



## Regular Article

# Modelling secondary school students' attitudes toward TVET subjects using social cognitive and planned behavior theories

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## ARTICLE INFO

## Keywords:

Technical education  
Vocational training  
Social influence  
School affective support  
Family influence  
Attitudes toward TVET  
Lesotho

## ABSTRACT

Technical Vocational Education and Training (TVET) has been a part of most developing African countries, including Lesotho. Africa's collapsing economies will receive a true economic bailout if they produce readily employable and self-employed graduates. There are several factors that influence student attitudes toward TVET, including the perceived influence of their families, the impact of society, and the impact of their schools. This study aimed to examine the interrelationships and effects of these variables on attitudes toward TVET. Social Cognitive Theory and Planned Behavior are the theoretical underpinnings of the study. Three hundred and six students in the Mafeteng district were sampled for this quantitative study. IBM SPSS 28 and Smart PLS 4.0.7.2 were used to analyze the measurement and structural models based on the data collected through a questionnaire. The study found that perceived family influence and societal influence had a significant causal relation to attitudes toward TVET but that the school does not provide enough support for students in TVET education, which impedes their education level. Study findings provide insight into how Lesotho educational policymakers and practitioners can promote TVET as a viable educational and career option by improving students' attitudes towards TVET subjects. For career guidance, learners were recommended to be taken to TVET colleges and universities.

## 1. Introduction

Technical Education (TE) and Vocational Training (VT) are intended to prepare individuals for self-sufficiency in specialized skills, abilities, trade, industries, agriculture, and business. It is typically associated with manual and practical skills and does not include academic abilities (Ayub, 2017). VT primarily consists of education and training focusing on physical labor and preparing individuals to work in positions tied to a specific industry. Also, Adewale et al. (2017) explain it as training or learning that is specifically designed to prepare people for a specific job in the business sector, trade sector, or information technology industry, or that aims to improve students' skills and knowledge in order to be productive. Okoye and Udoudo (2015) argue that by acquiring practical skills through vocational education, a nation's productivity could be increased, thereby increasing its economic output. Rathidevi and Sudhakaran (2019) also assert that TE is similar to VE; nevertheless, the emphasis is on the advancements in computerized data. These abilities aid one's comprehension and facts in entering as well as progressing in work on an industrious basis. Succinctly, Technical and Vocational

Education and Training (TVET) is a term that refers to the integration of both TE and VT. TVET programs are designed to provide individuals with the skills and knowledge necessary to succeed in the job market. They often incorporate a mix of theoretical and practical training to ensure that learners are equipped with both the technical and practical skills necessary for the workforce. While TE and VT are both important components of TVET, the connection between them lies in their complementary nature. TE provides the theoretical foundation for learners to understand the principles and concepts behind a particular field of technology, while VT provides hands-on experience in applying that knowledge to practical situations. Together, TVET creates a powerful combination that prepares learners for successful careers in the workforce. By integrating these two approaches, TVET programs offer a holistic and comprehensive approach to education and training that is essential for success in today's rapidly changing job market. Compared to mainstream schooling, TVET garner greater attention (Okoye & Udoudo, 2015). TVET education alleviates various challenges, including poverty, unemployment, and workplace skills (Ayub, 2017; Maskey, 2019).

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<https://doi.org/10.1016/j.ssaho.2023.100478>

Received 21 December 2022; Received in revised form 12 March 2023; Accepted 12 March 2023

Available online 6 April 2023

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Additionally, TVET is a type of education that teaches students the skills and knowledge they need to succeed in the job market Maskey (2019) while also preparing them to be skilled employees in a specific profession, which is why it is becoming more popular. The significance of the TVET sector to national development was recognized globally. In line with this idea, some confirmed scientific data shows that TVET will aid enhancing the countries' economic growth (Khaizer Omar et al., 2020; UNESCO, 2021). Affirming the above notion, Ansah and Attah (2019) suggest that African nations should adopt TVET to prepare their technical labor force for economic development and industrialization. For instance, the European Union, the African Union, and the Middle East have reshaped and reformed their training curriculum to ensure a sufficient supply of highly skilled experts (Khaizer et al., 2020) due to the growing need for staff, states, etc. Based on Australia's comprehensive government policy from 2004 to 2010, with backing from UNESCO-ILOkhaize (Khaizer et al., 2020), there are many international initiatives to reassess TVET.

Recently, TVET courses have seen a resurgence worldwide (Khaizer et al., 2020). To bring more trained personnel to the job market, the World Bank authorized an advance of \$60 million for TVET training in Nepal (World Bank Group, 2017). The World Bank further subsidized an occurrence for teaching and learning professionals from Africa who managed to study about evolving governance buildings to elevate the development as well as sustainability of TVET courses (Khaizer et al., 2020). Nations are trying to secure work market improvements by improving the number and standard of jobs through vocational trainings. It is imperative that African developing countries like Botswana, Ghana, Nigeria, and Lesotho, are not an exception, with young, unskilled populations (Khaizer et al., 2020). A number of industrialized nations have introduced TVET courses in recent years following Germany's successful implementation (Spees, 2018).

As globalization has increased on all fronts, developing countries' economies, socialization and skills development infrastructure are being forced to undergo drastic changes (Khaizer et al., 2020). Due to this global trend, Lesotho's economy and education system has faced numerous challenges, including sudden economic backlash, as raw material exploitation and cheap labor have diminished. Poverty levels have also risen in the face of escalating unemployment (Moseboko, 2018). The new Curriculum Assessment Policy (CAP) seeks to equip learners with advanced entrepreneurial, vocational, and technological skills, in response to a number of attempts by the Ministry of Education and Training (MOET) (Ayanwale et al., 2023), to eliminate unemployment and increase the economy through further education and employment. Thus, investigating students' attitudes towards TVET is essential since if the attitude is positive, it can indicate that more students will continuously learn about TVET.

Previous research appears to have been focusing on students' attitude towards core subjects like English Language (Herwiana & Laili, 2021; Mohd Zin and Yunus, 2020), Mathematics and science disciplines subjects (Davadas & Lay, 2018; Eddie & Mwanza, 2020), online learning (Nasir & Neger, 2022; Rohanai et al., 2022; Um, 2021), whereas there is dearth of empirical studies examining students' attitudes toward TVET subjects in Lesotho. Earlier studies in other countries like Nigeria have explored several factors associated with students' attitude to learn TVET such as, family factors, society, means of mass communication, instructors, and set of courses (Adewale et al., 2017). This study explores the some of these variables in the context of Mafeteng, a district of Lesotho to see their predictive tendency on students' attitude toward TVET using variance-based structural equation modelling (VB-SEM). The findings will consequently assist TVET policymakers, curriculum makers, and teachers in this country. Additionally, this study is aimed at improving TVET performance in Lesotho.

### 1.1. Current study

TVET could be essential in Lesotho since it improves the economy of

the country (UNESCO, 2021) and TVET courses have to draw a lot of scholars because of its commendable significance, nonetheless this has been the opposite. The reason for this perhaps is owing to people's ways of viewing TVET, thus, it does not need specialized kind of training. The learners feel that even if one is at home, the required expertise one needs to study, such as cooking, farming, carpentry, plumber etc., can be attained without official training. Students are oblivious of the significance of vocational courses, which might benefit male and female students obtain formation and provide solutions to glitches. Similarly, it allows learners to attain skills and abilities crucial for self-governing life, especially in these economic difficulties. Hence, the researcher explores secondary school students' attitudes towards TVET subjects in Mafeteng, a district of Lesotho. A study of the factors that affect learners' attitude will aid in the development of methods for enhancing vocational training. As a result, the study aims to examine secondary school students' attitudes towards TVET as well as develop a structural model that shows how school affective support, perceived family influences, and societal influences contribute to students' attitudes toward TVET. The study poised to provide answers to the following questions; (a) In terms of convergent and discriminant validity, as well as reliability, how does the study scale perform? (b) What is the variance accounted for by the model variables in the criterion variable (attitude towards TVET)? (c) Does the measurement model that describes the causal relationship among school affective support, perceived family influence, societal influence, and attitudes towards TVET fit?

