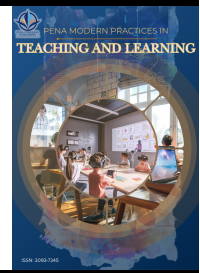




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Assessing Infrastructure, Training Quality, and Public Perception of TVET in Malaysia

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ABSTRACT

Technical and Vocational Education and Training (TVET) plays a vital role in equipping individuals with workforce-ready skills, particularly in science, technology, engineering, and mathematics (STEM)-related fields. Despite its importance, TVET in Malaysia continues to face challenges related to public perception, often being viewed as a less prestigious option compared to academic education. While previous studies have examined individual aspects such as infrastructure, training quality, or societal attitudes, there remains limited empirical evidence on how these factors interact to influence public perception of TVET in Malaysia. This study aims to assess the levels of infrastructure, training quality, and public perception toward TVET, and to examine the relationships among these factors. Using a multi-stage sampling method, data were collected from 500 respondents across various economic sectors. The findings revealed that respondents generally rated TVET infrastructure and training quality positively, and public perception is showing signs of improvement. Correlation analysis showed significant positive relationships between infrastructure, quality, and perception, indicating that improved facilities and effective training contribute to more favorable societal views. However, social stigma and parental influence remain key barriers to broader TVET participation. This study highlights the need for continued investment in TVET infrastructure, strategic promotional efforts, and stronger industry linkages to enhance the status and appeal of TVET pathways in Malaysia.

1. Introduction

Technical and Vocational Education and Training (TVET) is essential for preparing individuals with practical skills that support entry into the workforce. These skills enhance employability, particularly in science, technology, engineering, and mathematics (STEM) disciplines. It encompasses a variety of delivery formats, including apprenticeships, vocational training programs, and experiential learning opportunities [17]. Recognized globally as a key driver of economic progress, TVET contributes significantly to workforce readiness and promotes social inclusion [16]. Implementation approaches

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differ across nations, as each tailors its strategies and allocates resources according to specific economic and societal priorities [18].

In Malaysia, ongoing reforms are focused on enhancing the TVET system to align with the evolving needs of the Fourth Industrial Revolution (IR 4.0) and to boost the nation's global competitiveness. Despite these initiatives, public perception of TVET remains relatively unfavorable. Vocational education is still commonly viewed as less prestigious than traditional academic pathways, which diminishes its attractiveness to students and parents. As in many other countries, TVET in Malaysia is frequently regarded as a secondary option when compared to academic education [13]. This perception challenge is not solely a matter of public opinion but is also influenced by several underlying factors, including insufficient infrastructure [9], and perceived inconsistencies in the quality of TVET programs. Outdated facilities and limited access to modern equipment may hinder the learning experience [9]. Additionally, concerns about the quality and relevance of training such as outdated curricula, lack of qualified instructors, and limited industry engagement further reinforce the notion that TVET is less valuable than academic education.

TVET's importance is widely recognized, and reforms are underway to enhance the system. Yet, a gap remains in understanding its structural components. In particular, the roles of infrastructure and training quality in shaping public perception are not well understood. Therefore, this study aims to address this gap by investigating the current state of infrastructure and quality of TVET, and how they affect public perception in Malaysia. The objectives of the study are:

1. To evaluate the current state of infrastructure, training quality, and public perception regarding TVET.
2. To examine the relationship between infrastructure, training quality, and public perception of TVET.

2. Literature Review

2.1 Infrastructure

Technical and Vocational Education and Training (TVET) infrastructure is a critical factor in delivering high-quality, industry-relevant skills and supporting national economic development. Across various countries, the adequacy and modernization of TVET infrastructure such as workshops, labs, digital tools, and green facilities directly impact the effectiveness, attractiveness, and competitiveness of TVET programs. Many TVET institutions in Malaysia face challenges such as outdated facilities, limited access to modern equipment, and inadequate physical resources. These shortcomings hinder the delivery of practical, hands-on training, which is central to TVET's value proposition [20]. Insufficient and outdated infrastructure makes it difficult for TVET programs to keep pace with current industry standards. As a result, graduates' skills often do not match job market requirements. This contributes to the perception that TVET graduates are less employable or prepared for modern workplaces [9]. Therefore, continued reforms and investment are essential to ensure TVET meets future workforce demands and supports national development.

