

Vocational education quality and students' satisfaction: an empirical analysis in the UAE context

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91

Received 26 December 2024
Revised 19 January 2026
Accepted 20 January 2026

Abstract

Purpose – Higher vocational education has gained popularity over the years. The integration of competence orientation in higher education is a current market demand. The purpose of this study is to measure and manage the quality of vocational education and training (VET) in universities as an antecedent of student satisfaction.

Design/methodology/approach – Literature review highlighted program quality, instructor quality and support service quality as key components of VET quality. Research hypotheses were formulated and tested using empirical data gathered from 112 students enrolled in VET programs in the United Arab Emirates. Partial Least Squares–Structural Equation Modeling and importance–performance analysis were used to process the data.

Findings – Results revealed the moderated mediating role of VET program quality on the relationship between instructor quality and students' overall satisfaction. Instructor quality emerged as the most important quality component in the model.

Research limitations/implications – Future studies can explore other dimensions of VET quality, such as the technological factors, as well as the perceptions of other stakeholders, such as the instructors or the employers.

Originality/value – This study fills a gap in existing literature by exploring the impact of VET quality components on students' satisfaction. The findings assist VET institutions in prioritizing areas for improvement and guide decision-makers to develop strategies and allocate resources. The proposed model sheds light on the complex relationships among VET key success factors. This case is a unique one in the country-specific context.

Keywords Vocational education and training, Technical vocational education and training, United Arab Emirates, VET, TVET, Moderated mediation, Partial Least Square–Structural Equation Modeling, PLS–SEM

Paper type Research paper



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Quality Education for All
Vol. 3 No. 1, 2026
pp. 91–110
Emerald Publishing Limited
2976–9310
DOI 10.1108/QEA-12-2024-0149

1. Introduction

Skill enhancement is crucial for achieving multiple Sustainable Development Goals (SDGs), with a particular emphasis on SDG4, which focuses on improving access to vocational and tertiary education to equip individuals with the skills and knowledge necessary for quality employment (McGrath and Yamada, 2023). Furthermore, the development of skills is integral to achieving SDG8 and SDG9, which aim to promote decent work, economic growth and the advancement of industry, innovation and infrastructure (Barbosa *et al.*, 2020). Vocational education and training (VET) plays a central role in fostering the sustainable development of scientific and environmental education among skilled workers in professional and technological fields (Wang *et al.*, 2019). Higher education institutions are pivotal in driving societal transformation by linking academic knowledge with practical applications (Blaique *et al.*, 2023). VET is widely recognized as an effective approach to meeting the demands of the labor market and the global economic system (Martínez-Carmona *et al.*, 2022), serving as a key driver of socio-economic progress and technological innovation in nations (Ayonmike *et al.*, 2015). VET programs are particularly characterized by their emphasis on technical and hands-on education (Sartori *et al.*, 2022). VET is an inclusive term that covers the study of technologies and associated sciences, as well as the development of practical skills, attitudes, understanding and knowledge applicable to various occupations across different economic and social sectors (Serumu, 2015). Furthermore, VET includes formal, non-formal and informal learning, providing individuals with the essential knowledge and skills needed for the workplace (Dahalan *et al.*, 2024).

In Indonesia, the absence of feasibility studies before establishing new schools has led to challenges for graduates in securing employment because of the theoretical nature of their education, which is less applicable to the job market (Pambudi and Harjanto, 2020). Additionally, 74% of students reported feeling bored during lessons due to an overemphasis on social topics (Pambudi and Harjanto, 2020). Establishing clear regulations for industry involvement is essential to ensuring that vocational graduates develop competencies aligned with labor market needs (Pambudi and Harjanto, 2020).

VET has become increasingly critical, playing a pivotal role in advancing both society and the economy. Additionally, there has been a notable revival of interest in VET within the international policy community (McGrath, 2012), which underscores the importance of VET in equipping individuals with the necessary competencies through training interventions (Beer and Mulder, 2020). Evidence in countries including the Czech Republic, Austria and Germany showed that VET can decrease unemployment rates (Hoidn and Šťastný, 2023). Furthermore, VET is found to foster a culture of lifelong learning through upskilling and reskilling opportunities, ensuring graduates remain competitive in their fields (Kim *et al.*, 2024). Furthermore, VET contributes to industry competitiveness and innovation by cultivating practitioners with valuable knowledge and skills, providing a global advantage (Lund and Karlsen, 2020).

The core principle of VET is to provide learners with a blend of hands-on learning and theoretical understanding (Guo *et al.*, 2024; Hagos Baraki and van Kemenade, 2013). A comparative study found a positive relationship between education and training in improving competence (Alainati *et al.*, 2010). As stated by Anderson (2009), VET is built upon two key productivity principles. Firstly, it focuses on growth, aiming to boost productivity and drive economic expansion. Secondly, it emphasizes developing skills for work to improve employability and generate job prospects. In general, there exists a disparity between the skills desired by employers and those possessed by job seekers. Literature frequently points out a clear mismatch between the qualities of university graduates and the continually changing needs of the job market (Ashour, 2020).