## 2. Conceptual framework and hypothesis development

Numerous findings have sought to analyze students' inspiration to choose TVET in various nation backgrounds, and the literature on TVET education is extensive. Several researchers used a variety of instruments, approaches, and techniques to find the influential aspects to examine in specific areas of study. However, there are limited studies in Lesotho on the connection amongst educational approaches together with acquisition of expertise, perception, and inspiration of learners in the TVET area. Amongst others, the main goal of TVET students is to participate in education techniques that focus on work-related actions and responsibilities. TVET students are more presumably to be visual students, preferring to study through photos, illustrations to comprehend the topic better (Mohamad et al., 2012) cited in (Khaizer et al., 2020), (AhmedAlnaqbi, 2015). In the context of TVET, a wide range of educational activities are encompassed, including additional education, the study of technology, complementary sciences, the acquisition of skills and attitudes, as well as the acquisition of knowledge leading to employment.

### 2.1. Underpinning theory

A theory of Social Cognitive and Planned Behavior underpins this study. In reaction to his dissatisfaction with the philosophies of behaviorism and psychoanalysis, Bandura developed the social cognitive theory (SCT). These two ideas mostly ignore the importance of cognition in motivation and the influence of situations. SCT argues that attitude and behavior are shaped by personal, environmental, and behavioral factors. SCT explains how individual attitudes and beliefs about TVET can be formed and how the formation of these attitudes can be influenced by school-based affective support, family influence, and societal influence (Bandura, 1986; AhmedAlnaqbi, 2015). AhmedAlnaqbi (2015) further argues that people become their own motivators and form a system within which they network their inspirations. However, SCT covers a wide range of topics such as ethical decision-making and psychological stimulation. Also, according to Ajzen (2012), the Theory of Planned Behavior (TPB) can be viewed as an advancement over the Theory of Reasoned Action (TRA), adding to and strengthening the presumptions of the TRA. More so, TPB supports TRA's theory that attitudes and behavioral goals, in conjunction with social norms and the

use of volitional control, determine an individual's behavior and that these factors have a direct impact on their behavior. Moreover, an understanding of the relationship between intentions and attitudes can be gained through the theory of planned behavior (TPB). As per TPB, behaviors are influenced by individuals' attitudes towards behavior, subjective norms (perceived social pressure to engage in a particular behavior), and perceived behavioral control (perceived ease or difficulty of performing a behavior). As it pertains to TVET, TPB helps explain how student attitudes towards TVET are related to their intentions to enroll in TVET programs, as well as how social and environmental factors influence their intentions. Education and vocational training researchers have widely used both SCT and TPB (Rathidevi & Sudhakaran, 2019). The role of social support and perceived control over decisions has been examined in studies using these theories to determine the factors influencing student attitudes toward TVET. Importantly, TPB and SCT allow authors to examine the complex interplay between personal, social, and environmental factors that shape student attitudes toward TVET. Students' attitudes toward TVET programs can be better understood by understanding the factors that influence them, and strategies can be developed to improve student engagement and enrollment. In order to promote vocational education and training, policymakers, educators, and employers need to understand student attitudes. With the help of SCT and TPB, researchers can provide evidence-based recommendations for improving TVET programs and increasing student enrollment. These theories, therefore, provide a lens into looking deeper at students' attitude towards TVET subjects, help in seeing the actual problem, thus eventually assisting the researcher in answering the research questions.

## 2.2. Concept of attitude

As defined by Adewale et al. (2017), attitude is the collection of knowledge regarding an item, individual, condition, or knowledge that creates a person's view or tendency toward that object. In the same manner, Davadas and Lay (2020); Rathidevi and Sudhakaran (2019) explain an attitude as a psychological state that indicates preparedness toward an act and mental foundation of attitude, their durability, their identity and evaluative personality. Additionally, an attitude is an interpretive judgement, both positive and negative, which a human has and guides toward some attitude object, which could be abstract or (Adewale et al., 2017; Mohd & Yunus, 2020). Finally, attitudes are defined as a good or bad feeling that a person has concerning items, people, or ideas, but they also argue that attitudes are how one reasons and perceives an act towards aims and concepts. Ayub (2017) posits that a good attitude towards TVET influences students' education and performance in a good way. This is because people are usually unfair towards attitude objects they assess positively and against those badly assessed.

## 2.3. Students' attitude towards TVET

Students' decision to enroll in vocational training programs may be affected by a number of factors. One factor influencing students' decisions to engage in such a program is the way vocational training is portrayed. Personal values can often impact an individual's decision to pursue vocational training, as can parents and school administrators. A variety of things influence attitude. Family factors, society, teachers, and syllabus are among the eight elements highlighted by (Adewale et al., 2017). Student perceptions regarding vocational education and training are heavily influenced by these factors. Azubuike, (2011); Adewale et al. (2017), found perceptions, lack of education and training, socioeconomic status, sex, and lack of mentorship influence learners' attitudes toward TVET.

## 2.4. Factors influencing students' attitude towards TVET

We investigate three independent factors associated with attitudes towards TVET: perceived family influences, school affective support, and societal influences. To start with, one of the variables that impact attitude towards TVET is perceived family influence (PFI). Family can influence students directly or indirectly (Davadas & Lay, 2018). According to Achieng (2012); Adewale et al. (2017), parents significantly impact their children's later behavior and decisions. The parents' engagement in the learning process creates an environment that fosters the development of pupils' intellectual talents. Parental encouragement aids a student's performance by developing favorable attitudes towards education. A supportive family supports the growth of good attitudes in learners toward TVET learning. This is apparent that if learners have good educational marks, it will reduce failure rates and improve students' self-confidence and participation in school events. Tsukamoto (2016) further highlights that, in comparison to TVET, parents and students place a stronger emphasis on university education. As a result, students with poorer grades and from low-income families are viewed as a second-best option after university. In Malaysia, Hamid et al. (2016) and Buang et al. (2020) have investigated the issue; in Pakistan, Ayub (2017) has examined the issue; and in Kenya, Rotich et al. (2020) have demonstrated that students' perceptions, parent influence, and friend influence all impact their choice to attend TVET. Student enthusiasm for the TVET program is critical because it motivates them to stick to the plan and as a result play a part to an experienced Lesotho labor force. Furthermore, family effect in the form of assisting and encouraging their kids, guidance, monetary support is critical as families, mainly close relatives, have an enormous effect on their kids' future. Friends, in like manner, have an influence on learner's behavior in day to day routines for they are only immediate parents in terms of closeness to learners (Mohamed, 2022; Sitepu et al., 2020). Considering the arguments above, it is proposed that;

**H1.** Perceived family influence will show a significant causal relationship on attitude towards TVET

Societal influence (SI): Societies and culture have an impact on people's attitudes and choices. AhmedAlnaqbi (2015); Mohamed (2022) argue that people typically select work based on their societal values and status and in an effort to appease their peers and associates while undermining their ability for the field. People tend to view TVET for people with disabilities, dropouts and students who perform poorly in other courses (AhmedAlnaqbi, 2015). TVET also suffers from a negative public image, last option schooling, low smart quotient, low academic achievement, and job instability, which all negatively affect women's interest in pursuing the course (Adewale et al., 2017; Reyes, 2018). Similarly, Ayub (2017) also highlighted that previously, both traditional and western education did not allow or offer equal possibilities for females to pursue their studies in Pakistan's vocational and technical education. In addition to what Adewale has postulated, Khaizer et al., (2020) claims that throughout the early stages of technological education in Pakistan, TVET professionals were identified to be a mechanical repairers. Alam and Forhad (2021) noted that low perceptions of community, poor entry-level, bad attitude towards community, dearth of acknowledgement, prejudice towards TVET graduates and elitism are some of the issues that contribute to attitude towards involvement in TVET in Bangladesh.

