

Sustaining Technical and Vocational Education Training Based on Competency and Creativity Instructors

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Abstract

Based on competency and creativity, this quantitative study investigates the question of how the Training Institute of the Human Resources Department (ILJTM) instructors are implementing the sustainability of Technical and Vocational Education Training (TVET). The purpose of this study is to ascertain whether the implementation of TVET sustainability is influenced by the creativity and competency of the teaching staff. Additionally, this study ascertains whether or not creativity mediates the relationship between competency and TVET sustainability implementation. 444 members of the teaching staff at ILJTM participated in the survey. The data analysis methods used in this study include Structural Equation Modeling (SEM) and Pearson's Correlation Analysis. The study's findings demonstrate that all of the variable means—competence = 4.27, creativity = 4.10, and TVET sustainability = 4.35—are at a high level. The use of TVET sustainability is associated with a substantial and positive association at a medium level for competence ($r=0.64$, $p<0.05$) and a high level for creativity ($r=0.22$, $p<0.05$), according to the results of the Pearson Correlation study. Concurrently, the SEM path's regression analysis reveals that, with β values of $\beta=0.23$ and $\beta=0.37$, respectively, competence and creativity have a substantial impact on the implementation of TVET sustainability. Competence was found to be a significant predictor of originality in the SEM path regression analysis, with a β value of $\beta=0.36$. Next, it is discovered that there is a partial mediator effect in the relationship between competency and the implementation of TVET sustainability due to the influence of the mediator, which is creativity. Therefore, enhancements are required in the areas of training infrastructure, curriculum, industry linkages, teacher competence, and training quality assurance in order to raise the effectiveness of TVET's sustainability implementation.

Keywords: Sustainability of TVET, Competence, Creativity and Instructors

Introduction

At the 57th United Nations General Assembly, in December 2002, in South Africa, the Decade for Education Sustainable Development (ESD) was officially launched, introducing the idea of sustainability in all facets of learning (UNESCO, 2005). Global attempts to modify educational curricula to incorporate sustainability principles into vocational topics will be mobilized at all educational levels (Elias, 2006). Both Combes (2005) and Gadotti (2008) concurred that in order for vocational training institutions to fulfill their mandates and support sustainable learning for sustainable development, they must be able to support sustainability. (Kevany, 2007; Kaprawi et al., 2009; Azroai, 2010; and Minghat, 2012) The

primary objective of this concept of sustainability is to enhance the development of community life, particularly for students and instructors to have knowledge, skills, and noble values that support sustainable, competitive behavior and have a better quality of life.

In order to execute sustainability programs in line with UNESCO's guidelines, Malaysia's TVET system is currently undergoing frequent adjustments. This is a standard procedure that the Malaysian Ministry of Education (KPM) now uses. The objective is to generate inventive, creative, and competitive workers by providing a highly skilled and flexible workforce (KPM, 2012). In order to support Malaysia's transformation ambition into a high-income nation, TVET transformation aims to re-engineer the current Technical and Vocational Education Training (TVET) institutional system's framework until a new TVET system is constructed (EPU, 2015). The Education Development Plan (PPPM) 2013–2025 has been implemented in order to provide an educational framework for the purpose of achieving the process of the education system's transformation to a more effective and efficient higher level (KPM, 2014). The development of a nation that is capable of facing challenges and engaging in critical thinking in the context of globalization will be impacted by the increase in human capital achieved through the transformation of teaching, the restructuring of the TVET system, the application of various initiatives, and the culture of the TVET organization (KPM, 2014). With an emphasis on mainstreaming TVET institutions to become sustainable global competitors and meet the objectives of sustainable educational development, the Ministry of Education is committed to transforming the educational system towards sustainability in order to ensure that the PPPM 2013–2025 can be accomplished.