Numerous studies have explored the determinants of quality teaching and learning across various fields, but there has been little focus on VET programs (Wafudu *et al.*, 2022). VET programs aim to bridge this gap by offering industry-specific skills, enhancing individuals' employability and fostering a culture of lifelong learning. These programs provide opportunities for upskilling and reskilling, ensuring that workers stay pertinent in their fields. Moreover, VET plays a critical role in today's dynamic environment by aligning individuals with industry requirements, mitigating unemployment, fostering entrepreneurship and enhancing both individual and business achievements within the ever-changing job market.

VET encompasses programs aimed at acquiring specific knowledge, skills and competencies for occupations, often incorporating work-based elements and resulting in occupation-oriented certifications. VET is often used interchangeably with the term "technical vocational education and training" (TVET). Scholars noted that TVET is lately less preferable and replaced by the more inclusive term "vocational skills development" (Li and Pilz, 2023). TVET was primarily associated with formal education, operating as a distinct, often separate, track within secondary and post-secondary levels. This traditional approach aimed to prepare individuals for specific tradebased occupations, often functioning as an alternative to academic pathways. Today, both scholars and practitioners recognize TVET as encompassing formal and informal forms across secondary and tertiary education (see e.g. Gianni *et al.*, 2024; Khan *et al.*, 2017; Raji, 2019). In the framework of this study, VET is understood primarily at the higher education (university) context, in line with previous research (de Oliveira Silva *et al.*, 2020; Webb *et al.*, 2017).

Ultimately, VET programs play a critical role in bridging the gap between industry demands and workforce capabilities, thereby enhancing employability and aligning individuals with the specific skills and knowledge required across various sectors. However, the cost of higher education, including vocational training, poses a significant challenge in the United Arab Emirates (UAE), especially during economic downturns driven by fluctuations in oil prices (Jose and Chacko, 2017). More importantly, vocational education, both secondary and tertiary, is considered of low quality, "second choice" in the Gulf states and limits the enrollment of students, consisting another critical challenge for policy makers in the UEA. For instance, in Kuwait, Qatar, Saudi Arabia and the UAE, enrollment rates in technical programs at the upper secondary level are below 5% of the total student population (Khan *et al.*, 2017). The structure of VET systems varies widely across countries, influenced by differing objectives and the ways in which VET is integrated into national education and labor market systems (Pilz, 2016). This categorization includes aspects such as government regulation, curriculum design and teaching methodologies.

Fretwell (2003) provides a foundational framework for evaluating VET systems, aiming to assess the comprehensiveness of these systems, guide the collection of relevant data and suggest improvements. Fretwell (2003) distinguishes between internal factors, such as policy and program management, teacher qualifications, stakeholder input and resources, and external factors, such as employment, economic development and poverty reduction. Social and cultural factors also significantly influence educational institutions (Wilkins, 2002). For instance, teaching language plays a significant role in the success of the learning process in the Arab countries (Wilkins, 2002; Raji, 2019). Gender differences are also encountered (Hojeij and Al Marzouqi, 2023). Common beliefs about suitable work for women in the Gulf states discourage females from enrolling in VET programs (Hojeij and Al Marzouqi, 2023; Khan *et al.*, 2017). Furthermore, the understanding of the student-instructor relationship is imbalanced (Ashour, 2020; Wilkins, 2002, 2010). Therefore, there is a notable gap in understanding which specific factors affect VET evaluations and how, particularly in the UAE context. To address this research gap, this study focuses on the internal factors involved

in assessing and evaluating VET programs, including program quality (PQ), instructor quality (IQ), support services and student satisfaction.

Based on the aforementioned research focus, the following two research questions (RQs) are generated:

- RQ1. What are the students' perceptions regarding the quality of their program, instructors and support services?
- RQ2. Is there a relationship between students' satisfaction and the quality of the program, the instructors and support services?

To answer the research questions, pertinent literature is thoroughly reviewed, leading to certain hypotheses.

2. Literature review and hypotheses development

Education is expected to add value for participants by developing their knowledge, abilities and skills (Hagos Baraki and van Kemenade, 2013). The categorization of VET systems in different levels across countries encompasses aspects such as government regulation, curriculum design and teaching methods (Pilz, 2016). Educational institutions are responsible for providing high-quality programs, adequate facilities and comprehensive student support services (Tadle *et al.*, 2021). Challenges include inadequate facilities, insufficient teachers and a lack of industry support (Pambudi and Harjanto, 2020).

2.1 Instructor quality and students' satisfaction

The success of advanced VET largely relies on the quality of instruction provided by educators (Jin and Xu, 2024). An empirical study of 505 students in Brazil revealed that service quality, including the quality of instructors, has a direct and positive relationship with student satisfaction (de Oliveira Silva *et al.*, 2020). VET teachers face moderate challenges in adopting technological innovations, particularly with tech applications, school resources and curriculum design, which can impact student performance (Jarrah *et al.*, 2024).