The report by Rathidevi and Sudhakaran (2019) indicates that high social prestige in our society is often associated with government positions and white-collar occupations. It is widely believed that white-collar jobs are closely linked to prestige, social status, authority, and intellectual ability (Aruleba et al., 2022; Rathidevi & Sudhakaran, 2019). Additionally, AhmedAlnaqbi (2015) found that family income and the local environment influence students' decision to take TVET courses. There is a history of lower social class being associated with carpentry, mechanics, blacksmithing, welding, and other professions, so

working in these professions is considered disgraceful since they are associated with poor IQ, laziness, and academic performance (Ade-Ibijola & Aruleba, 2019; Aruleba & Jere, 2022; Mohamed, 2022). Furthermore, AhmedAlnaqbi (2015) contends that students from families with lower educational backgrounds are more likely than students from cities with significantly higher socioeconomic backgrounds in terms of income, housing costs, and academic qualifications to enroll in TVET programs. On the basis of the argument, it is proposed that;

**H2.** Societal influence group will show a significant causal relationship on attitude towards TVET

School affective support (SAS), which refers to the emotional and social support provided by schools, has been shown to be an important factor in shaping students' attitudes towards TVET. This review examines several studies that have investigated the relationship between school affective support and attitudes towards TVET. Zhang et al. (2020) conducted a study involving 531 vocational school students in China and found that students who received high levels of emotional support from their teachers had more positive attitudes towards vocational education and training. Similarly, Yang et al. (2018) found that emotional support from teachers had a positive effect on attitudes towards vocational education and training among Chinese high school students. These findings suggest that teacher emotional support plays a crucial role in shaping students' attitudes towards TVET. More so, Chua et al. (2020) investigated the role of social support in predicting attitudes towards TVET among Singaporean secondary school students. The study involved 364 students and found that social support from teachers, peers, and parents significantly predicted positive attitudes towards vocational education and training. This highlights the importance of not only teacher support but also support from peers and parents in shaping students' attitudes towards TVET. In a study involving 355 Turkish high school students, Dincer and Yesilyurt (2019) found that social support from teachers had a significant positive effect on attitudes towards vocational education and training. This study emphasizes the need for schools to provide social support for TVET students to promote positive attitudes towards their programs. In summary, the studies reviewed

suggest that school affective support, particularly emotional and social support from teachers, peers, and parents, has a significant positive effect on attitudes towards TVET. These findings highlight the importance of creating a supportive school environment for TVET students to promote positive attitudes and engagement in their programs. The hypothesis below, therefore, is proposed;

**H3.** School affective support will show a causal significant relationship on attitude towards TVET

2.5. The conceptual framework

This study uses a conceptual framework which evolved from a previous study (Davadas & Lay, 2018) and a theoretical framework that identifies factors associated with students' attitudes toward TVET. There is a direct relationship between students' attitudes towards TVET and perceived family influences, school affective support, and social influences. This study proposes a structural model based on the conceptual framework presented in Fig. 1.

3. Methodology

Our study explored the factors influencing secondary school students' attitudes toward TVET subjects. This study, therefore, sampled Mafeteng students offering TVET at secondary schools. A district of Lesotho, Mafeteng is located in the southwest of the country. It is known for its agricultural production, with maize being the primary crop. In this study, the Mafeteng district was selected as the sample area because of its population size and representation of urban and rural communities. Each of Lesotho's ten districts has its own characteristics that may influence students' attitudes toward TVET.

3.1. Sample and its characteristics

During the study, 335 students filled out an online survey about their attitudes toward TVET, of which 306 responses were useful. In the

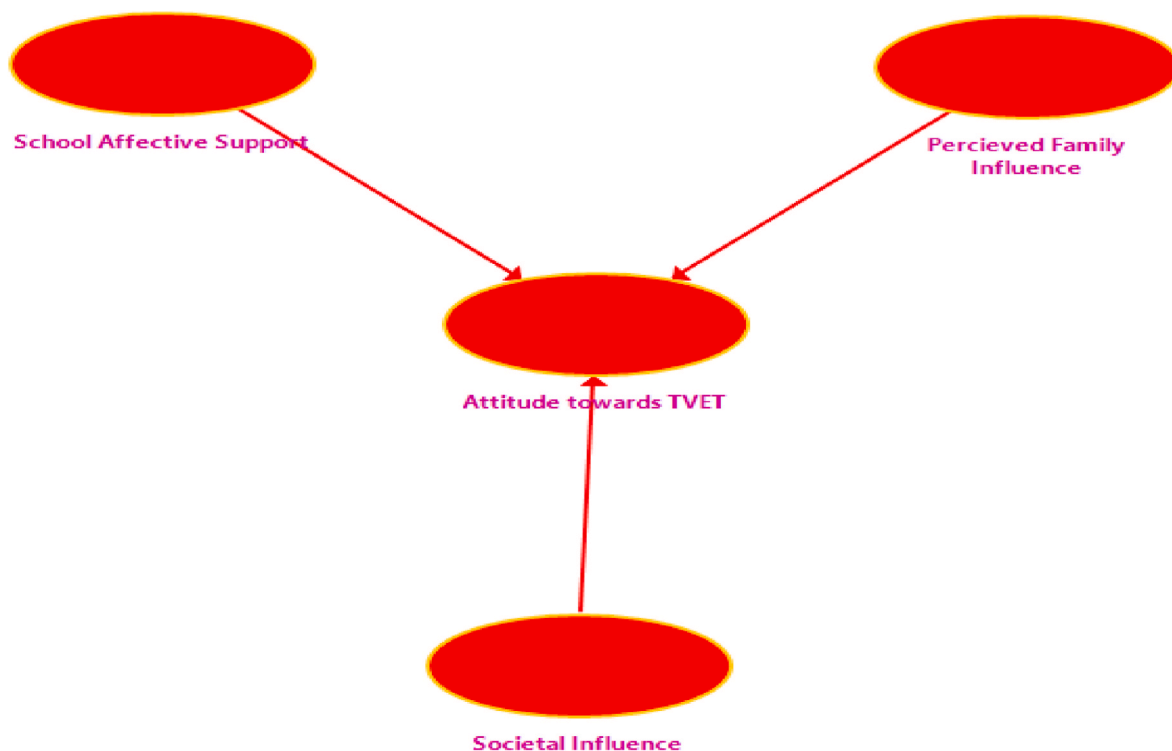


Fig. 1. Conceptual model.



sample, there were students attending government schools in different grades; however, 138 (45.1%) were in grade, and 168 (54.9%) in grade 11. In the survey, 56.5% of students were female, representing more than half of the population. According to the survey, 210 (68.6%) students are between the ages of 14 and 16, which indicates the age at which students should determine whether or not to offer a TVET subject. A total of 28 (9.2%) belong to the 11–13 age group, 65 (21.2%) belong to the 17–19 age group, while 3 (1.0%) belong to the 20–22 age group. However, research studies involving students typically require both parental and participant consent. This study obtained parental consent through written permission, while assent came from students who agreed verbally and in writing with their teachers' consent to take part in the study. Furthermore, students in Lesotho and other African countries typically start school later or have longer educational pathways than their Western counterparts, as evidenced by their age above 20 years in secondary school. Several factors can influence the education system and students' experiences, including poverty, limited access to education, and cultural norms.

### 3.2. Measurement instrument

We have gathered from various sources and references a number of measuring instruments that we have adapted to our purpose. Consequently, we partially selected questions and had six TVET teachers validate the questionnaire based on different considerations. Based on previous research (Davadas & Lay, 2018; Ngogo, 2014), four variables were developed using 42 items. On a Likert scale, we ranked responses from 1 (strongly disagree) to 6 (strongly agree). The survey consisted of two parts. First, background information was collected, including gender, age, and grade level. Secondly, a survey measured students' attitudes toward TVET, their perception of family influence, their perception of societal influence, and their perception of their personal support. Additionally, every variable produced an ordinal alpha reliability coefficient (SI = 0.74, PFI = 0.89, SAS = 0.73, and ATT = 0.83) and a significantly content validity index (SI = 0.61, PFI = 0.57, SAS = 0.52, and ATT = 0.69), respectively.

### 3.3. Data collection

A Google Form was used for data collection in the study. Using designed students' WhatsApp accounts, a Google Forms survey was conducted regarding attitudes toward TVET. Considering that the survey link was shared through a closed social media platform only used to communicate between schools' teachers and their students, researchers believe only the students filled out the survey. We sampled our respondents randomly, and they were representative of the target audience. Additionally, data collection on the Google form-based instrument was permitted between the 3rd of August and the September 1, 2022, before the instrument was closed.

### 3.4. Data analysis

For the purpose of analyzing the obtained data, a partial least squares structural equation model (PLS-SEM) was implemented using SmartPLS software version 4.0.7.2. We used version 28.0 of the statistical package for social sciences (SPSS) to deal with the missingness of the dataset.

## 4. Results

In this section, based on a questionnaire designed specifically for this research, here are the results of our data analysis. This study examines the interrelationships between school affective support (SAS), perceived family influence (PFI), societal influence (SI), and attitudes toward TVET (ATT). There were two phases to the analysis. During the first phase of the study, data integrity was ensured using the statistical package for social sciences (SPSS) version 28.0 software package, and in

the second phase, measurement model (i.e. construct validity and reliability) and building a structural model were evaluated using partial least square structural equation modelling (PLS-SEM) combined with a multivariate analytical technique using SmartPLS version 4.0.7.2 (Ringle et al., 2015). As a result of the following reasons, PLS-SEM was used in this study. In particular, it is good for theory development and variance explanation, handles both observed and latent variables, and when data is non-normal (Hair et al., 2014). Testing the reliability and validity of the measurement model (convergent and discriminant) is done using PLS-SEM analysis. Among them are factor/outer loadings, average variance extracted (AVE), composite reliability values (CR), and Cronbach's alpha ( $\alpha$ ) values (Construct Reliability). A fitness test is then performed on the structural model to determine its relationship with variables.