2.2 Training Quality

Technical and Vocational Education and Training (TVET) in Malaysia is recognized as a key driver for national development, workforce readiness, and economic competitiveness. However, overall quality of TVET and public perception remain significant challenges, affecting enrolment and the sector's reputation. Persistence issues include a curriculum that does not fully align with industry

demands, limited digital infrastructure, and a lack of robust collaboration with industry partners [3]. Enhancing quality in TVET is closely tied to frequent curriculum revisions, strong industry collaboration, and practical, hands-on training [11]. Initiatives like the HETVET framework and the National Dual Training System are designed to close the gap between vocational training and higher education, boost employability, and ensure alignment with industry requirements [10].

2.3 Perception

In Malaysia, Technical and Vocational Education and Training (TVET) is often perceived by society as a pathway reserved for students who are academically less capable [2]. This perception is aligned with the findings of Ismail and Hassan [7], who reported that vocational institutions, especially TVET colleges, are frequently viewed as suitable only for specific groups, such as low achievers or school dropouts. These negative views are further perpetuated by the association of TVET graduates with "3D jobs" dirty, dangerous, and demeaning rather than with stable, high-paying white-collar careers [4].

Critics also highlight concerns about the TVET curriculum, which is often perceived as producing less competent graduates, offering limited opportunities for academic advancement, and involving unstructured, labor-intensive work [6,20]. Such misconceptions have significantly tarnished the reputation of TVET as a viable and valuable educational pathway. However, more recent findings suggest signs of improvement in public perception. For example, while earlier studies emphasized predominantly negative views [1,14], current data from the Ministry of Education indicate that 42.8% of skilled workers in the workforce are TVET graduates, reflecting a growing recognition of the sector's contribution and value. Parents play a crucial role in influencing public perceptions of TVET. It is common for TVET to be associated with students from lower socioeconomic backgrounds or those perceived to have weaker academic performance [8,19].

Compared to conventional academic routes, TVET is often viewed as less prestigious. These views, further reinforced by community attitudes, significantly affect students' decisions regarding their educational pathways. Consequently, such deeply rooted perceptions may discourage students from enrolling in TVET programmes and pose challenges to increasing participation and fostering stronger collaboration between TVET institutions and industry partners.

3. Methods

The sampling procedure comprised three stages: identification of zones within Peninsular and East Malaysia, selection of specific states and districts within each zone using simple random sampling, and selection of individual respondents random members of the public through simple random selection on-site in public areas such as markets, transportation hubs, and community centres within the selected districts. The final sample consisted of 500 respondents, proportionally distributed across Kuala Terengganu (Terengganu), Johor Bahru (Johor), Kota Kinabalu (Sabah), Alor Setar (Kedah), and Serdang (Selangor).

Ethical approval was obtained, and minor revisions were made to the research instrument to ensure clarity and appropriateness. Based on the sample size determination table developed by Krejcie and Morgan [12], a minimum sample size of 384 was required for a population of over 1,000. To enhance representativeness and data robustness, a total of 500 respondents were selected, with 100 participants from each zone.

Data were analyzed using SPSS software. Descriptive statistics including frequencies, percentages, means, and standard deviations were utilized to address the study's objectives. To

explore relationships between variables, Pearson correlation analysis was conducted. Table 1 presents the reliability results of the measurement instruments. Cronbach's alpha values for infrastructure, training quality and public perception ranged from 0.599 to 0.879. These values suggest moderate internal consistency, which is considered acceptable for exploratory research. Nonetheless, future studies may consider refining these scales to improve measurement reliability [5].