A debate on competence-based VET is ongoing, emphasizing on future professional development by investing on the ability to learn and adapt to current and future changes (Otieno *et al.*, 2024; Yasdin and Muksins, 2024). It is essential that teachers, trainers and mentors are well-equipped to foster these skills (Beer and Mulder, 2020). Many studies "put the blame on" the instructors and the quality of teacher preparation (see e.g. Dutschke, 2018; Hodge, 2007).

Based on the aforementioned argumentation, the following research hypothesis is posited:

- H1. VET instructor quality is positively and significantly related to overall student satisfaction.

2.2 Mediating role of program quality

A well-designed curriculum tailored to meet identified market demands is fundamental to the success of any VET program (Mouzakitis, 2010). Aligning the education and employment systems promotes standardization, reflecting the quality of stakeholders' involvement in curriculum design (Rageth and Renold, 2020). Historically, VET quality has been measured in two ways: by outcomes, such as graduate employment and employer satisfaction, and by processes, such as time spent on tasks and skills covered. However, while both are linked to quality, neither fully captures it to guide effective policy (Campbell and Panzano, 1985). A

quality program is derived from the measures and indicators set by governments in various countries to ensure standards in the VET program. For instance, the Australian Quality Training Framework (AQTF) uses quality standards and indicators to assess training providers (Smith, 2024). There are three main standards within AQTF, each consisting of specific elements. First, the registered training organization (RTO) delivers high-quality training and assessment consistently across all areas of its operations. Second, the RTO upholds principles of access and equity, striving to optimize outcomes for its clients. Third, the organization's management systems adapt to the needs of clients, staff, stakeholders and the operating environment. Several challenges hinder the achievement of quality VET programs in Nigerian tertiary institutions, including inadequate facilities, insufficient funding, ineffective teaching methods used by instructors and inadequate assessment of students' competencies (Ayonmike et al., 2015).

A recent study in the UAE revealed that TVET students, despite facing academic and cultural challenges, have an overall positive educational experience. They believe that VET enhances their future prospects, whether in their careers or further education (Hojeij and Al Marzouqi, 2023). The effectiveness of a program, reliant on a robust VET curriculum, can be evaluated based on, first, the level of proficiency in job-specific skills that employers require from employees, second, the effectiveness of course delivery in equipping students to tackle new challenges, and, finally, the extent to which learners are prepared for continuous lifelong learning (Mouzakitis, 2010). The scores are determined by combining expert opinions on program quality with statistical indicators that reflect the strength of a school's faculty, research output and student performance at entry and graduation (Lynch and Kirpal, 2011). This study understands that student evaluations and satisfaction regarding program quality should also be considered. Hence, it is logical to anticipate that improvements in program quality will correlate with increased student engagement and satisfaction (Skrocki et al., 2024).

Based on the aforementioned argumentation, a second research hypothesis is posited:

- H2. VET program quality mediates the relationship between instructor quality and overall student satisfaction.

2.3 The moderating role of support service quality

Service quality is usually determined through five core dimensions: tangibles, reliability, responsiveness, assurance and empathy (Cronin and Taylor, 1992; Guo et al., 2024; Kataria and Rajput, 2025). The findings of a questionnaire survey in Malaysia revealed that service quality has a significant and direct effect on student satisfaction (Hassan and Shamsudin, 2019). Another empirical study revealed a correlation between teachers' use of technology, their participation in training programs, the availability of technical resources and how well these align with the mission and vision of technical and vocational institutions (Owais et al., 2020). Challenges in implementing VET in Saudi Arabia include a lack of encouragement and support from managers and supervisors, the absence of incentives, insufficient accountability for improving transfer environments and limited authority to apply training knowledge in the workplace. Maimane (2016) stressed that student support services, if coordinated effectively, could contribute immensely to students' academic achievement and bigger opportunities.

Based on the aforementioned argumentation, a second research hypothesis is posited:

- H3. VET support service quality moderates the relationship between instructor quality and program quality.

3. Methodology

To test the research hypotheses, a survey was designed and the insights of university students into their level of satisfaction with vocational education in terms of program, instructor and support service quality were gathered.

3.1 Questionnaire development

The questionnaire assessing VET student satisfaction comprised four constructs: PQ, IQ, support service quality (SSQ) and overall students' satisfaction (OSS). First, an item pool was created to allow content and face validity testing by certain VET and survey design experts (Zaichkowsky, 1985). Only those items were retained that produced a high level of consensus. The items on instructor quality and program quality were drawn from the studies of Ayonmike *et al.* (2015), Coates (2009), Dutschke (2018) and Wang *et al.* (2019). The items on support service quality were drawn from the studies of Dutschke (2018), Maimane (2016) and Munyaradzi and Addae (2019). The items on students' overall satisfaction were drawn from the studies of Ibrahim *et al.* (2014) and Wang *et al.* (2019). A five-point Likert-scale was used for all items listed in the Appendix.