The collected data were checked for missing data and outliers. Despite the lack of outliers, there were some missing values. Using the appropriate method for solving missingness depends on the extent of missingness. Taking data incompleteness into account properly is crucial for preventing spurious statistics. Little's test shows that all questionnaire data ( $X^2 = 4482.564$ ,  $df = 448$ ,  $p = 0.486$ ) are missing at random (MCAR). Missing values are determined by the expectation-maximization method. Little's test results are insignificant since missing data don't show any pattern based on MCAR. As a result, missing data points were replaced using single imputation. After ensuring data integrity, further analysis can be conducted.

The question was answered using a measurement model. There is no doubt that the measurement model is synonymous with the widely known confirmatory factor analysis. A reflective evaluation of validity and reliability was also performed on the measurement model. Reflective measurement models estimate the outer loadings of the underlying construct and relate the construct directly to the indicators. This study evaluated reflective models for their composite reliability, internal consistency, and construct validity (convergent and discriminant). Fig. 2 proposes a model in which independent variables, such as school affective support, perceived family influence, and societal influence, are directly associated with attitudes toward vocational education and training.

To explain causal relationships in the hypothesized model, model assessment estimates of each construct and their indicators are shown in Fig. 2. A measure's reliability is determined by the factor loading in the underlying construct, as Hair et al. (2016) suggested. A reliable item is also considered to be one whose outer loading exceeds 0.70 (Hair et al., 2022). Higher values indicate greater reliability for Cronbach's alpha criterion as well as composite reliability. According to Ayanwale et al. (2022); Hair et al. (2022), exploratory research should be conducted at a substantial credibility level between 0.70 and 0.95. The average variance extracted (AVE) is considered valid by Fornell and Larcker (1981) because it guarantees convergent results. A minimum value of 0.50 was recommended by Hair et al. (2017) for a substantial AVE. Therefore, all items below 0.60 were excluded from the measurement model (See Fig. 3).

In reference to Fig. 2, some items of the constructs in the model had outer loading less than 0.60. In the model detailed, school affective support and societal influence - had AVEs less than 0.50. As shown in Fig. 2, some indicators that constitute the constructs have low outer loading. For these reasons, items with loadings less than 0.60 were unreliable for measuring constructs. The hypothesized model cannot be tested using such items. As a result, SAS2 (0.639), SAS3 (0.622), SAS4 (0.694), PF10 (0.658), ATT1 (0.698), SI2 (0.692), SI4 (0.689) and SI6 (0.690) need to be deleted. When these items were removed, the hypothesized structure showed better specifications. As shown in Fig. 3, an improved measurement model (Table 1) has been respecified.

In Table 1, all factors are loading higher than 0.70, which complies with Bagozzi (1981) and Hair et al. (2016; 2017) recommendations. Further, AVE values corresponding to convergent validity ranged from 0.535 to 0.605. When unreliable indicators were eliminated, all

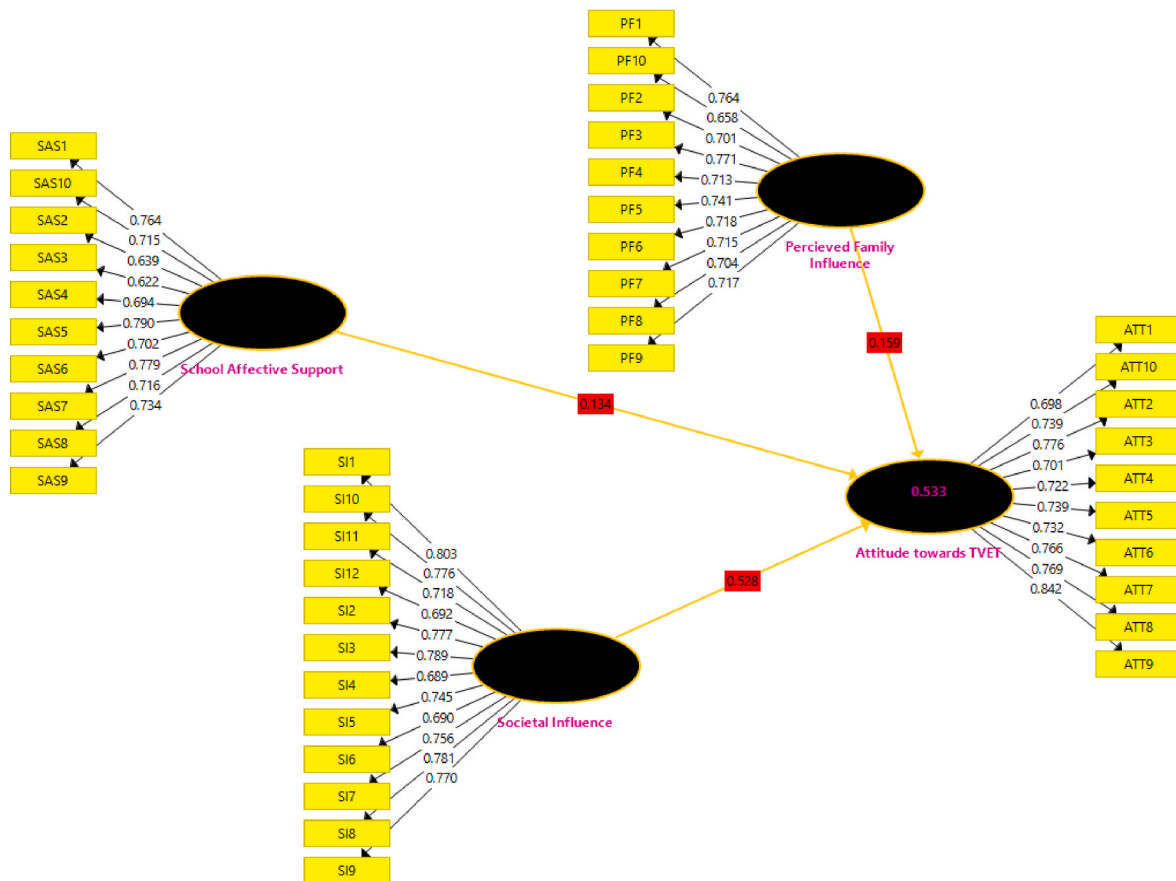


Fig. 2. Hypothesized/Measurement model estimates.

constructs had AVE values above 0.50 (Ayanwale & Oladele, 2021; Hair et al., 2017). For reliability, Cronbach’s alpha ( $\alpha$ ) values vary between 0.880 and 0.918, which is reasonable (Amusa & Ayanwale, 2021; Hair et al., 2022; Taber, 2018). Additionally, all CR ranges between 0.907 and 0.932 are greater than 0.70, as recommended by (Hair et al., 2022; Henseler et al., 2016).

A Fornell-Larcker criterion indicates that discriminant validity is determined by the square root of AVE, which must be greater than the correlation between the reflective construct and all other constructs. According to Table 2, the constructs of the model have discriminant validity.

As illustrated in Table 2, the square root of AVE was higher than the correlation between each construct. Thus, the model’s discriminant validity has been confirmed since the constructs were distinct. In general, the variables in the model are both reliable and have convergent validity. Consequently, we assessed the structural model to determine the variables’ relationships. Also, according to Fig. 3, the predictor variables jointly accounted for about 51.9% of the variance observed in attitudes toward TVET ( $R^2 = 0.519$ ). However, the predictive power of perceived family influence (17.6%) and societal influence (51.5%) both proved to be strong predictors of attitude towards TVET compared to managerial and school affective support (12.7%). More so, Table 3 presents the overall measurement model fit.

Multi-category fit measurements are commonly used for measuring model fit. The PLS-SEM method can thus be applied to estimate the values of several latent constructs and measured variables (Oluwajana et al., 2019). Unweighted least squares discrepancies ( $d_{ULS}$ ), geodesic discrepancies ( $d_G$ ), and Standardized Root Mean Squared Residuals (SRMR) must be used to assess the goodness of fit of the composite PLS model. Fits to a saturated model are generally considered valid when their squared Euclidean distance ( $d_{ULS}$ ) is lower than the bootstrapped

value of 95% of their estimated  $d_{ULS}$ , and their  $d_G$  is lower than the bootstrapped value of 95% of their estimated  $d_G$ . Thus, Table 3 shows that  $SRMR < 0.08$ ,  $d_{ULS} sat < est$ , and  $d_G sat < est$  are in line with these model fit requirements, as suggested by (Henseler et al., 2016; Quintana & Maxwell, 1999).