Research Background

It is common to bring up the subject of TVET instructors' qualifications and abilities. The instructor's experience in the relevant area makes up part of their competence, however there is a competency gap with modern technologies. It is extremely constrained, and the lecturer is not as knowledgeable about the newest technologies. Determining the competence gap of TVET instructors is further complicated by the lack of a comprehensive centralized instructor data profile system (EPU, 2015). Analyzing present and future expertise needs is crucial to ensuring that TVET helps implement sustainable education development to human resource development and reduces the competence gap between the academic environment and industry needs (Ahmad Rizal et al., 2008; Kim Peng et al., 2020). To eliminate the competence gap and disparity in expertise, there is a need for significant involvement from all relevant stakeholders, including the government, public sector, private sector, and others (Hart, 2018). Employees and organizations alike should be aware of and prepared for the shift to demands for labor efficiency (Hamdani & Ramdhani, 2019). Closing the competency gap is crucial because it will enable workers to receive additional training.

Nor Hayati Ramlan, Zuraidah Abdullah, and Sufean Hussin (2017) state that training plays a crucial and varying role in determining whether a TVET organization succeeds or fails. It enables educators to keep up with the rapid advancements in technology while also gaining the skills needed to enhance and preserve the caliber of the teaching and learning processes (Enke et al., 2018; M'mboga Akala, 2021). Rapid technological advancement will render some talents outdated and generate new ones that will be in higher demand (Sirotová, 2016; Jailani, et al. 2017; Norhayati, 2018). Thus, the best way to help competent workers is to have more adaptable educational programs that can adjust to the demands of a changing job market. It will then make sure the TVET program stays current. The need for restructuring and a move from traditional to more focused on work organization and more work-related content must be included

in a more flexible TVET curriculum with a wider skill base (Jailani, 2017). Plans for Technical and Vocational Education and Training (TVET) must take the needs of the labor market into account (KPM, 2014).

The graduates' acceptance of their instruction and the instructors' skill level both affect the caliber of the graduates that are produced. The caliber of students generated is influenced by how well they were trained (Norhayati, 2018). According to Suleiman et al. (2015), current educational policies are still unable to generate human capital that is genuinely dynamic for the demands of stakeholders. Insufficient training for instructors to be competent in the workplace is another factor contributing to this issue (Peculea, 2015; Glass & Metternich, 2020). The goal of the Lifelong Learning Seminar resolution is to enhance lecturers' proficiency in the teaching domain through ongoing professional development. It will be able to offer the most pertinent training and further improve students' marketability with the skills training given (Ismail & Hassan, 2013; EPU, 2015; Mamat et al., 2019). In addition to the findings of a study conducted in 2010 by Wan Kamaruddin & Ibrahim, which showed that lecturers in higher education institutions must constantly enhance their knowledge and get ongoing training in order to raise their level of skill competency in keeping with the quickly advancing field of technology. For lecturers to be considered competent, they must provide their students with the most recent information and skills (Jailani, 2017; Norhayati, 2018; Kim Peng et al., 2020).

Some previous researchers and research studies have also frequently brought up the subject of creativity among TVET instructors, casting doubt on their capacity to deal with problems and obstacles in the context of teaching and learning. Among these are the reasons why teachers communicate teaching and learning (PdP) in less relevant ways because they employ unsustainable resources that they are unable to scientifically explain (A. Ismail & Hassan, 2013; Paryono, 2017). Because of this, instructors are unable to put the Teaching and Learning (PdP) approach into practice when they are trying to find a workable solution. Because TVET prioritizes practicing sustainable development above all else, instructors should implement sustainable policies and practices (Albert, 2006; Minghat & Yasin, 2010). The first step to creating a creative learning environment is for instructors to model creative teaching by encouraging students to engage in activities they find engaging (Amabile, 1983; Morais & Azevedo, 2011; Takala & Korhonen-Yrjänheikki, 2019). When instructors with strong creative abilities are able to translate Educational Sustainability Development (ESD) into the methods and approaches used, the elements of Sustainable Education or ESD can be oriented in the TVET curriculum involving students, instructors, administrators, and policy makers (Šlaus & Jacobs, 2011; Takala & Korhonen-Yrjänheikki, 2019; Mróz & Ocotkiewicz, 2021). The same situation can be found in Malaysia, where TVET practitioners have taken several steps to introduce the concept of ESD into TVET institutions, but information about sustainability is still lacking and cannot be fully implemented (KPM, 2014; Zaki, 2014). Therefore, more research is required to fully understand how to implement the ESD curriculum, with a focus on TVET instructors' use of creativity in the classroom. The writings and studies made about the creativity of TVET instructors in achieving the ESD goals are still comparatively scarce and do not particularly address the teaching creativity practices of TVET instructors in this nation, according to a search and reading of the literature and surveys.