3.2 Data collection

Data collection was carried out in collaboration with a university offering vocational education and training programs in the UAE. After establishing communication with the university, permission was granted to conduct the survey. The purpose of the study was explained to a representative of the university and the finalized questionnaire was subsequently circulated to a targeted group of 150 students in November 2024. A five-point Likert scale was used. By the end of the data collection period, 123 responses were received, achieving a response rate of 82%. Of these, 11 responses were discarded due to missing values. Consequently, the final data set included 112 valid responses for analysis. A G*Power analysis tested whether the sample was sufficiently large (Cohen, 1988; Mayr *et al.*, 2007). Assuming an effect size of 0.5, a significance level of 5% and statistical power of 80%, the statistical software required 45 participants to test the proposed model. Thus, sample size adequacy was confirmed. Furthermore, the use of SmartPLS is considered appropriate when sample size is relatively small and the normality assumption can be violated (Hair *et al.*, 2011). Also, the sample size rule of thumb in PLS-SEM is met, as the minimum sample size is equal to ten times the largest number of structural paths directed at a particular latent construct in the structural model, i.e. 20 ($= 10 \times 2$) in this study (Hair *et al.*, 2011).

3.3 Methods and tools

An initial examination of the responses focused on assessing the external and construct validities, as well as the reliability of the study (Wang *et al.*, 2019). External validity was evaluated and confirmatory composite analysis was performed to scrutinize the structural validity of the measure. Partial Least Squares–Structural Equation Modeling (PLS-SEM) approach was used to analyze the data, as it is a statistical method appropriate for models involving a number of interrelated constructs (Hair *et al.*, 2022). The PLS algorithm was run to assess convergent validity and reliability, and the bootstrapping technique was employed to estimate path coefficients and significance levels and to support or reject the research hypotheses posed (Ringle *et al.*, 2024). Further to the PLS-SEM method, an importance–performance analysis (IPA) was used on the collected data. IPA is considered a useful tool in examining stakeholder satisfaction and management strategies. This technique can unveil hidden gaps and prioritize resources (Sever, 2015).

4. Results

4.1 Measurement reliability and validity

Before testing the research hypotheses, it is imperative to confirm the reliability and the validity of the measurement model. To assess reliability, Cronbach's alpha and composite reliability (CR) estimates were used. If the values of Cronbach's alpha and CR exceed 0.7, the reliability is established (Nunnally, 1978). As displayed in Table 1, Cronbach's alpha and CR values for all constructs in the model are well above the threshold of 0.7, confirming the effectiveness of the measurement model (Hair *et al.*, 2022: p. 129). The average variance extracted (AVE) values for all the latent factors are above the 0.50 threshold, demonstrating high convergent validity (see Table 1).

Next, discriminant validity was tested based on the Fornell-Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio. The Fornell–Larcker criterion is fit for reflective multi-item constructs, as in the model of this study, and is based on the measurement of the square root of each construct's average variance extracted (AVE) and its comparison to its correlations with other constructs (Fornell and Larcker, 1981; Hair *et al.*, 2022: 121). In Table 2, the square roots of constructs' AVE that are included in the diagonal values are larger than the respective non-diagonal elements that represent the correlations between the latent variables and, hence, discriminant validity is established (Hair *et al.*, 2017: 117).

Henseler *et al.* (2015) stressed that the Fornell–Larcker criterion performs very poorly when indicator loadings of the constructs under consideration differ only slightly, as is usually the case in empirical applications of PLS-SEM, and introduced the HTMT ratio to accurately evaluate discriminant validity (Hair *et al.*, 2022: 121–122). The HTMT values are listed in Table 3.

All HTMT values are found below the more conservative threshold of 0.85, thereby providing clear evidence for the constructs' discriminant validity.

4.2 Hypotheses testing

After validating the measurement model, the structural model is tested using the bootstrapping method with 5000 subsamples (Figure 1). To assess the model's explanatory

Table 1. Construct validity and reliability testing

Main variables	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Instructor quality	0.867	0.898	0.558
Program quality	0.883	0.911	0.632
Support service quality	0.778	0.848	0.529
Overall student satisfaction	0.806	0.866	0.563

Table 2. Fornell–Larcker criterion

Main variables	Instructor quality	Overall satisfaction	Program quality	Support service quality
Instructor quality	0.747			
Overall satisfaction	0.564	0.751		
Program quality	0.567	0.497	0.795	
Support service quality	0.519	0.408	0.479	0.728

Table 3. Heterotrait–monotrait ratio (HTMT) matrix

Main variables	Instructor quality	Overall satisfaction	Program quality	Support service quality
Overall satisfaction	0.666			
Program quality	0.639	0.579		
Support service quality	0.636	0.514	0.567	
Support service quality × instructor quality	0.101	0.059	0.230	0.063