#### 4.1. Structural model assessment

An indicator of path coefficient significance is the degree to which a variable establishes a causal relationship with another variable in the model. Bootstrap p-values are used in PLS-SEM to measure path coefficient significance. The significance of these parameters was estimated using a bootstrapping method, and the p-value and t-value of the student were calculated. To replace the original sample, a series of random samples were taken. The statistical significance of the estimates of the original parameters was assessed by comparing the average values of the new samples with those of the original sample. The results of 5000 bootstrap resamples are shown in Fig. 4 and Table 4.

**H1.** Perceived family influence will show a significant causal relationship on attitude towards TVET

Table 4 shows that perceived family influence ( $\beta = 0.176$ ,  $t = 2.584$ ,  $p = 0.010 < 0.05$ ) have a significant higher positive relationship on students’ attitude towards TVET in Lesotho. Thus, the alternative hypothesis stated was supported. Also, this result implies that the contributions of perceived family influence to attitude towards TVET is something to reckon with, thereby motivating and developing students’ interest in TVET at the secondary school level.

**H2.** Societal influence group will show a significant causal relationship on attitude towards TVET

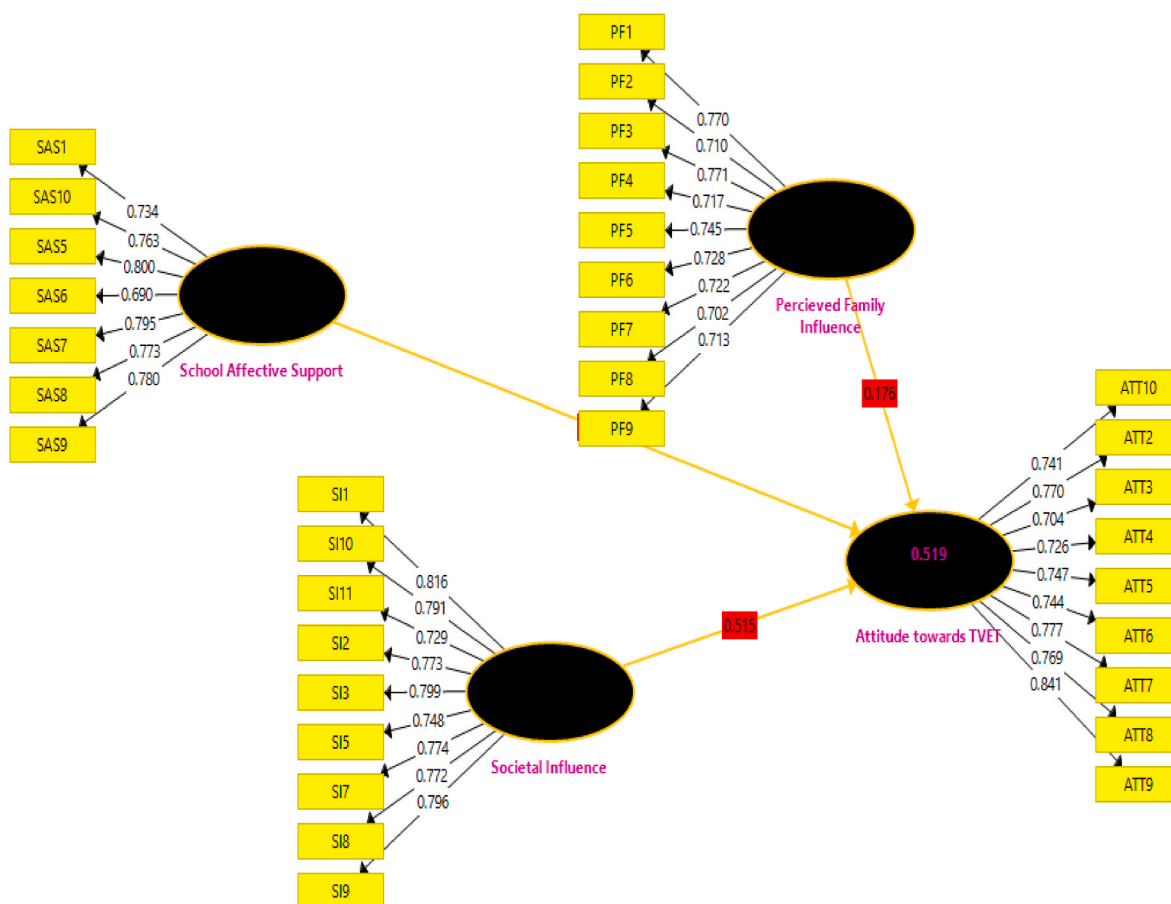


Fig. 3. Re-specified measurement model.

Table 4 revealed that societal influence ( $\beta = 0.515$ ,  $t = 7.026$ ,  $p = 0.000 < 0.05$ ) has a significant positive relationship on students' attitude towards TVET. Therefore, the alternative hypothesis stated was supported. This result implies that the variable relationship to attitude towards TVET was in an advance and evolution manner in secondary schools in Lesotho.

**H3.** School affective support will show a causal significant relationship on attitude towards TVET

Table 4 depicts that school affective support ( $\beta = 0.127$ ,  $t = 1.955$ ,  $p = 0.051 > 0.05$ ) does not show significant relationship on students' attitude towards TVET. Therefore, the alternative hypothesis stated was not supported. This result implies that their contributions to students' attitude towards TVET were in reverse order. This might also allude to the fact that the support given by the school is not encouraging and not resonate well with students to go in the direction of TVET.

### 5. Discussions

The findings of this study reveal that perceived family influence show positive significant relationship towards TVET. This implies that family's attitude towards TVET training will influence the future enrollment of more students in TVET education. Students' decisions in choosing an educational path are highly influenced by parents and their friends. These findings are supported by Adewale et al. (2017) that parents significantly impact their children's later behavior and decisions. Ayub (2017); Chua et al. (2020); Hair et al. (2016); Rotich et al. (2020) have confirmed that learners' perception, parents' impact and friends influence all have a major influence on students' choice to pursue TVET. Mohamed (2022) has also confirmed that students' decisions

regarding their educational pursuits are heavily influenced by their parents, especially when they choose what school they are going to attend and what they will learn.

Further, the study's results also reveal that societal influence has a significant positive relationship on students' attitude towards TVET. This portrays the fact that more students whether female or men would join the TVET since their communities regard TVET education crucial. This is supported by AhmedAlnaqbi (2015); Mohamed (2022), that people usually select jobs based on their societal values and status and in an effort to appease their peers and associates while undermining their ability for the field. Alam and Forhad (2021) also noted that low perceptions of community, poor entry-level, bad attitude towards community, dearth of acknowledgement, prejudice towards TVET graduates and elitism are some of the issues that contribute to low female involvement in TVET. Rathidevi and Sudhakaran (2019) had denoted that high social prestige in our society is typically with government jobs and white-collar positions in commercial sectors but the findings have proved that these days communities do not undermine TVET education hence more students will be motivated to do the course in the future. This is further emphasized by AhmedAlnaqbi (2015) that students' decisions to enroll in TVET courses are influenced by factors such as family income and the local environment. Importantly, through community engagement, societal influence can be strengthened to positively shape students' notions of TVET and to change societal perceptions and attitudes towards TVET subjects. Promoting the value and importance of TVET subjects can be accomplished by working with community leaders, employers, and other relevant parties. It is also possible to showcase the importance and relevance of TVET subjects in the workforce through partnerships with industry stakeholders. The value and impact of TVET can be demonstrated by highlighting the success stories

