field before serving as TVET instructors.

The next gap is that there are still few studies related to TVET instructor competency, especially specialized in the construction field. This is because there is a need for a framework for TVET instructors and policy for TVET instructor training standard in Malaysia. Hassan et al. (2012) emphasize the need to strengthen the accreditation skills program to allow for new TVET instructor models to meet high quality standards and the labour market's requirement for TVET instructors. This statement is in agreement with Bauer (2007) and Mahazani (2011) who say that the volume of literature on TVET competency is still small. Therefore, professional competency profiles for TVET instructors are still less satisfactory. Findings of this research show that instructor training centers for TVET are still lacking in Malaysia. Most instructors who graduated from universities are from engineering fields. The majority of instructors are new graduates and have no knowledge or experience in teaching.

Because of the research problems mentioned, Mahazani (2011) in a study titled *"Development of a New Empirical Competency Profile for Training and Vocational Education Instructors in Malaysia"* succeeded in producing a competency profile for electronic TVET instructors in Malaysia, namely a total of 98 specific competencies required for TVET

instructors specializing in the electrical field. However, until now there has been no study concerning TVET instructors specializing in the construction field.

Therefore, the researcher proposes the submission of a competency profile to be adopted by all TVET institutions that conduct specialized skills competency training in the construction field. Based on the administrative system in Malaysia, the agency or body responsible for planning and developing TVET instructors should be comprehensive for all TVET skill fields in Skills Training Institutions (Institut Latihan Kemahiran, ILK) for each ministry involved. Hassan (2012) noted that there is still a lack of coordination in the TVET management system in Malaysia. Furthermore, there is no specific body that controls all TVET institutions in Malaysia (Ministry of Education Malaysia, 2011). This includes overlap in training fields, certification and recognition of courses, application and admission of trainees based on industrial demand, and qualification standards as TVET instructors among TVET institutions oriented toward service schemes.

However, for the construction field, it has its own statutory authority under Act 520, the Construction Industry Development Board (CIDB). It encompasses all aspects of training, instructor and assessor, as well as modules for each program run. Moreover, in-service skills enhancement training for construction TVET instructors must be aligned with the learning content requirements found in the National Occupational Skills Standard (NOSS). It is based on Section 33B, Act 520 of CIDB related to training institutions, which states:

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