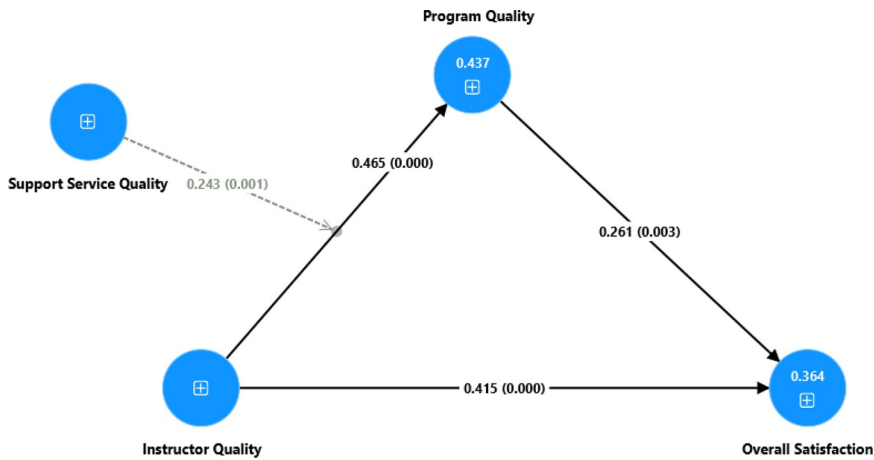


Figure 1. Moderated mediation – bootstrapping results

power, the values of the determination coefficient (R^2) are examined. In general, R-square values of 0.75 are substantial, values around 0.50 are moderate, while values around 0.25 are considered weak (Hair *et al.*, 2011). The R-square values of the dependent latent variables in the model are 0.437 for program quality and 0.364 for the overall student satisfaction, both moderate R-square values. Then, the effect size (f^2) is examined, as it regulates the strength of the change described by the independent variables. An effect size of 0.02 is considered as minor, 0.15 as mediocre and 0.35 as high (Cohen *et al.*, 2013). As depicted in Table 4, the highest effect size was from IQ on PQ ($f^2 = 0.278$). In addition, the impact of IQ on OSS is considerable.

Next, blindfolding analysis (“PLSpredict” in SmartPLS 4) examines the predictive relevance of the structural model. Indeed, Q-square values of the endogenous constructs – PQ and OSS – were well above zero (0.372 and 0.294, respectively), indicating that the model has significant predictive relevance (Hair *et al.*, 2011).

4.3 Mediation analysis

This study hypothesized that IQ impacts OSS through the PQ. This relationship is illustrated via a mediation model. SmartPLS bootstrapping was used to test the mediating effect of program quality on the relationship between the instructor quality and the overall student

Table 4. Effect size (f-square)Quality Education
for All

Paths	f-square
Instructor quality → overall satisfaction	0.184
Instructor quality → program quality	0.278
Program quality → overall satisfaction	0.073
Support service quality → program quality	0.078
Support service quality × instructor quality → program quality	0.122

99

satisfaction. The total indirect effect of instructor quality on the overall student satisfaction was estimated by multiplying the loadings of the path: IQ → PQ → OSS ($0.465 \times 0.261 = 0.121$). Both the direct and indirect effects are significant, since none of the 95% confidence intervals included zero. Thus, the mediation hypothesis is supported (Hair *et al.*, 2022: pp. 234–235). As shown in Table 5, the direct and indirect effects are both positive, resulting in partial complementary mediation. This type of mediation suggests the possible existence of additional factors, beyond those identified in this study that can explain the effect of IQ on OSS. Relevant studies have identified such factors, including conceptions of vocational education (Guo *et al.*, 2024), student engagement and learning outcomes (Iqbal *et al.*, 2026) and competence acquisition, learning and infrastructure (Yan *et al.*, 2025).

4.4 Moderation analysis

As indicated in Table 6, SSQ moderates the relationship between IQ and PQ with a path coefficient of 0.243.

4.5 Importance–performance map analysis

The Importance–Performance (IP) map can be created at both the construct and the item level. The secondary (item level) assessment is meaningful in formative measurement models. As the items in this model are reflective, a construct-level IPA is sufficient. In general, the variables located in the lower right quadrant of the map perform poorly but are very important to the target construct, so a high priority for performance improvement is expected. Conversely, less important variables are given a lower priority for investment or resource allocation (Hair *et al.*, 2022: 274–276; Ringle and Sarstedt, 2016).

In the proposed model, the IP map (Figure 2) shows that IQ is particularly important for explaining the target construct, which is the OSS and, hence, it is prevalent compared to PQ or SSQ and should be prioritized when decisions are to be made. To facilitate orientation, a vertical and a horizontal line are added to the map representing the mean importance and performance values, respectively (Figure 3). The importance and performance values for each quality component are listed in Table 7.