Problem Statement

The primary focus of the concerns in this study is on challenges connected to the implementation of PLTV sustainability among ILJTM instructors, which is in line with the rationale and explanation provided in

the study's background section. We'll talk in-depth about how PLTV sustainability is being implemented at ILJTM. This is due to the discovery that PLTV teachers are still implementing PLTV sustainability at a low level (Ahmad Zainal, 2019). Accordingly, previous research has indicated that the level of PLTV sustainability implementation in skill training institutions is low to medium, particularly when considering the following: i) curriculum design that is not sustainable; ii) training infrastructure that is unable to support the development of sustainable education; iii) PLTV instructors lack industrial relations; iv) staff development planning that is incomplete and does not involve all instructors; and v) Quality assurance and recognition for the skilled and semi-skilled manpower produced.

The implementation of TVET institutions in Malaysia is not consistent with the true objective of sustainable education development. Seven ministries are in charge of running TVET institutions in this nation, according to the report of strategy paper nine, Transforming TVET in RMK-11. As a result, there is a rise in the requirement for significant financial commitments and overlapping of roles and activities (EPU, 2015). The EPU (2015) report states that despite the successful implementation of initiatives to mainstream TVET, there are still issues that need to be resolved. Among these include an insufficiently integrated delivery system, a dearth of acknowledgment for professions in technology, and a discrepancy between the proficiency of educators and the state of the art in terms of technology. The Malaysian Qualification Agency (MQA) and the Skills Development Department (JPK) are the two organizations with the authority to regulate TVET governance, according to the Malaysian Qualification Framework. All vocational and technical courses provided by Polytechnics, Community Colleges, and MARA-accredited educational and training institutions are recognized by MQA and fall under the purview of the Ministry of Education (MOE). While JPK, a division of the Ministry of Human Resources, regulates the skill training programs provided by skill institutions like the Industrial Training Institute (ILP), the High Technology Training Center (ADTEC), the National Youth Skills Training Institute (IKBN), and a number of other skill institutions (KSM). Regarding the quality of training and the graduate certification evaluation system, the industry and general public have various concerns regarding the execution of TVET program accreditation by these two distinct agencies. Furthermore, the various certification systems have led to numerous issues with the mobility of students, who have very restricted options for pursuing TVET education in TVET institutions in this nation (EPU, 2015). In order to operationalize TVET's contribution to sustainable development, a number of concerns and challenges face the global community of policy makers, researchers, lecturers, and administrators (Krönner, 2005; UNESCO-UNEVOC, 2010; Jailani et al., 2018).

