

ORIGINAL ARTICLE

THE ANALYSIS OF THE GOVERNMENT POLICY ON TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) AND THE PREDICAMENTS OF TVET IN MALAYSIA

Mohd Rozaimy Ridzuan¹ and Noor Amira Syazwani Abd Rahman¹

¹Faculty of Administrative Science & Policy Studies, UiTM Pahang Branch, Raub Campus, 27600, Raub, Pahang.

ABSTRACT – Efforts to elevate Technical and Vocational Education and Training (TVET) are often becoming the main agenda of the Malaysian government. In the Twelve Malaysia Plan, the government pledge to strengthen the capacity of TVET through the National Technical Education and Vocational Training (TVET). Although there have been many government efforts in elevating this TVET institution, there are some areas that need to be improved to ensure that this institution can help the country to become a developed nation. The main thrust of this paper is to highlight the Malaysian government policies in enhancing TVET and the predicaments of TVET in Malaysia. No finger-pointing intention is expected to be discovered, instead, the study is for the practical recommendation to address the unresolved issues. The findings provide insights to the policymakers and curriculum developers on the appropriate interventions that need to be taken to ensure our graduates are well equipped with the employability skills needed for the future. It is hoped that the analysis of this paper could contribute to the existing literature on an initial overview of TVET in Malaysia.

ARTICLE HISTORY

Received: 08th Apr. 2022 Revised: 15th Apr. 2022 Accepted: 15th May 2022

KEYWORDS

Employability Skills Government Policies Human Capital Skilled Workers Technical and Vocational Education and Training (TVET)

INTRODUCTION

TVET stands for Technical and Vocational Education and Training, and it is designed to meet the growing demand for highly skilled workers with a wide range of advanced talents [1]. TVET is currently receiving more attention than traditional higher education since it can address a variety of challenges, such as poverty, unemployment, and the need for workers with a variety of abilities [2] & [3]. According to Jane et al. [4], TVET is a type of education that equips students with the knowledge and skills they need to succeed in the job market once they graduate.

The development of TVET in Malaysia's educational system corresponds to the development of TVET globally [5]. However, when it comes to the labor market, high rates of youth unemployment remain a serious concern even as the overall job market improves [6]. The Department of Statistics Malaysia and the Economic Review 2019 of the Ministry of Finance Malaysia discovered that graduates experienced a greater rate of unemployment than those with secondary, elementary, or no formal education [7].

Many graduates, according to research, lacked relevant information, skills, and abilities [8]. According to experts, one of the reasons behind this is that our graduates have not kept up with the rapid changes in technology. Malaysia needs world-class human resources through TVET focus areas to reach developed country status in the final phase [9]. However, the quality of TVET in many ASEAN countries is substandard [10]. Hence, this study is embarked to examine the Malaysian government policies aimed at boosting TVET and the predicaments of TVET in Malaysia.

LITERATURE REVIEW

The Background of TVET

Most of the orientation in this TVET higher education institution focuses on skill-based subjects (such as technical and commercial services courses) that have been improvised to be in line with the national development plan. TVET is widely regarded as one of the most advantageous aspects of the German educational system, where 60 to 70 percent of students choose to attend vocational schools [11]. South Korea, Singapore, and China are all redoubling their efforts to improve education, especially TVET [12]. Consequently, the Republic of Korea went from being a war-torn nation to global economic power in a matter of decades [13].

Quality and capabilities of human resources are critical in Malaysia for economic transformation and accomplishing Malaysia's goal of becoming a developed country. This type of training aimed at equipping future workers for a market economy that was more varied and dynamic [14]. For a developing country like Malaysia, TVET is crucial in building the human capital needed to become a developed nation [15].

According to Zoharah et al. [15], individuals with poor educational attainment can gain better access to good labor and higher-paid positions through TVET, thus avoiding poverty and marginalization and gaining greater social recognition. Once they have completed elementary school, students can enroll in junior vocational education institutions to continue their education in technical or polytechnic fields of study [16]. When it comes to job placement, TVET is a key player because it serves the needs of both individuals and businesses. TVET is a type of education that prepares students for work that necessitates mastery of a certain set of competencies [17].