Table 5. Mediation analysis

Path	Direct effect	95% Confidence interval (with bias correction)	Significance ($p < 0.05$)?	Indirect effect	95% Confidence interval (with bias correction)	Significance ($p < 0.05$)?
IQ → OS	0.415	[0.255, 0.546]	Yes	0.121	[0.055, 0.225]	Yes

Table 6. Confidence intervals bias corrected

Paths	Original sample (O)	Sample mean (M)	Bias	5%	95%
Instructor quality → overall satisfaction	0.415	0.421	0.006	0.255	0.546
Instructor quality → program quality	0.465	0.467	0.002	0.297	0.623
Program quality → overall satisfaction	0.261	0.268	0.006	0.112	0.400
Service quality → program quality	0.245	0.257	0.012	0.073	0.385
Service quality × instructor quality → program quality	0.243	0.226	-0.016	0.128	0.366

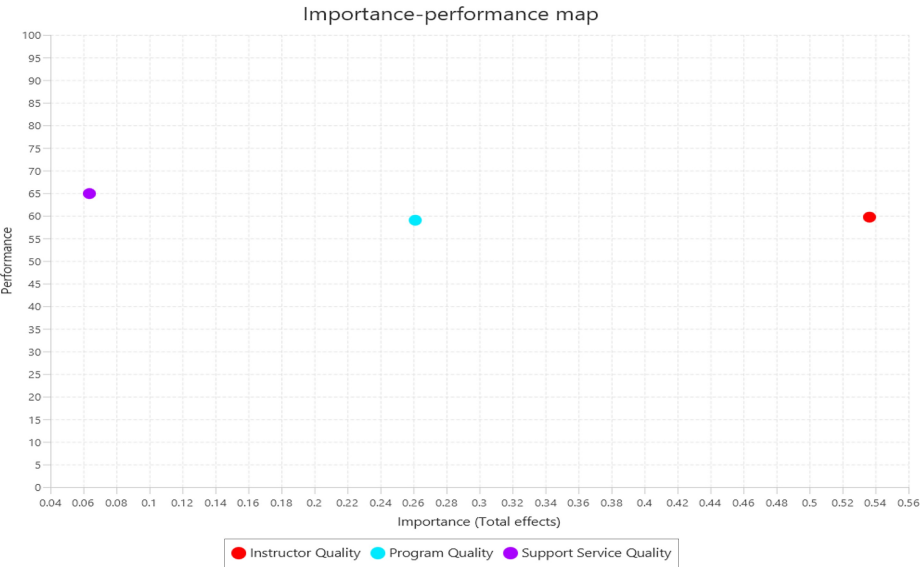


Figure 2. Importance–performance map – construct level

5. Discussion and research implications

The hypotheses were tested based on measures of quality in terms of VET curricula (programs), instructors and support services, as well as the overall students’ satisfaction. First research hypothesis is strongly supported as the path linking instructor quality with overall student satisfaction is statistically significant (0.415, *p*-value < 0.001) and the R-square value of the dependent variable (student satisfaction) is 0.364. Second research hypothesis is strongly supported as the path linking instructor quality with program quality is statistically significant (0.465, *p*-value < 0.001), and the R-square value of the dependent variable (program quality) is 0.437. Also, the path linking program quality with student overall satisfaction is statistically significant (0.261, *p*-value < 0.01), and the R-square value of the dependent variable (overall student satisfaction) is 0.364.

The findings emphasize the importance of educators and their influence on student satisfaction in line with prior research. This association has been investigated further via the

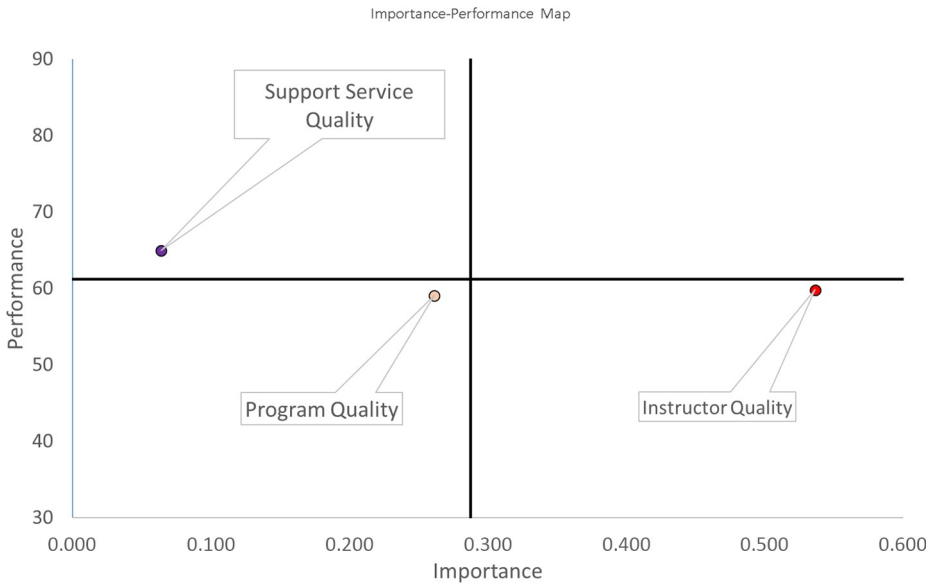


Figure 3. Importance–performance map with IP means axes

Table 7. Importance and performance values

Variables	Importance	Performance
Instructor quality	0.537	59,701
Program quality	0.261	59,017
Support service quality	0.064	64,912
Mean value	0.287	61,210