Table 1

Reliability test

Variable	Cronbach Alpha
Infrastructure	0.824
Training Quality	0.879
Public Perception	0.599

Table 2

Demographic characteristics of the respondents

Variable	Frequency	Percentage
Gender		
Female	268	53.6%
Male	232	46.4%
Marital Status		
Single	238	47.6%
Married	248	49.6%
Divorced	14	2.8%
Ethnics		
Malay	384	76.8%
Chinese	11	2.2%
Indian	5	1.0%
Bumiputera Sabah and Sarawak	100	20%
Age		
<20 years old	30	6.0%
20-25 years old	140	28.0%
26-30 years old	92	18.4%
31-35 years old	81	16.2%
36-40 years old	117	23.4%
41 years old and above	40	8.0%
Income		
<RM3,000	321	64.2%
RM3,000-RM4,999	91	18.2%
RM5,000-RM6,999	42	8.4%
RM7,000-RM8,999	31	6.2%
RM9,000 and above	15	3.0%
TVET Background		
Yes	155	31.0%
No	345	69.0%

Source: Present data

Table 2 presents the socio-demographic characteristics of the respondents. The sample showed a slightly higher proportion of female participants (53.6%) compared to male participants (46.4%). Regarding marital status, nearly half (47.6%) of the respondents identified as single. In terms of ethnicity, the majority were Malay (76.8%), followed by respondents from Sabah and Sarawak (20.0%), Chinese (2.2%), and Indian (1.0%) backgrounds. The age distribution revealed that the largest group of participants were aged between 20 and 25 years (28.0%), followed by those in the 36–40 age group (23.4%). Other age groups included those aged 26–30 (18.4%), 31–35 (16.2%), 41

and above (8.0%), and those under 20 years of age (6.0%). Regarding monthly income, a majority of respondents (64.2%) reported earning less than RM3,000. Meanwhile, 18.2% earned between RM3,000 and RM4,999; 8.4% earned between RM5,000 and RM6,999; 6.2% earned between RM7,000 and RM8,999; and only 3.0% reported an income of RM9,000 or above. Importantly, 31.0% of respondents indicated they had a background in Technical and Vocational Education and Training (TVET).

3.1 Respondents' Levels of Infrastructure, Training Quality and Public Perception of TVET

Table 3 provides a summary of the descriptive statistics for the variables Infrastructure, Training Quality, and Public Perception, measured using a 5-point Likert scale and categorized into three levels: low, moderate, and high. for infrastructure, most respondents (95.6%) rated this variable as high ($n = 478$), while 4.0% ($n = 20$) rated it as moderate, and only 0.4% ($n = 2$) indicated a low level. The mean score was 4.455 with a standard deviation of 0.518, indicating a strong positive perception of infrastructure among respondents. In the case of Training Quality, 90.4% of respondents ($n = 452$) reported a high level, 9.4% ($n = 47$) rated it as Moderate, and only 0.2% ($n = 1$) perceived it as Low. The mean score was 4.282 ($SD = 0.504$), suggesting a generally high level of satisfaction with training quality. For Public Perception, 80.8% ($n = 404$) of respondents rated it as High, while the remaining 19.2% ($n = 96$) reported a Moderate perception. No respondents were categorized under Low. The mean score for this variable was 4.069, with a standard deviation of 0.492, indicating an overall positive public perception of the TVET system.