Among the public TVET providers in Malaysia is the Training Institute of the Department of Manpower (ILJTM) under the Ministry of Human Resources, the National Youth Skills Institute (IKBN) under the Ministry of Youth and Sports, Mara High Skills College (KKTM) under the Ministry of Urban and Regional Development, Community Colleges under the Ministry of Education Malaysia and several other TVET providers under the Ministry of Education and the Ministry of Agriculture. According to Ministry of Education Malaysia [5], TVET institutions are classified into two levels which are basic and high. The Vocational College and the Technical High School are the centers for basic skills education (SMT). At a higher level, the government provides education centres such as Community College, Polytechnic, and public skills training institutes (ILKA).

Government Policy on TVET in Malaysia

TVET has grown in the organization's life during the last few years [18]. The existing study highlights the vital importance of TVET in the Malaysian economy as the industry sector ranks as the second-largest contributor to GDP at 37.8% and dominates 36% of the labor force. Since its inception more than 40 years ago, TVET education and development in Malaysia have expanded to more than 500 institutions run by several ministries [13]. Malaysian TVET education is geared toward producing a technologically advanced, globally competitive, well-respected, and successful nation.

In 1956, the Razak Report and the Education Regulations established Malaysia's first TVET curriculum. The Rahman Talib Statement, the Education Law of 1961, the Mahathir Report of 1979, and the Cabinet Reports of 1995, 1998, and 1999 created a solid framework for the implementation of TVET policies, systems, directives, and curriculums in Malaysia. Besides, the Malaysian government has introduced ACET 2015 by creating eight primary objectives aimed at equipping the TVET field to satisfy market demands and be able to tackle 21st-century problems. Malaysia's Education Development Plan (Preschool to Post Secondary) 2013-2025 and Malaysia's Education Development Plan (Higher Education) 2015-2025 both establish a clear agenda in keeping with the 21st century's job needs, and the Kuala Lumpur Declaration serves as a model for that agenda.

The Malaysian government is deeply dedicated to enhancing the country's TVET system. The increase in ILKA funding in the Malaysian Plan series, from RM1.9 billion in the Seventh Malaysia Plan (7MP) from 1996 to 2000 to RM3.8 billion in the Eighth Malaysia Plan (8MP) from 2001 to 2005, demonstrates this [11]. By mainstreaming TVET education and enhancing graduate study competency so that it is marketable in the Tenth Malaysia Plan (10MP) for the period 2011-2015, a substantial development was also shown [19].

Malaysia's Ministry of Higher Education's National Education Blueprint emphasizes the importance of producing graduates who are global, holistic, entrepreneurial, and lifelong learners [23]. As a result, by introducing the "higher TVET" (HTVET) track, the plan puts TVET courses at Malaysian technical universities on an equal footing with regular engineering programs [20].

As part of the eleventh Malaysian Plan, initiatives had to be taken to ensure that TVET transforms successfully [18]. One million new jobs had been generated by 2020 to give Malaysians more opportunities and lessen reliance on foreign workers [24]. More than half (60 percent) of the 1.5 million new positions have necessitated the use of TVET-related skills and productivity, and as a result, wages had risen. Because of this trend, employers need to hire significantly more trained people who can match industry expectations based on present and future needs [21]. To help develop qualified workers, the government has established a National Technical Education and Vocational Training Empowerment Agenda as part of the Twelve Malaysia Plan. A unified platform for TVET supply and demand was also developed, as well as increased collaboration between industry and academics [22].

Predicaments of TVET in Malaysia

In most countries, TVET is highly valued because it contributes to national growth. This is also true for Malaysia. Because they have access to so much expertise, the country is in desperate need of a large number of highly trained workers. The Malaysian government has set aside a significant amount of money to ensure that TVET is on the right track and can contribute to the country's growth. TVET can assist the government to develop the economy, but several issues need to be improved.