second research hypothesis, which recognized the mediating role of program quality. The moderation of the relationship between IQ and PQ by SSQ is statistically significant (0.243, p -value < 0.01). Therefore, the third research hypothesis is accepted. IPA has underscored Instructor quality as the most important of the quality dimensions in the model. This finding supports the structural model as it further stresses the dependence of student satisfaction on the quality of the educator and guides decision makers to shift resources to this particular quality component.

5.1 Theoretical implications

The moderated mediation model proposed and confirmed in this study is consistent with recent findings by [Huang et al. \(2024\)](#), who identified the moderating role of the social environment in the relationship between theoretical or practical entrepreneurship education and the entrepreneurial intentions of higher vocational students. Notably, despite the different independent variables (i.e. intention vs satisfaction) in the two models, complex relationships were confirmed in both cases. The constructs “educational content” and “social

environment” that are used in the model of [Huang et al. \(2024\)](#) bear similar meanings to the instructor and support service quality components of the model proposed in this study. Partial mediation findings imply the existence of other mediators. In a similar line of thought, [Guo et al. \(2024\)](#) underscored the mediating effect of VET conceptions (students’ perceptions and attitudes regarding VET policies and their impact on career development) on the relationship between VET service performance and satisfaction with learning achievements. Furthermore, [de Oliveira Silva et al. \(2020\)](#) identified service quality, learning outcomes, employability, image and perceived value as critical antecedents of students’ satisfaction.

5.2 Practical implications

Research suggests that vocational education is often undervalued, perceived as having low social status in many countries ([Oeben and Klumpp, 2021](#)). [Al-Saaideh \(2016\)](#) identified five key reasons why students may avoid VET: personal traits such as abilities and interests, social influences from family and peers, educational issues with school resources and curricula, economic factors, such as financial constraints and job market conditions, and vocational concerns related to job nature, working conditions and security. Nevertheless, the VET field is growing, and there is ample opportunity for future research to foster theoretical understanding through the development and testing of new hypotheses ([Caves et al., 2021](#)). In this context, the conceptual and structural models of this study shed light on the partly uncharted VET territory, adding practical knowledge, offering actionable insights and recommendations to enhance the likelihood of successful implementation, as prior research recommends ([Caves et al., 2021](#)).

Regarding instructor quality, shifting VET focus to preparing induction programs for entry-level professionals can make educational institutions more extroverted and VET processes more effective ([Hawse and Wood, 2019](#)). Furthermore, mentors can support students in achieving their academic and professional goals, by improving their theoretical understanding, recommending efficient study practices and shedding light on career paths ([Ikram et al., 2026](#)). It is of ultimate importance in vocational education to recruit instructors who combine academic background and professional expertise. Selection criteria should weigh and balance knowledge, skills and abilities differently than in general (academic) education. VET reliance on instructors with occupational skills is much higher ([Yasak and Alias, 2015](#); [Raji, 2019](#)).

In an effort to reduce its dependence on oil and generate a service-oriented economy, the UAE has fostered a culture of business and governmental excellence ([Lasrado, 2018](#)). In this context, organizations and individuals are continuously evaluated and recognized for their achievements ([Baig et al., 2025](#)). Business excellence awards emphasize the importance of people in every aspect of organizational activities, including employee training and education, motivation, rewards and recognition ([Lasrado and Uzbeck, 2017](#)). Instructors’ professional development fosters transformative vocational education ([Aldabbas and Alzoukani, 2025](#)). Thus, vocational education can benefit from this climate of excellence, where instructors can thrive in an incentive- and human-centered environment.

Additionally, programs that introduce instructors smoothly to VET requirements are necessary. Teachers must recognize and address the unique challenges of vocational education. In this context, mentoring and coaching can emphasize essential learning and knowledge management practices for instructors ([Runhaar et al., 2024](#)). From a strategic perspective, resources should be allocated toward systematic recruitment to ensure the timely implementation of induction programs. Furthermore, appropriate candidates must be attracted and retained through motivation and reward policies and practices, following the abilities-motivation-opportunities theory of human resource management ([Benítez-Núñez et al., 2024](#); [Runhaar et al., 2024](#)).