In order to provide graduates with the necessary skills for the twenty-first century, Civil Skills Training Institutions (ILKA) must adapt to the changing TVET program (Ismail & Hassan, 2013; Salleh, Khalid, et al., 2015; Nam & Kim, 2016). In addition to the findings of Minghat et al. (2016) and Enke et al. (2018), who have revealed that teachers are the key to a sustainable TVET institution's success. To make it easier to include the idea of sustainable development in the TVET curriculum, a number of tools, curricula, and resources have been developed. Nevertheless, neither TVET teachers' nor students' training requirements specify this particular role of TVET (Minghat & Yasin, 2010). Majumdar (2009), Minghat et al. (2014), and Okubo et al. (2021) all state that there hasn't been much progress in improving the competency and practices of teachers at TVET institutions. TVET institutions have a critical role to play in creating a sustainable society and introducing students to the idea of sustainable workers as part of Malaysia's transition to an information-based industrial nation (Minghat et al., 2016). The findings of Rahim (2011) and Amdan et al. (2016) support this, showing that in order to produce graduates who meet the

requirements of the modern industry, TVET institution instructors must be up to date on the latest information, be industrially oriented, and possess stable and sustainable competencies. The primary reason for the inability to produce high-quality graduates is the absence of marketability, sustainability, and soft skills among TVET teachers (Ahmad Rizal et al., 2008; Norhayati & Hussin, 2017; Kim Peng et al., 2020).

Objectives of Study

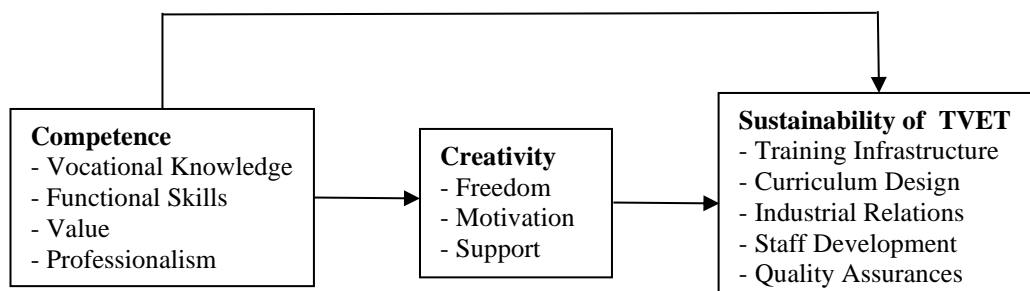
This study was carried out with the aim of identifying the implementation of the sustainability of TVET programs based on the competence and creativity of TVET instructors at ILJTM. Therefore, the following are the main objectives of this study;

- Identifying the level of competence, creativity and implementation of TVET sustainability among instructors at ILJTM.
- Identifying whether there is a relationship between competence and creativity with the implementation of TVET sustainability among instructors at ILJTM.
- Identifying whether there is an influence of instructor competence and creativity on the implementation of TVET program sustainability among instructors at ILJTM.
- Identifying whether there is a direct and indirect relationship and influence on the competence and creativity of instructors in the implementation of the sustainability of the TVET program among instructors at ILJTM.

Conceptual Framework of The Study

The elements and dimensions derived from the document analysis—that is, the literature review—form the basis of this study's conceptual framework. Figure 3 illustrates the two independent factors in this study: the instructor's originality and competency. The creativity of the instructor variable serves as a second dependent variable, or mediator. The sustainability of TVET is the study's dependent variable, however. Professionalism, values, practical skills, and vocational knowledge are the components of competency (Zainal, 2018). According to Soh (2015), there are three components to teacher creativity: opportunity, motivation, and freedom. Training infrastructure, curriculum design, industrial relations, staff development, and quality assurance are the factors for the sustainability of Technical and Vocational Education and Training (UNESCO, 2005; Minghat & Yasin, 2010; Zainal, 2015).

Figure 1 : Conceptual framework for the study of the influence of competence and creativity of instructors on the sustainability of TVET



Research Methodology

The research design employed in this study is non-experimental. In a survey approach, a collection of questionnaires is employed as a research tool on a study sample with the goal of gathering data from a

segment of the population regarding the variables under investigation. This quantitative method is utilized to guarantee the validity, reliability, and describe ability of the data that may be gathered while also making the process of gathering data easier. The study population, which consisted of TVET instructors from Human Resources Department Training Institutions (ILJTM) around the nation, received questionnaires. Stratified random sampling, cluster random sampling, and basic random sampling are the probability sampling approaches that have been applied. In this study, 444 respondents make up the total number of targeted samples, which is determined by combining multiple sampling techniques. Simple random samples offer the best degree of generalization and the lowest level of bias, according to Sekaran (2016).