Growing concern about environmental protection and conservation has prompted social and scientific discourse on sustainable development in nearly every facet of life. For the green industry to succeed, workers must be equipped with green skills. However, many graduates, particularly those in the TVET industry, lack the green skills needed in the green economy. This is due to the lack of emphasis on green skills in the TVET curriculum. The types of green skills required by the green industry are still a mystery to many TVET institutions, thus there are not any green skill elements in their curricula [23].

In addition to the green industry, renewable energy is a significant factor in advancing sustainable development. Alternative energy sources such as renewable energy can be used in Malaysia to reduce reliance on fossil fuels. Wind, hydro, and solar are a few of the potential renewable energy sources. To promote renewable energy production in line with government energy policy, the Malaysian Ministry of Energy and Natural Resources (KeTSA) has offered several incentives since 2019. There was a hope that the TVET institution can help ease this situation by fostering the growth of renewable energy entrepreneurs with strong technical skills.

The literature on energy entrepreneur development, on the other hand, found that the TVET electrical entrepreneur faced four hurdles, including financial, technical prices, logistical, and government support [24]. TVET graduates are woefully underprepared to work as electrical entrepreneurs in their home regions. To be more precise, only 12% of the country's TVET institutions are dedicated to WHS [25]. In other words, students in the electrical area are less prepared to start their electrical businesses when they graduate, particularly in the renewable energy sector. Also, graduates with entrepreneurial potential face similar issues when confronting global concerns due to their lack of entrepreneurial expertise, confidence, creativity, and innovation [26].

TVET in Malaysia is also beset by problems linked to the curriculum and its execution, aside from those directly related to sustainable development. Higher learning institutions in Malaysia, such as colleges and universities, provide automotive programs to students who have a particular skill set. Lecturers and syllabus information are determined to be out of date with modern procedures, approaches, and methods [27]. To add insult to injury, students get little or no hands-on practice and learn less useful material because of it. Besides, many students are unable to communicate technical information both within and outside of the company because they have had insufficient exposure to real-life industrial exposure during their course studies [28]. According to [27], businesses and educators are concerned about Malaysian technical and vocational graduates' lack of soft skills. This issue is also one of the most difficult ones for Malaysia's technical and vocational schools to address [12].

Teachers of English in institutions with a focus on skills may lack the knowledge and resources to instruct students in technical communication. It is also possible that they would not have access to industry specialists because of their busy schedules [21]. TVET lecturers have problems juggling their fundamental responsibilities of teaching with their clerical works. As a result of the expanded job scope and limited time allotment, this practice poses a danger to lecturers' professionalism because unrealistic teaching tasks make it difficult for them to prepare for excellent teaching and participate in professional development programs [29]. According to Makki et al. [30], vocational teachers have difficulty attending professional development programs to improve their knowledge, abilities, and professionalism because of a restricted budget and job rotation system.

A global epidemic that began at the end of 2019 is now threatening economies all over the world. The COVID-19 has sickened and killed thousands of people, disrupted education and training, and disturbed learning. Having opted to put in the Movement Control Order (MCO), Malaysia's government has had a significant impact and issues on the country's education system. In contrast to occupational hands-on skills, the use of ICT by TVET students is more beneficial in fostering cognitive learning [31].

Some teachers lack the necessary skills to effectively integrate ICT into the classroom because they preferred traditional teaching methods over those that incorporate ICT [32]. Learning facilities could also be a hindrance to the implementation of online learning in TVET programs. However, according to a study by [33], internet access is the biggest barrier to students at Malaysian polytechnics adopting Massive Open Online Courses (MOOCs).

According to [34] findings, vocational and technical students in Malaysia are more likely to be unemployed if their teachers are less skilled in teaching methods and classroom management, lack relevant industry experience and are uninterested in teaching the given courses. There must be qualified and skilled vocational lecturers or teachers for a successful teaching and learning process in TVET since TVET aims to develop students with technical knowledge and skills to meet the needs of the job market [35]. A lack of qualified teachers in TVET has led to a situation where a lot of teachers are hired straight out of university or college without taking their abilities into account [36].