**Table 1**  
Summary of measurement model.

Items	Indicators	Item Loading	CA	CR	AVE
<b>Attitude towards TVET</b>			<b>0.907</b>	<b>0.924</b>	<b>0.575</b>
I really like TVET	AT2	0.770			
I usually enjoy studying TVET in school	AT3	0.704			
TVET problems are something I am good at solving	AT4	0.726			
TVET is worthwhile and necessary subject	AT5	0.747			
TVET is essential in everyday life	AT6	0.744			
TVET class allows me to express my own ideas about how to solve problems	AT7	0.777			
I have much self-confidence it comes to TVET	AT8	0.769			
I want to develop my TVET skills	AT9	0.841			
I am always confused in a TVET class	AT10	0.741			
<b>Perceived family Influence</b>			<b>0.892</b>	<b>0.912</b>	<b>0.535</b>
My parents ask me about my assessment results in TVET	PF.1	0.770			
My parents and friends advise me on vocational training	PF.2	0.710			
I mostly use family and friends' advice to choose an educational path	PF.3	0.771			
My family checks my TVET homework frequently	PF.4	0.717			
My family helps me with difficult TVET problems	PF.5	0.745			
My family makes me feel I can do well in TVET subjects	PF.6	0.728			
I am expected by my parents to excel in my classes and in TVET	PF.7	0.722			
Working hard is what my parents taught me growing up	PF.8	0.702			
As my family tells me, to do something well, one must be careful.	PF.9	0.713			
<b>School Affective Support</b>			<b>0.880</b>	<b>0.907</b>	<b>0.582</b>
I feel like I belong in my TVET program at this school.	SAS1	0.734			
The school encourages TVET students to pursue their career goals.	SAS5	0.800			
Teachers at my school are supportive and caring towards TVET students.	SAS6	0.690			
The school provides resources and support for TVET students to succeed in their program.	SAS7	0.795			
The school provides counseling services to TVET students when needed.	SAS8	0.773			
The school has a welcoming and inclusive environment for TVET students	SAS9	0.780			

**Table 1 (continued)**

Items	Indicators	Item Loading	CA	CR	AVE
When I have concerns about something, I can speak with my TVET teacher	SAS10	0.763			
<b>Societal Influence</b>			<b>0.918</b>	<b>0.932</b>	<b>0.605</b>
TVET does not offer future career opportunities	SI1	0.816			
TVET plays a big role in reducing unemployment	SI3	0.799			
TVET has a positive image in our country	SI5	0.748			
The lack of role models in TVET in my society has contributed to my lack of understanding towards	SI7	0.774			
High social prestige in our society is associated with government jobs	SI8	0.772			
There is a high demand for TVET-related professions on the jobs market	SI9	0.796			
Coming from a lesser educational background is likely to lead one to enroll in TVET programs	SI10	0.791			
Most students who engage in TVET subjects come from poor backgrounds	SI11	0.729			
Most students who study TVET subjects are academically incompetent	SI2	0.773			

**Table 2**  
Discriminant validity- Fornell-Larcker criterion.

Variable	AT	PFI	SAS	SI
AT	<b>0.759</b>			
PFI	0.562	<b>0.731</b>		
SAS	0.522	0.650	<b>0.763</b>	
SI	0.688	0.590	0.546	<b>0.778</b>

**Table 3**  
Overall measurement model fit.

	Saturated model (sat)			Estimated model (est)		
	Value	HI 95	Remarks	Value	HI 95	Remarks
SRMR <0.08	0.046	0.043	Supported	0.058	0.038	Supported
d_ULS sat < HI 95	0.250	0.874	Supported	0.988	0.997	Supported
d_G sat < HI 95	0.518	0.216	Supported	0.757	0.536	Supported

of individuals who pursued TVET careers and excelled in their fields. TVET can be successfully portrayed in a positive light through awareness campaigns. It is possible for stakeholders to raise awareness of TVET subjects and the opportunities available in the industry by using various media platforms, whereas mentorship programs can enable students to make informed decisions about their future careers by providing practical guidance and exposure to TVET careers. By participating in such programs, students can have access to successful TVET professionals who can act as role models and provide guidance.

The study has further found that the school affective support does not show significant relationship on students' attitude towards TVET. This indicates that the school is not doing enough to support students towards TVET education which in the end will result to students thinking that TVET education is mostly done by academically incompetent students and hence it is not regarded as an important subject in the school. For instance, the results show that teachers do not deliver the content to the



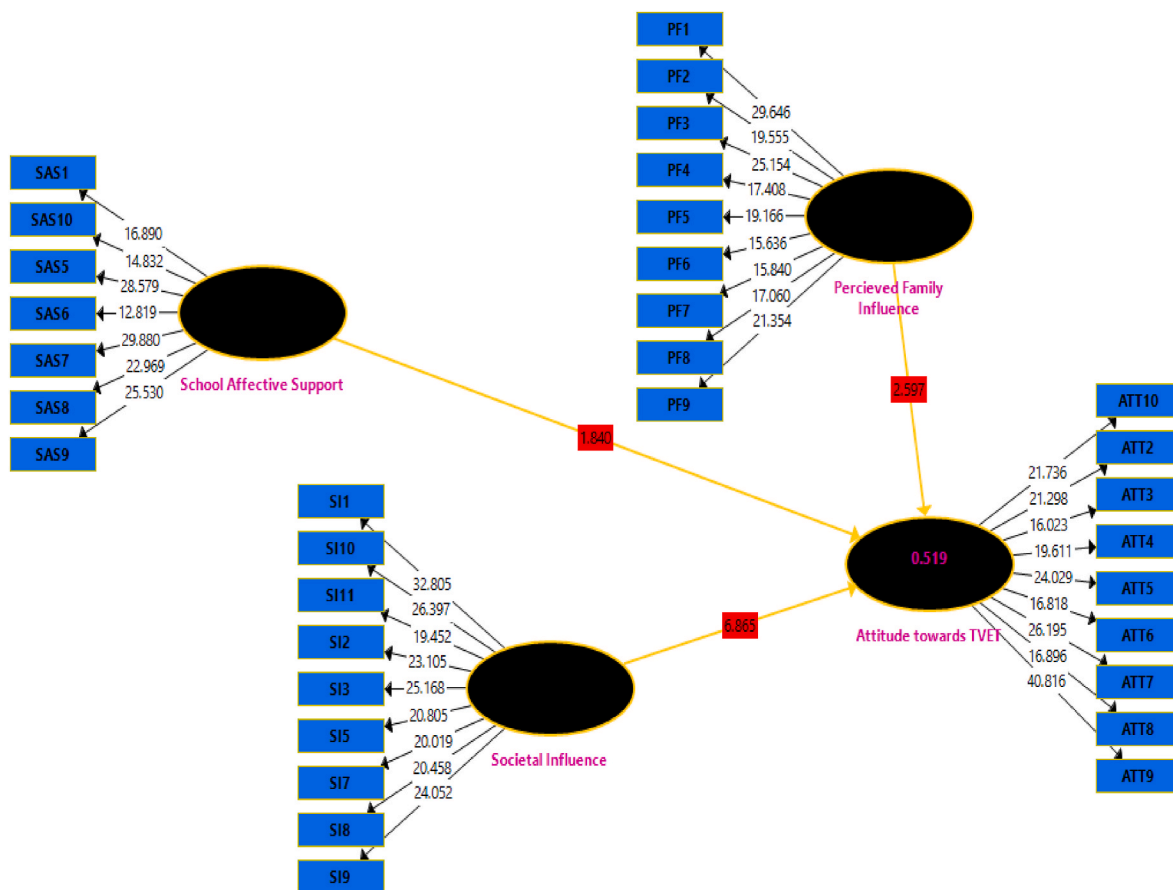


Fig. 4. Structural model estimates.

Table 4 Relationship between variables in the model.

Causal relationship	$\beta$	Std. Dev	t - values	p- values	Remarks
Perceived Family Influence ->Attitude towards TVET	0.176	0.068	2.584	0.010	Supported
Societal Influence ->Attitude towards TVET	0.515	0.073	7.026	0.000	Supported
School Affective Support ->Attitude towards TVET	0.127	0.065	1.955	0.051	Not supported

students in a way that they understand. To support this statement, AhmedAlnaqbi (2015) posits that curriculum, potential employment, cost of education and teachers are some factors that influence attitude towards vocational education. One other contributing factor is providing them with relevant equipment required for the specific subjects. Adewale et al. (2017) opines that it is necessary for a school to have resources like textbooks and equipment’s for effective teaching and learning of TVET.

5.1. Implications of the study

A variance-based structural equation model approach was used to study secondary school students’ attitudes toward TVET subjects in Lesotho in order to gain insight into their perceptions and attitudes toward these subjects. Researchers found several implications for policymakers, educators, and administrators responsible for TVET in Lesotho. In Lesotho, the study indicates that TVET subjects must be perceived and

promoted differently to address the needs of secondary school students. Among secondary school students, societal and family influences are major factors contributing to positive perceptions and attitudes toward TVET subjects. To further promote awareness of TVET subjects in the country, policymakers, educators, and administrators must develop effective strategies. Also, TVET curricula that meet industry needs and prepare students for the workplace should be developed in a practical and relevant manner. According to the findings, many students perceive TVET subjects as theoretical, outdated, and irrelevant to today’s job market. Consequently, TVET institutions and industry stakeholders must collaborate to ensure that TVET curricula are current and relevant.