Once the TVET instructors at ILJTM who were chosen by probability sampling completed the questionnaire, the data was examined using statistical analysis tools, specifically IBM SPSS and SEM AMOS version 26.0. Descriptive and inferential statistical analyses are two of the analyses used in this investigation.

Study Findings and Discussion

Level of TVET competence, creativity and sustainability

According to an analysis of the study's findings, the competency variables for occupational knowledge, functional skills, values, and professionalism are at a high level with a mean score (M=4.27, SP=0.36). The value dimension (M=4.34, SP=0.42) has the highest score, followed by the professionalism (M=4.29, SP=0.44), functional skills (M=4.25, SP=0.35), and vocational knowledge (M=4.23, SP=0.36) dimensions. It is evident that the teachers possess a high degree of proficiency in the four areas they have studied. Table 1 displays the mean score result for the competency variable.

Table 1 : Mean Score and Standard Deviation of Competence (N=444)

	Mean	Standard Deviation
Competence	4.27	0.36
• Vocational Knowledge	4.23	0.38
• Functional Skills	4.25	0.35
• Value	4.34	0.42
• Professionalism	4.29	0.44

The study's analysis of the results reveals that the mean score (M=4.10, SP=0.39) for the creativity variables related to opportunity, motivation, and occupational flexibility is at a high level. The dimensions with the greatest scores include value opportunities (M=4.17, SP=0.48), motivation (M=4.08, SP=0.43), and freedom (M=4.05, SP=0.50). It is evident that the teachers are quite creative in the three areas they have studied. Table 2 displays the outcome of the mean score for the originality variable.

Table 2 : Mean Score and Standard Deviation of Creativity (N=444)

	Mean	Standard Deviation
Creativity	4.10	0.39
• Freedom	4.05	0.50

• Motivation	4.08	0.43
• Opportunities	4.17	0.48

However, an analysis of the study's results reveals that, with a mean score of (M=4.35, SP=0.38), the degree of sustainability implementation for staff development, industrial relations, curriculum design, training infrastructure, and quality assurance is also at a high level. The implementation of staff development (M=4.37, SP=0.49), curriculum design (M=4.34, SP=0.43), industrial relations (M=4.38, SP=0.44), quality assurance (M=4.51, SP=0.44), and training infrastructure (M=4.12, SP=0.59) have the lowest scores. This indicates that instructors are implementing TVET sustainability in all five aspects at a high level, which makes them crucial components in guaranteeing the program's efficacy. Table 3 displays the TVET sustainability variable's mean score result.

Table 3 : Mean Score and Standard Deviation of TVET Sustainability (N=444)

	Mean	Standard Deviation
Sustainability of TVET	4.35	0.38
• Curriculum Design	4.34	0.43
• Training Infrastructure	4.12	0.59
• Industrial Relations	4.38	0.44
• Staff Development	4.37	0.49
• Quality Assurance	4.51	0.44

Relationship between competence and creativity with the implementation of TVET sustainability among instructors at ILJTM.

The table 4 explains the Pearson Correlation test coefficient results for the entire study sample (N=444). These results indicate that the dependent variable of TVET sustainability has a significant positive relationship with the independent variables of distributive leadership (r=0.61, p<0.01), organizational commitment (r=0.65, p<0.01), competence (r=0.64, p<0.01), and creativity (r=0.72, p<0.01). All factors, with the exception of the creativity variable, which is based on the index suggested by Davies (1971) and Cohen et al. (2007), showed a moderate level of link. It was discovered that there was a strong correlation 0.72 between the creativity variable.