TVET-based careers and qualifications are still not well-recognized by employers. Due to the extremely fragmented landscape, multiple ministries, and agencies issuing credentials, many employers do not recognize the qualification [37]. The provision of TVET in Malaysia is supervised by numerous ministries, agencies, and organizations, both public and private [38]. As a result, many TVET providers typically operate in silos, failing to take into consideration program offerings across the board, leading to duplication of efforts across universities and institutions, as well as confusion among students and employers. The biggest problem, according to business, is a dearth of quality products and workers with the necessary abilities. Malaysia's present TVET programs are mostly supply-driven, with little focus on matching training to available jobs, even though the system is primarily designed to satisfy observed or expected labor market demands. In addition, the overall financial system does not completely support TVET providers' quality and performance [39].

CONCLUSION

Malaysia's TVET system also has to undergo significant reforms right away because failing to do so could lead to the country becoming globally inept and further falling behind. Malaysia should improve the overall quality of training and expand recruitment in TVET [40]. It is recommended that TVET embed green skills (e.g. problem solving related to environmental pollution, interpretative skills about the environment, environment research skills) into the curriculum. These include skills like data collection, analysis, and green technology exploitation. They also include knowledge about natural resources management and design [41]. According to Paryono [42], the idea of eco-friendly technology should be incorporated into the curriculum together with other teaching-learning processes and regulations.

Green technology is alarmingly absent from Vocational Colleges' curriculum, even though these institutions are among the country's top producers of semi-skilled and skilled individuals for the labor force. The economy and technology are evolving rapidly in the twenty-first century, which has an impact on how people work and live. With regards to green technology, TVET must be able to anticipate and respond appropriately by providing relevant courses, appropriate curriculum, and new teaching-learning methods and assessment methods for students. A vocational college must be able to raise awareness, act as a catalyst for the adoption of green technology, produce a workforce that embraces it, and apply regulatory or monitoring mechanisms to gauge how well the institution is doing in this area [43]. According to a qualitative study conducted by Anusuya and Hashima in the year 2021, all seven participants agreed that Vocational Colleges should incorporate green technology into their curriculum to keep up with and meet market demands.

The rapid advancement of technology is having a dramatic impact on business processes. TVET universities must work closely with industry experts to ensure that graduates produced are in line with industry needs if they are to be prepared for the real world. As a result, they may enter the workforce right away and require very little [1].

TVET institutions must teach technical communication and provide an opportunity for students to practice using the language in real-world scenarios. Thus, opportunities for teamwork, problem-solving, report writing and communication of technical information in an automobile environment must be provided [1]. Higher education institutions, particularly degree programs in technical subjects, must encourage their students' ability to think creatively, adapt to varied working contexts and be self-reliant and resilient in learning to improve graduates' employability [44; 45]. To boost the employability of skill-based graduates, industry-based curricula should give expanded resources and flexibility to adapt to the changing work environment [21].

In Malaysia, TVET is critical in developing the country's economy by supplying skilled people. As a result, the idea that TVET students are treated as second-class citizens must be dispelled [1]. As part of its efforts to prepare for a 20 percent share of RE generation by 2025, the government should also support efforts to grow technical entrepreneurs in the RE sector through TVET institutes or any technical institution that produces highly competent technical entrepreneurs [46]. As part of the twelve Malaysia Plan, academics have encouraged the government to adopt new policies or guidelines for the Technical Education and Vocational Training (TVET) program (12MP). Malaysian Vocational Education and Training Research Institute Director Assoc Prof Dr. Razali Hassan of Universiti Tun Hussein Onn Malaysia (UTHM) emphasized that the development of this policy should emphasize effective teaching and learning methods so that TVET is no longer perceived as alternative education for students.