6. Recommendations and conclusion

There is a significant relationship between students’ attitudes towards TVET and perceived family influence and societal influence. Following are the conclusions drawn from this study. According to the results, most of the participants were aged under 24 and female, indicating that the future generations of the country will have great opportunities to gain further access to TVET training. Based on the findings above, it has been concluded that the school does not support students enough regarding TVET education. Therefore, it is recommended that the school provide appropriate equipment for effective teaching and learning of TVET. Again, the school can also take students for a career guidance trip to TVET colleges, so that students could be exposed to TVET training not just universities that offer white collar jobs. It is also recommended that TVET teachers be taken to workshop for orientations so that they could assist students in delivering the content in a way that they will comprehend and love the subject. Further, A serious and reliable campaign should be organized and offered by the government, board members of TVET, and schools on the significance of TVET in

eradicating poverty and promoting economic development in the country. To reinforce and improve the quality of TVET education, governments, communities, and NGOs should provide financial, material, and human resources.

## 7. Limitations and future work

This study has a number of limitations. It should be noted that the study was conducted within the Mafeteng district and that the results may not be generalizable to other districts in the country. It is possible, however, that the results may not be fully representative due to the small sample size. Additionally, the study relied on self-reported data, which may be biased and not accurately represent participants' attitudes. Also, the study did not consider the perspectives of other stakeholders, such as parents, teachers, or policymakers, in its study of secondary school students' attitudes toward TVET subjects. While this study has its limitations, it still provides valuable insights into secondary school students' attitudes toward TVET subjects in Lesotho. The limitations of this study could be addressed in future research in this area in order to build on these findings. To provide a more comprehensive understanding of the factors that affect attitudes toward TVET subjects, future studies could include larger sample size and incorporate perspectives from other stakeholders. Researchers could also develop interventions to improve school affective support for TVET students by exploring mechanisms through which affective support influences attitudes towards TVET. Research on career guidance and counseling programs for secondary school students may also be conducted in the future to determine their effectiveness in promoting positive attitudes toward TVET subjects. Lastly, future research could analyze findings based on gender and conduct longitudinal studies to identify factors contributing to changes in attitudes toward TVET subjects over time.

## CRedit authorship contribution statement

**Musa Adekunle Ayanwale:** Conceptualization, Writing – original draft, Methodology, Data curation, Validation, Formal analysis, Writing – review & editing, Visualization, Supervision. **Rethabile Rosemary Molefi:** Writing – original draft, preparation, Formatting, Investigation. **Nthama Matsie:** References alignment, Editing.

## Declaration of competing interest

We wish to confirm that there are no known conflicts of interest associated with this manuscript.

## Acknowledgements

The authors acknowledged all the previous works used in this study.

## References

- Ade-Ibijola, A., & Aruleba, K. (2019). Interactive learning of factual contents using a game-like quiz. In S. Kabanda, H. Suleman, & S. Gruner (Eds.), *ICT education. SACLA 2018. Communications in computer and information science* (Vol. 963). Cham: Springer. [https://doi.org/10.1007/978-3-030-05813-5\\_19](https://doi.org/10.1007/978-3-030-05813-5_19).
- Adewale, B., Adisa, O., Ndububa, C., Olawoyin, O., & Adedokun, A. (2017). Attitude of students and teachers towards vocational education in secondary schools in Ota, Ogun state, Nigeria. *INTED2017 Proceedings*, 1(March), 4480–4487. <https://doi.org/10.21125/inted.2017.1062>
- Ahmed Alnaqbi, S. K. (2015). Attitudes towards vocational education and training in the context of United Arab Emirates: A proposed framework. *International Journal of Business and Management*, 11(1), 31. <https://doi.org/10.5539/ijbm.v11n1p31>
- Ajzen, I. (2012). The Theory of planned behavior. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 438–459). London, UK: Sage.
- Alam, G. M., & Forhad, M. A. R. (2021). Roadblocks to university education for diploma engineers in Bangladesh. *Higher Education, Skills and Work-based Learning*, 11(1), 59–77. <https://doi.org/10.1108/HESWBL-07-2019-0096>
- Amusa, J. O., & Ayanwale, M. A. (2021). Partial least square modeling of personality traits and academic achievement in physics. *Asian Journal of Assessment in Teaching and Learning*, 11(2), 77–92. <https://doi.org/10.37134/ajatel.vol11.2.8.2021>
- Ansah, M., & Attah, P. (2019). Attitudinal change towards technical and vocational education and training (TVET) in ashanti region of Ghana. *ijiras.com*, 6(Issue 1), 16–20. <https://www.semanticscholar.org/paper/Technical-and-Vocational-Education-and-Training-in-Ansah-Ernest/ac3f1d90da7c601e3f4ea4d43b90088bc4be93f3>.
- Aruleba, K., & Jere, N. (2022). Exploring digital transforming challenges in rural areas of South Africa through a systematic review of empirical studies. *Scientific African*, 16, 1–13. <https://doi.org/10.1016/j.sciaf.2022.e01190>. e01190.
- Aruleba, K., Jere, N., & Matarirano, O. (2022). An evaluation of technology adoption during remote teaching and learning at tertiary institutions by gender. *IEEE Transactions on Computational Social Systems*, 10, 1–12. <https://doi.org/10.1109/TCSS.2022.3163912>
- Ayanwale, M. A., Mosia, P. A., Molefi, R. R., & Shata, L. (2023). Reliability components of online teaching and learning tools in Lesotho higher education institutions: A systematic review. *Pertanika Journal of Science and Technology*, 31(1), 595–614. <https://doi.org/10.47836/pjst.31.1.34>
- Ayanwale, M. A., & Oladele, J. I. (2021). Path modeling of online learning indicators and students' satisfaction during covid-19 pandemic. *International Journal of Innovation, Creativity and Change*, 15(10), 521–541. [https://www.ijicc.net/images/Vol\\_15/Iss\\_10/151038\\_Ayanwale\\_2021\\_E1\\_R.pdf](https://www.ijicc.net/images/Vol_15/Iss_10/151038_Ayanwale_2021_E1_R.pdf).
- Ayanwale, M. A., Sanusi, I. T., Adelana, O. P., Aruleba, K. D., & Oyelere, S. S. (2022). Teachers' readiness and intention to teach artificial intelligence in schools. *Computers and Education: Artificial Intelligence*, 3. <https://doi.org/10.1016/j.caeai.2022.100099>
- Ayub, H. (2017). Parental influence and attitude of students towards technical education and vocational training. *International Journal of Information and Education Technology*, 7(7), 534–538. <https://doi.org/10.18178/IJIEET.2017.7.7.925>
- Bagozzi, R. P. (1981). Attitudes, intentions, and behavior: A test of some key hypotheses. *Journal of Personality and Social Psychology*, 41(4), 607–627. <https://doi.org/10.1037/0022-3514.41.4.607>
- Bandura, A. (1986). *Social foundation of thoughts and actions. A social cognitive theory*. Prentice Hall. <https://psycnet.apa.org/record/1985-98423-000>.
- Buang, Z., Mohamad, M. M., Ahmad, A., & Yuniarti, N. (2020). The earnings and employment of community colleges' graduates: Occupational field and gender analysis. *Jurnal Pendidikan Teknologi Dan Kejuruan*, 26(1), 11–17. <https://doi.org/10.21831/jptk.v26i1.29750>
- Chua, Y. P., Wong, A. F. L., Yeoh, B. S. A., & Ang, R. P. (2020). Social support and career self-efficacy in predicting attitudes towards vocational education and training in Singapore. *Asia Pacific Journal of Education*, 40(4), 433–446.
- Davadas, S. D., & Lay, Y. F. (2018). Factors affecting students' attitude toward mathematics: A structural equation modeling approach. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(1), 517–529. <https://doi.org/10.12973/ejmste/80356>
- Davadas, S. D., & Lay, Y. F. (2020). Contributing factors of secondary students' attitude towards mathematics. *European Journal of Educational Research*, 9(2), 489–498. <https://doi.org/10.12973/eu-jer.9.2.489>
- Dincer, A., & Yesilyurt, E. (2019). The effect of teacher support on vocational high school students' attitudes towards vocational education and training. *Journal of Education and Practice*, 10(28), 19–26.
- Eddie, S., & Mwanza, D. S. (2020). Factors contributing to pupils' poor performance in literature in English. *International Journal of Humanities, Social Sciences and Education*, 7(3), 55–65. <https://doi.org/10.20431/2349-0381.0703007>
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18(3), 382–388. <https://doi.org/10.2307/3150980>
- Group, W. B. (2017). *World development indicators 2017*. World Bank. <https://doi.org/10.1596/26447>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2014). A primer on partial least squares structural equation modeling (PLS-SEM). In *International journal of research & method in education*. <https://doi.org/10.1080/1743727x.2015.1005806>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2016). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19(2), 139–152. <https://doi.org/10.2753/MT1069-6679190202>
- Hamid, Z., Yusri, K., Azlan, A. L., & Yahya, B. (2016). Generic Green Skills: Industry and perspectives on technical education and vocational training (TVET). *The Online Journal and Vocational Education and Training in Asia*, 6, 1–12. [http://www.tvet-online.asia/issue6/zolkifli\\_et\\_al\\_tvvet6.pdf](http://www.tvet-online.asia/issue6/zolkifli_et_al_tvvet6.pdf).
- Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management and Data Systems*, 116(1), 2–20. <https://doi.org/10.1108/IMDS-09-2015-0382/FULL/PDF>
- Herwiana, S., & Laili, E. N. (2021). Students' attitude towards English language learning. *Journal of Educational Method and Technology*, 2(3). <https://doi.org/10.36412/jemtec.v2i3.1026>
- Khaizer Omar, M., Rauf, A., Ismail, N., Rashid, A. M., Hazwan, M., Puad, M., & Zakaria, A. (2020). Factors on deciding TVET for first choice educational journey among pre-secondary school student. *European Journal of Molecular & Clinical Medicine*, 609–622, 07(03,2020) [https://www.researchgate.net/publication/346199349\\_Factors\\_On\\_Deciding\\_TVET\\_For\\_First\\_Choice\\_Educational\\_Journey\\_Among\\_Pre-Secondary\\_School\\_Student](https://www.researchgate.net/publication/346199349_Factors_On_Deciding_TVET_For_First_Choice_Educational_Journey_Among_Pre-Secondary_School_Student).