The study's conclusions clarify that there is a connection between the sustainability of TVET among ILJTM instructors and the characteristics of competence and creativity.

Table 4 : Pearson Correlation Analysis Between Competence And Creativity With TVET Sustainability

Variable		Competence	Creativity
Sustainability TVET	<i>Pearson Correlation</i>	.64**	.72**
	<i>p (Sig)</i>	.00	.00
	<i>N</i>	444	444
	** Significant at the level $p < 0.01$ (2-tail)		

Influence of instructor competence and creativity on the implementation of TVET program sustainability among instructors at ILJTM.

Results indicating the beta coefficient value and significance level for the two predictor variables indicate that a one unit increase in competence also affects TVET sustainability by 0.23 ($\beta=0.23$, C.R=6.12, $p<0.05$). Secondly, a unit increase in creativity will result in a 0.37 ($\beta=0.23$, C.R=9.12, $p<0.05$) improvement in TVET sustainability. Table 5 presents the study findings, which indicate that the sustainability of TVET among teachers can be enhanced by up to 59 percent ($R^2=0.59$) when the two predictor factors are combined. According to the analysis's findings, creativity makes up up to 35 percent ($R^2=0.35$) of the total contribution, compared to the competency predictor variable 24 percent ($R^2=0.24$).

Table 5 : Estimated Values of Multiple Regression Coefficients and the Significance of Competence and Creativity Variables on TVET Sustainability

			R ²	β	S.E.	C.R.	P
Sustainability TVET	<---	Competence	.24	.23	.038	6.120	.000
Sustainability TVET	<---	Creativity	.35	.37	.038	9.119	.000

Because other factors were not examined in this study, a further 41.0 percent change in the dependent variable of TVET sustainability cannot be projected. The study's conclusions demonstrate that the factors of originality and competence have a major impact on the long-term viability of TVET among ILJTM instructors. Thus, this research also demonstrates how teachers' application of TVET sustainability is impacted by their growing competence and inventiveness, and vice versa. Better competency and inventiveness will therefore benefit the implementation of TVET sustainability among ILJTM instructors, according to this scenario. For this analysis, the regression equation can be created as follows: $Y = 0.59 + 0.23x_1 + 0.37x_2 + 0.16$

Direct and indirect relationship and influence on the competence and creativity of instructors in the implementation of the sustainability of the TVET program among instructors at ILJTM.

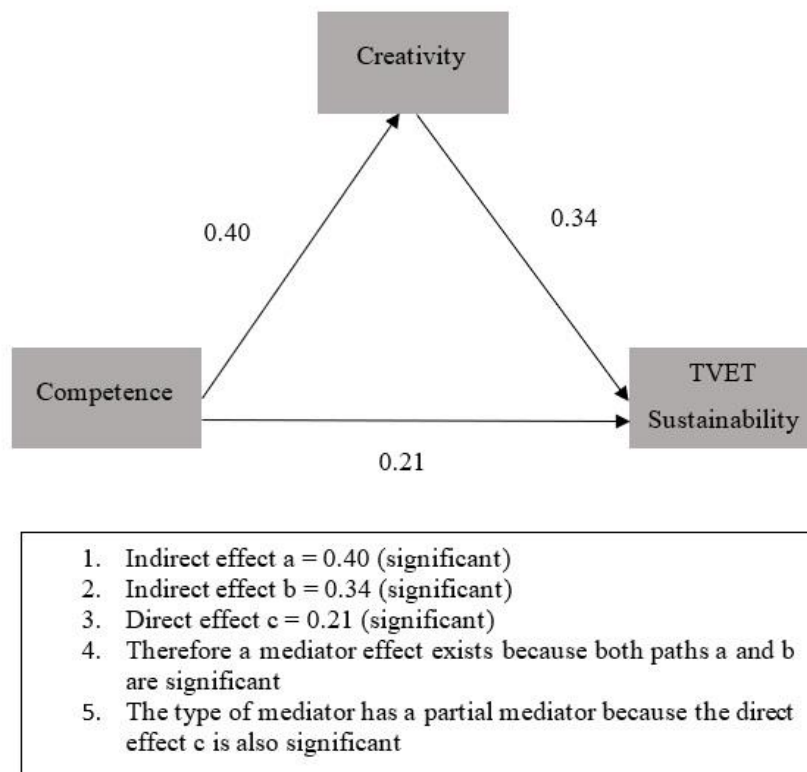
According to the findings of the SEM path analysis, competence ($\beta=0.40$, C.R=7.24, $p<0.05$) is a predictor variable that significantly influences teacher creativity. Both creativity ($\beta=0.34$, C.R=6.20, $p<0.05$) and competence ($\beta=0.21$, C.R=4.49, $p<0.05$) are predictive characteristics that are important for TVET sustainability implementation. As demonstrated in table 6, the study's conclusions demonstrate the direct and indirect relationships and influences that the competence and creativity variables have on the independent and dependent variables that are significant at each level.