ACKNOWLEDGEMENT

The authors would like to thank the reviewers for their thoughtful comments and efforts towards improving our manuscript.

REFERENCES

- Ruzita Md. Yusoff, Anas Harun & Ahmad Munzir Zakaria, "TVET in Malaysia: Capabilities and Challenges as Viable Pathway and Educational Attainment." *Journal on Technical and Vocational Education* (JTVE), vol. 5, no. 1, pp. 52-58, 2020.
- [2] Chamadia, S. And Shahid, M., "Skilling for the future: Evaluating post-reform status of "Skilling Pakistan and identifying success factors for TVET improvement in the region." *Journal of Technical Education and Training*, vol. 10, no. 1, pp.1-14
- [3] Marope, P. T. M., Chakroun, B. & Holmes, K. P., "Unleashing the Potential: Transforming Technical and Vocational Education and Training". UNESCO Publishing, 2015.
- [4] Jane, I. O., Raymond, U. & Patrick, S. O. U., "Bridging Skill Gap to Meet Technical, Vocational Education and Training School-Workplace Collaboration in the 21st Century". *International Journal of Vocational Education and Training Research*, vol. 3, no. 1, pp. 7-14, 2017.
- [5] Ministry of Education Malaysia, "Malaysia Education Blueprint 2013-2025," 2013.
- [6] Kaprawi, N., Rasi, R. Z., Spottl, G., Ismail, A. & Razzaly, W., "Malaysian apprenticeship implementation: Issues and challenges towards effective employers' engagement", 2022.
- [7] Hanapi, Z. & Nordin, M. S., "Unemployment Among Malaysia Graduates: Graduates' Attributes, Lecturers' Competency and Quality of Education, Procedia" - Social and Behavioral Sciences, vol. 112, pp. 1056-1063, 2014.
- [8] Zaharah Che Isa & Nurulwahida Azid, "Embracing TVET education: The effectiveness of project-based learning on secondary school students' achievement". *International Journal of Evaluation and Research in Education*, vol.20, no.3, pp. 1072-1079, 2021, https:// 10.11591/ijere. v10i3.21392
- [9] Aizuddin Saari, Mohamad Sattar Rasul, Ruhizan Mohamad Yasin, Rose Amnah Abd Rauf, Zool Hilmi Mohamed Ashari & Diaz Pranita, "Skills Sets for Workforce in the 4th Industrial Revolution: Expectation from Authorities and Industrial Players". *Journal of Technical Education and Training*, vol. 13, no. 2, pp.1-9,2021
- [10] Aring, M, "ASEAN Economic Community 2015: Enhancing competitiveness and employability through skill development. Thailand": International Office,2015
- [11] Malaysia. "The third outline perspective plan 2001-2010. Kuala Lumpur," National Printing Berhad, 2001.
- [12] Danial, J. and Mohamed, S, "Factors influencing the acquisition of employability skills by students of selected technical secondary school in Malaysia". *International Education Studies*, vol. 7, no. 2, pp. 117-124, 2014
- [13] Mohd Jalil Ahmad, Noor Hisham Jalani & Annas Akhmal Hasmori, "TEVT di Malaysia: Cabaran dan Harapan. Seminar Kebangsaan Majlis Dekan-Dekan Pendidikan Awam" 2015. pp. 340-346, 2015.