- Maskey, S. (2019). Choosing technical education and vocational training: A narrative inquiry. *Journal of Education Research*, 9(2), 9–26. <https://doi.org/10.3126/jer.v9i2.30460>
- Mohaffyza Mohamad, M., Hussein Onn Malaysia Yee Mei Heong, T., & Rashid Rajuddin, M. (2012). Vocational pedagogy A dimension of vocational learning with workplace requirement 1. *Journal of Technical Education and Training (JTET)*, 4(Issue 1). <https://publisher.uthm.edu.my/ojs/index.php/JTET/article/view/482>
- Mohamed, S. Z. (2022). Factors affecting the attitude of students towards TVET education in Bedesa town , western Harerge zone , Oromia regional state. *Psychology Journal*, 4(4), 1–8. <https://researchopenworld.com/wp-content/uploads/2022/10/PSYJ-4-445.pdf>.
- Mohd Zin, M. F., & Md. Yunus, M. (2020). TVET students' attitudes and motivation toward learning English. *International Journal of Academic Research in Business and Social Sciences*, 10(11), 717–727. <https://doi.org/10.6007/ijarbs/v10-i11/8134>
- Mosebekoa, M. J. (2018). *The technical and vocational education and training as the basis for societal development: The comparative study of the republic of South Africa and Lesotho*. Free State: Central University Of Technology. <http://ir.cut.ac.za/bitstream/handle/11462/2241/Mosebekoa%2C%20Motsamai%20Joseph.pdf?sequence=1&isAllowed=y>.
- Nasir, K. B., & Neger, M. (2022). Students' attitude towards online education system: A comparative study between public and private universities in Bangladesh. *Journal of Social, Humanity, and Education*, 2(2), 167–183. <https://doi.org/10.35912/jsh.e.v2i2.860>
- Ngogo, J. L. (2014). *Assessment of attitudes of secondary school students towards vocational education and training in Tanzania*. <http://www.suaire.sua.ac.tz/bitstream/handle/123456789/659/JOEL%20LAMECK%20NGOGO.pdf?sequence=1&isAllowed=y>.
- Okoye, K. R. E., & Udouo, E. S. (2015). Vocationalisation of secondary education in Nigeria: Issues, challenges and prospects. *Journal of Education and Practice*, 6(30), 71–76. <https://files.eric.ed.gov/fulltext/EJ1081310.pdf>.
- Oluwajana, D., Idowu, A., Nat, M., Vanduhe, V., & Fadiya, S. (2019). The adoption of students' hedonic motivation system model to gamified learning environment. *Journal of Theoretical and Applied Electronic Commerce Research*, 14(3), 156–167. <https://doi.org/10.4067/S0718-18762019000300109>
- Quintana, S. M., & Maxwell, S. E. (1999). Implications of recent developments in structural equation modeling for counseling psychology. *The Counseling Psychologist*, 27(4), 485–527. <https://doi.org/10.1177/0011000099274002>
- Rathidevi, D., & Sudhakaran, M. V. (2019). Attitudes of students towards vocational education with reference to Chennai city. *The International Journal of Indian Psychology*, 7(3), 84–93. <https://doi.org/10.25215/0703.011>
- Reyes, R. (2018). *Leading the country in TVET: Don bosco technical vocational education and training center*. Doctoral dissertation, University of Southern California.
- Ringle, C. M., Wende, S., & Becker, J.-M. (2015). *SmartPLS 3*. Boenningstedt: SmartPLS GmbH.
- Rohanai, R., Ahmad, M. F., Rameli, M. R. M., Hassan, W. A. S. W., & Mutalib, N. N. A. (2022). The attitudes of MTUN students towards m-learning usage during COVID-19 pandemic. *International Journal of Information and Education Technology*, 12(5), 406–413. <https://doi.org/10.18178/ijiet.2022.12.5.1634>
- Rotich, Reuben, W., & Hebert, D. (2020). Influence of occupational stereotyping on enrolment in technical courses: A case of female students in technical training institutions in north rift region, Kenya. *African Journal of Education, Science and Technology*, 5(4), 249–256. <https://ajest.info/index.php/ajest/article/view/437>
- Sitepu, E. S., Chik, W., Binti, N., Mansor, M. B., & Maarof, S. B. (2020). The role of intellectual , emotional and spiritual intelligence towards entrepreneurial intention. *International TVET Academic Research Conference 2020 (ITARC)*, 2(1), 117–123. [https://www.researchgate.net/publication/341508280\\_The\\_Role\\_of\\_Intellectual\\_Emotional\\_and\\_Spiritual\\_Intelligence\\_towards\\_Entrepreneurial\\_Intention\\_among\\_TVET\\_Student\\_Indonesia\\_and\\_Malaysia](https://www.researchgate.net/publication/341508280_The_Role_of_Intellectual_Emotional_and_Spiritual_Intelligence_towards_Entrepreneurial_Intention_among_TVET_Student_Indonesia_and_Malaysia).
- Spees, A.-C. (2018). Could Germany's vocational education and training system be a model for the U.S.? *World Education News + Reviews*, 1–13. <https://wenr.wes.org/2018/06/could-germanys-vocational-education-and-training-system-be-a-model-for-the-u-s>.
- Taber, K. S. (2018). The use of cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273–1296. <https://doi.org/10.1007/S11165-016-9602-2/TABLES/1>
- Tsakamoto, K. (2016). *Vocational education and training (VET) in Japan*. Australian Government: Department of Education and Training, March, 1–4 <https://internationaleducation.gov.au/International-network/japan/countryoverview/Documents/2016%20VET%20brief.pdf>.
- Um, N. (2021). Learners' attitude toward E-learning: The effects of perceived system quality and E-learning usefulness, self-management of learning, and self-efficacy. *International Journal of Contents*, 17(2), 41–47. <https://doi.org/10.5392/IJoC.2021.17.041>
- UNESCO. (2021). *Sub-education policy review report: Technical and vocational and training (Vol. 74)*. Unesco. [https://en.unesco.org/sites/default/files/tvet\\_final\\_-\\_january\\_2021.pdf](https://en.unesco.org/sites/default/files/tvet_final_-_january_2021.pdf).
- Yang, Y., Wu, X., & Qiu, X. (2018). The effects of teacher emotional support on students' attitudes towards vocational education and training in China. *Journal of Vocational Education and Training*, 70(4), 555–571.
- Zhang, H., Zhang, L., & Zhang, Y. (2020). The influence of teacher support on vocational high school students' attitudes towards vocational education and training. *Educational Research and Evaluation*, 26(5–6), 297–313.