Table 3
Summary of descriptive analysis

Variable	Frequency (n)	Percentage (%)	Mean	SD
Infrastructure				
Low	2	0.4	4.455	0.518
Moderate	20	4.0%		
High	478	95.6%		
Training Quality				
Low	1	0.2%	4.282	0.504
Moderate	47	9.4%		
High	452	90.4%		
Perception				
Low	0	0	4.069	0.492
Moderate	96	19.2%		
High	404	80.8%		

Source: Present data

Table 4 presents the Pearson correlation coefficients among the three main constructs: Infrastructure, Training Quality, and Public Perception. All correlations were found to be statistically significant at the 0.01 level (2-tailed). A moderate positive correlation was observed between Infrastructure and Training Quality ($r = 0.497$, $p < 0.01$), suggesting that better infrastructure is associated with improved training quality. Additionally, Infrastructure also showed a moderate positive correlation with Public Perception ($r = 0.371$, $p < 0.01$), indicating that improved infrastructure contributes to more favourable public perceptions of TVET. Similarly, a positive but weaker correlation was found between Training Quality and Public Perception ($r = 0.290$, $p < 0.01$), implying that better training quality is related to slightly more positive public perception. These findings highlight that both infrastructure and training quality play meaningful roles in shaping public perception of TVET. Improved physical and institutional infrastructure, as well as high-quality training

programs, are therefore essential for enhancing the overall image and acceptance of TVET among the public.

Table 4

Pearson correlations

	1	2	3
Infrastructure	1.000		
Training Quality	0.497**	1.000	
Perception	0.371**	0.290**	1.000

**Significance at the 0.05 level (2 tailed).

4. Discussion

The findings of this study indicate that a significant majority of respondents rated both infrastructure and training quality in Malaysia's TVET system highly. Specifically, 95.6% of respondents assessed the infrastructure as high, while 90.4% acknowledged the training quality to be of a high standard. This suggests that recent improvements in physical facilities and the delivery of training within TVET institutions are beginning to enhance positive outcomes.

Previous studies by Shimu and Haolader [14] and Adams *et al.*, [1] reported that TVET was often viewed negatively and associated with weaker academic pathways. In contrast, the present study shows a shift toward more positive perceptions of TVET. Approximately 80.8% of respondents expressed a positive public perception of TVET, indicating growing societal acceptance of vocational education as a credible and valuable educational route.

The Pearson correlation analysis further supports these observations. A moderate positive correlation was found between infrastructure and training quality ($r = 0.497$, $p < 0.01$), confirming that improved facilities and learning environments contribute significantly to better training outcomes. Additionally, infrastructure also showed a positive correlation with public perception ($r = 0.371$, $p < 0.01$), suggesting that modern, well-equipped institutions enhance public confidence and trust in the TVET system.

Interestingly, the correlation between training quality and public perception was weaker ($r = 0.290$, $p < 0.01$). This may indicate that public perception is not solely influenced by the quality of training but also by external factors such as social stigma and limited awareness of career opportunities available to TVET graduates. The weaker correlation between training quality and public perception, compared to infrastructure–perception, may be since infrastructure improvements are more visible and immediately noticeable to the public [15]. Meanwhile, training quality enhancements are less tangible to those without direct experience of the programmes. Changes in training quality often take longer to influence societal views, as their impact is typically mediated through graduate performance and employer feedback over time.

Overall, this study provides empirical evidence that improving infrastructure and training quality plays a vital role in shaping positive public perception of TVET. Therefore, policymakers and TVET institutions should continue to invest in modern facilities and high-quality training programmes, while also conducting public awareness campaigns to challenge outdated views and promote the relevance and value of vocational and technical education.

4.1 Limitations and Directions for Future Research

This study is limited by its reliance on self-reported perceptions and not fully focus on actual training quality or institutional conditions. The sample is also just choosing selected regions in Malaysia, which may limit the generalizability of the findings to other contexts. Additionally, the

study focuses on three key variables infrastructure, training quality, and public perception without accounting for other potential influences such as cultural values, labour market conditions, or government policy implementation.

Therefore, future research could adopt a longitudinal design to assess how improvements in training quality and infrastructure influence public perception over time. Expanding the scope to include multiple regions would provide a broader understanding of the factors shaping TVET perception. Qualitative approaches, such as interviews with employers, policymakers, and graduates, could offer deeper insight into the relationship between training quality and societal attitudes. Further studies might also explore the role of economic incentives, media representation, and policy communication strategies in shaping public opinion toward TVET.

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