- [14] Sharifah Kamaliah, Samsilah Roslan, Ab Rahim Bakar and Zeinab Ghiami, "The effect of supervised work experience on the acquisition of employability skills among Malaysian students." *Higher Education, Skills and Work-Based Learning*, vol 8, no 4, pp. 354-364, 2018.
- [15] Zoharah Omar, Krauss, S. E., Rahim, M. S. & Ismi Arif Ismail. "Exploring career success oflate bloomers from the TVET background". *Journal of Education & Training*, vol. 53, no. 7, pp. 603-624, 2017.
- [16] Hanapi, Z., Safarin, M., & Che, R., "Unemployment Problem among Graduates of Technical Field: Competencies of the Graduates and Quality of the Education." Sains Humanika, 2, 53-57, 2014 https://doi.org/10.11113/sh.v2n2.414
- [17] KPM, "Pelan Pembangunan Pendidikan Malaysia: 2013-2025. Kementerian Pendidikan Malaysia, Putrajaya., 2013.
- [18] Tazifuzin Azmi1 & Dani Salleh, "A Review on Tvet Curriculum Practices in Malaysia." *International Journal of Education, Psychology and Counselling.* vol. 40, pp. 35-48, 2021.
- [19] Aminuddin, A. K. "Reformasi dalam TVET: Perubahan masa hadapan," Journal of Edupres, 1(September), pp.336–341,2011
- [20] Hussain, N. H., Ismail, K.M., Nor, N.M., Mulop, N. and Mohamed, Z, "Knowledge expansion in engineering education: engineering technology as an alternative." *Asian Journal of Technology Management*, vol. 8, no. 1, pp. 37-46.
- [21] Viji Ramamuruthy, Dorothy DeWitt & Norlidah Alias, "The need for Technical Communication for 21st Century Learning in TVET Institutions: Perceptions of Industry Experts." *Journal of Technical Education And Training*, 13(1), pp 148-58, 2021.
- [22] Sinar Harian, "RMK12: KPT perkasa pendidikan teknikal, TVET." Retrieved on 28 October 2021 from https://www.sinarharian.com.my/article/164400/BERITA/Nasional/RMK12-KPT-perkasa-pendidikan-teknikal-TVET, 2021.
- [23] Hasim, A.S., Ali, R. and Ismail, K., "Higher TVET educational model as basis for global curriculum: the UniKL experience." *Journal of Modern Education Review*, vol. 6, no. 7, pp. 461-469, 2016.
- [24] Kamin, Y., & Ahmad, A, "How Work-Based Learning in Community Colleges Help Students Work in Industry in Malaysia and Comply to The Standards Required." *Paper Presented at the 10th Asian Academic Society for Vocational Education and Training* (ASSVET) Conference.DOI:10.13140/2.1.4814.0488, 2014.
- [25] Asykin, N., Rasul, M. S. & Othman, N, "Teaching Strategies to Develop Technical Entrepreneurs," International Journal of Innovation, Creativity and Change. www.ijicc.net, vol.7, no.6, pp.179–188, 2019.
- [26] Hasbolah, H., Mamat, S. A., Abdullah, Z. & Sidek, S., "A Review on Cyber Entrepreneurship in Malaysia: Past, Present and Future. Journal Of Critical Reviews," vol. 7, no. 14, pp. 2628–2636, 2020.
- [27] Makki, B.I., Salleh, R., Memon, M.A. and Harun, H, "The relationship between work readiness skills, career self-efficacy and career exploration among engineering graduates: a proposed framework." *Research Journal of Applied Sciences, Engineering and Technology*, vol. 10, no. 9, pp. 1007-1011, 2015.
- [28] Donnell, J., Aller, B., Alley, M., & Kedrowicz, A. "Why industry says that engineering graduates have poor communication skills": What the literature says. ASEE Annual Conference and Exposition, Conference Proceedings. https://pennstate.pure.elsevier.com/en/publications/why-industry-says-that-engineering-graduates-have-poorcommunicat, 2011.
- [29] Abdul-Wahab, S.H., Zakaria, M. A. & Jasmi, M. A. "Transformational of Malaysian's Polytechnic into University College in 2015?": Issues and challenges for Malaysian Technical and Vocational Education. In the Proceedings of the 1 UPI International Conference on TVET, pp.10-11, 2010.
- [30] Malaysia, "Rancangan Malaysia Kesepuluh 2011-2015." Unit Perancang Ekonomi, Jabatan Perdana Menteri, Putrajaya, 2010.
- [31] Yasak, Z., & Alias M., "ICT Integrations in TVET: Is It up to Expectations? Procedia-Social and Behavioral Sciences," 204, 88-97, 2015. https://doi.org/10.1016/j.sbspro.2015.08.120
- [32] Munyi, F. W., Okinda, R., & Wambua, F, "E-Learning Adoption Model in TVET Institutions in Kenya during and Post COVID-19." International Journal of Applied Computer Science, 6, 1-10. https://www.academicinsights.org/ index.php/IJACS/article/view/55, 2021.
- [33] Zulkifli, N., Hamzah, M., & Bashah, N, "Challenges to Teaching and Learning Using MOOC." Creative Education, 11, 197-205, 2020. https://doi.org/10.4236/ce.2020.113014
- [34] Ismail, K., Mohd Nopiah, Z., & Mohd Sattar, R, "Challenges Faced by Vocational Teachers in Public Skills Training Institutions: A Reality in Malaysia." *Journal of Technical Education and-Training (JTET)*, vol. 10, pp. 13-27, 2018, https://doi.org/10.30880/jtet.2018.10.02.002pp
- [35] Mohamad, M. M., Razali, C., & Abd Jalil., "The need of lifelong learning for instructors in vocational training institutions." International Conference on Teaching and Learning in Higher Education, 2009, 2009.
- [36] Ismail, A., & Abiddin, N. Z, "Issues and Challenges of Technical and Vocational Education and Training in Malaysia towards Human Capital Development." *Middle-East Journal of Scientific Research*, vol. 19, pp. 7-11, 2014.
- [37] Affero Ismail & Razali Hassan,"Issues and Challenges of Technical and Vocational Education & Training in Malaysia for Knowledge Worker Driven." *National Conference on Engineering Technology 2013* (NCET 2013), 2013.
- [38] Affero Ismail & Norhasni Zainal Abiddin, "Issues and Challenges of Technical and Vocational Education and Training in Malaysia Towards Human Capital Development." Middle-East J. Sci. Res., 19 (Innovation Challenges in Multidisciplinary Research & Practice), pp. 7-11, 2014.
- [39] Pang, C.L., "Key Reforms in Revitalising Technical and Vocational Education and Training (TVET) in Malaysia." Regional Conference on Human Resource Development Through TVET as a Development Strategy in Asia. Colombo Sri Lanka, 2011.
- [40] Zain, N., Aspah, V., Abdullah, N., & Ebrahimi, M, "Challenges and evolution of higher education in Malaysia." UMRAN-International *Journal of Islamic and Civilizational Studies*, vol. 4, no. 1, pp. 78–87, 2017.