6. Conclusion

This study contributes to the extant literature by leveraging VET at higher levels of proficiency and value addition to meet market and societal needs. The proposed model measures multiple dimensions of VET quality and their impact on students' satisfaction. The results revealed the moderated mediating role of VET program quality in the relationship between instructor quality and students' overall satisfaction. Instructor quality emerged as the most important component of quality in the model. These findings help VET institutions prioritize areas for improvement and guide policymakers to develop strategies and allocate resources.

While this study is unique in clarifying certain mechanisms among VET's key success factors, it is important to recognize that the sample size and study context may limit the generalizability of the findings. Although the selected statistical method tackled the low number of responses adequately, a larger sample size from different universities would increase the model's validity and reliability. Furthermore, future studies can expand the geographical scope and test the model in different cultural and economic contexts.

6.1 Societal and stakeholder perspectives

The proposed model operationalized three factors that students can assess: program, instructor and support services. It excluded factors that are difficult for students to assess directly, such as government regulations and industry support. Thus, future studies should address employers' perceptions of VET graduates and the extent to which those graduates can handle day-to-day operations. In other words, these studies should evaluate employers' satisfaction with regard to the VET graduates' gained. Furthermore, the findings of this study could inform a wider survey and expand the proposed scale and model to examine critical components of vocational education and increase its contribution to stakeholders, such as instructors, administrative staff and families. Different perspectives from other educational stakeholders would provide valuable insights into institutional branding, peer influence and family expectations.

6.2 Future research directions

Technological advancements are changing the way organizations and their employees perform their tasks. However, there is limited empirical research on how these changes affect job characteristics. This makes it difficult to determine the resulting changes in work demands and the necessity for continuous vocational education and training (Beer and Mulder, 2020). An empirical study of 74 teachers from three countries (Poland, Italy and Germany) indicates a positive attitude toward computer technology and e-learning (Hofmeister and Pilz, 2020). While VET and computer-based learning primarily benefit commercial interests, they also contribute to societal progress in the UAE by offering quality education, reducing unemployment and promoting lifelong learning (Raji, 2019).

Incorporating smart technologies and mobile devices provides timely solutions in dynamic educational environments. The adoption of innovative teaching approaches can equip students with technical skills and advanced competencies, easing their transition from education to the workforce and improving their employability (AlSuwaidi, 2014). The integration of technology and the cultivation of creativity, independence, communication skills, knowledge and understanding are essential qualities for enhancing the qualifications of the employed workforce (Mouzakitis, 2010). This integration is now more relevant than ever as Industry 4.0 technologies diffuse into all sectors and business activities, including education.

VET programs must adapt to technological progress by equipping students with the advanced digitalization skills (IoT, big data, blockchain, robotics, etc.) crucial for Industry 4.0. Technical and vocational educators should adopt innovative teaching methods and expand support for apprenticeship programs with various employers to address the changing demands of the workforce (Grobelaar and Verma, 2020). Future studies may draw on the proposed model and investigate the impact of technology quality on overall student satisfaction.

Acknowledgements

The authors would like to thank the Editor and the anonymous reviewers for their constructive comments and valuable suggestions. This research received no external funding.

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Appendix. Evaluating the vocational education and training (VET) success factors: students’ satisfaction survey

• Program quality:

The VET program I am attending...

- (1) Is well-structured.
- (2) Adequately prepares me for real-world work settings.
- (3) Adequately prepares me for entrepreneurship.
- (4) Has a good balance of theory and practical application.
- (5) Is well-aligned with the needs of the current job market.
- (6) Provided some challenges that enhanced my learning.

• Instructor quality:

To what extent...

- (1) Did the instructor demonstrate a good understanding of real-world applications and challenges within the vocational field?
- (2) Did the instructor foster a collaborative and hands-on learning environment conducive to vocational skills development?

- (3) Was the instructor effective in providing practical guidance and mentorship to enhance the acquisition of vocational skills?
 - (4) Was the instructor able to integrate technology and modern tools relevant to the vocational field into the teaching process?
 - (5) Did the instructor guide you in the learning and provide sensitive, ongoing and encouraging support?
 - (6) Are class activities clear and well organized?
 - (7) Are class activities stimulating and assisting your comprehension?
 - (8) Are class activities encouraged?
 - (9) Do you enjoy learning and participating in this environment?
- Support service quality
 - (1) The induction program for new students is effective.
 - (2) The textbook and learning materials are readily available.
 - (3) The career guidance provided during my VET was helpful.
 - (4) Internship opportunities related to VET are readily available.
 - (5) VET institutions are effective in fostering teamwork and collaboration.
 - (6) I feel safe in the institution.
 - (7) I feel supported by the staff and administration of the institution.
 - Overall satisfaction
 - (1) Satisfaction toward overall quality of training and service.
 - (2) Satisfied with the decision of selecting this institute.
 - (3) Meaningful and exciting experience of studying at this institute.
 - (4) Intention to pursue further studies at this institute.
 - (5) Recommend this institute to family or friends.

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