Table 6 : Results Analysis of Regression Coefficients of Each Path (path) for Study Variables

			β	S.E.	C.R.	P
Creativity	<---	Competence	.40	.055	7.236	.001
Sustainability TVET	<---	Competence	.21	.047	4.491	.001
Sustainability TVET	<---	Creativity	.34	.055	6.200	.001

Next, as can be seen in figure 4, the SEM Model of this study also examines the role of the mediator for the creative variable and whether or not it significantly affects the link between the dependent variables of competency and the sustainability of TVET. The association between competency variables and TVET sustainability implementation after creativity was included as a mediator was determined to be significant in the regression test of the variables involved, according to the tests done on the indirect impact route ($a = 0.40$ and $b = 0.34$). Additionally, a statistically significant direct effect of the path ($c = 0.21$) or the competence variable on the TVET sustainability implementation variable was discovered.

Figure 2 : Mediator Testing of Organizational Commitment - Creativity - TVET Sustainability



As a result, in the relationship between the competence variable and the application of TVET sustainability, the creativity variable acts as a mediator and has a partial mediation impact. Parametric bootstrap analysis was used once more to validate this outcome and support the traditional mediation test, as shown in figure 4. The Maximum Likelihood (ML) algorithm bootstrap method was once more carried out by the researcher using a sample of 1000 bootstraps at the 95% percentile confidence level and 95% bias adjusted. Table 7 indicates that the findings of the bootstrapping test further support the notion that creativity is a mediator and partially mediates the association between competency characteristics and TVET sustainability implementation. The methodology of Baron & Kenny (1986) and Zainuddin et al. (2018) is referenced in the study's findings.

Table 7 : Bootstrapping Analysis Results For Competence – Creativity – TVET Sustainability Mediator Testing

	Indirect Effects (ab)	Direct Sffects (c)
<i>Bootstrapping Value</i>	.163	.253
P-Value	.001	.003
Result	Significant	Significant
Types of Mediators	Mediation exists because indirect effects are significant. Partial Mediation due to direct effects is also significant.	

Conclusion

The concept and objectives of sustainable education development can be better understood through this study, which will aid in enhancing the efficacy of TVET sustainability implementation in this nation generally and ILJTM specifically. This is due to the fact that the UNESCO organization's opinions and concepts hold that the idea of sustainable education development (ESD) is essential to ensuring a higher standard of living and influencing TVET graduates to become sustainable workers. It can be inferred that integrating ESD into the TVET program based on the competency and creativity of instructors is crucial for developing knowledge and skills that support economic development and allow the community to improve the quality of their everyday lives. Thus, all those involved in its implementation must put into practice a number of recommendations for improvement from the aspects of training infrastructure, curriculum, industry relations, instructor expertise, and training quality assurance in order to increase the level of effectiveness of the sustainability of TVET.

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