- [41] Sern, L. C., Baharom, N., Foong, L. M. & Nadhrah, W. M. W. H, "Integrating Green Skills into TVET Curricula in Polytechnics Malaysia." *Journal of Technical Education and Training*, 13(3), 15-19, 2021 https:// 10.30880/jtet.2021.13.03.002
- [42] Paryono, "The importance of TVET and its contribution to sustainable development." In AIP Conference Proceedings (Vol. 1887, pp. 1–14), 2017 https://doi.org/10.1063/1.5003559
- [43] Anusuya Kaliappan & Hashima Hamid, "Green Technology: A Must or a Need in TVET Education in Malaysia?" Journal of Technical Education and Training, vol.1, no13, pp. 86-96,2021
- [44] Gartland, C.E. and Smith, C. "Supporting progression to HE: the role of colleges and vocational courses. Education & Training," vol. 60, no. 6, pp. 637-650, 2018.
- [45] Shriberg, M, "Institutional assessment tools for sustainability in higher education: strengths, weaknesses, and implications for practice and theory." Higher Education Policy, vol. 15, pp. 2, pp. 153-167, 2002.
- [46] Harun, G., Sarip, S., Abdul Fatah, A. Y., Kaidi, H. M. & Abd Rahim, N, "Wind, hydro and solar energy challenges for Technical Vocational and Training (TVET) electrical entrepreneur in Malaysia: A review." *Journal of Physics: Conference Series*. Https://10.1088/1742-6596/2053/1/012012, 2021.