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The Secondary School Students' Interest toward the TVET Programs: Demographic Differences

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Abstract. Technical and Vocational Education and Training (TVET) has been globally recognized as one of the most vital subjects in any educational system. Pakistan is currently confronted with numerous challenges because of globalization and the emergence of new economic and social orders. To satisfy the updated requirements of economic trends, current educational systems must prioritize TVET as the most effective tool for satisfying globalization expectations. This study aimed to determine the demographic differences of secondary school students' interest toward TVET programs, which may be considered success factors for future enrollment initiatives. We perform an in-depth investigation into the relationship between students' interest in TVET programs and their demographic features, including gender, field of education, and geography. A total of 386 secondary school pupils in Pakistan participated in the study. A cross sectional research approach was employed. The mean, frequency, t-test, and ANOVA results were calculated on the collected data using the Statistical Package for the Social Sciences (SPSS). The findings indicate that students' perceptions of their interest in the TVET programs on all three dimensions (i.e. affection, cognition and conation) were somewhat poor. The t-test revealed a statistically significant difference in male and female students' interest in TVET programs. Male students were more interested in TVET programs compared to females. According to their field of education, the one-way ANOVA test revealed a substantial difference in their interest in TVET programs. Tukey HSD post-hoc analysis results suggest that there is a substantial disparity in students' interest in TVET programs in the field of education. The mean scores indicate that students in the humanities group were more interested in TVET programs, followed by bioscience, and computer science. The t-test reveals that students who live in urban regions have a higher level of interest compared to those who live in rural areas. The data gathered from this study provide insight onto the possible approaches academic institutions can take to prepare for and address current problems associated with introducing TVET programs in secondary schools. This

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paper argues for the need to integrate TVET programs in Pakistan which can promote transformative, lifelong learning and provide vital implications with recommendations for policy and practice.

Keywords: demographic variables; secondary schools; technical and Vocational Education and Training

1. Introduction

Technical and Vocational Education and Training (TVET) has received significant attention in numerous national and international contexts (Kizu et al., 2019). The progression of globalization demands a more properly-trained workforce that is industry-responsive and possesses high order skills (Marope et al., 2015). A skilled workforce has an important role in industrialization, economic growth, employee development, and increased foreign direct investment (Hussain et al., 2021). Over the years, people have increasingly realized that public education is relatively overly theoretical and academic, and does not sufficiently prepare the younger generation for employment in practical settings. There is no doubt that, compared to general education, vocational education is more directly related to professional and economic development (Edokpolor & Abusomwan, 2019). Consequently, organizations must respond strategically to changes to benefit from economic growth.

Pakistan is a highly populated developing nation in South Asia, with a high proportion (64%) of youth between 15-30 years of age (Pakistan Bureau of Statistics, 2020). With such a fast-growing youth population, Pakistan requires skilled TVET graduates who can fill the modern demands of the market and human capital for the progression of the country. The Pakistani government has released vision 2025, recognizing the need for TVET and encouraging economic development and aids to reach the vision of a fully developed and industrialized nation by 2025 (Planning Commission, 2014). Economic development relies upon a series of factors, including increased productivity, increased exports, and the maintenance of quality standards necessary to compete globally (Sarastuen, 2020). Sustaining a trained and skilled workforce becomes a component in achieving vision 2025.

Pakistan is confronted with issues of underemployment and unemployment, which are obstacles in the way of economic development. Pakistan experiences a shortage in the skilled workforce, and unemployment in the face of globalization. The rate of unemployment may be minimized by individuals' employability and economic growth. However, without employable skills, poor people cannot be employed. To address these challenges, a skilled workforce may be created through TVET (Pavlova, 2019). Considering these challenges, a well-organized TVET is one of the country's potential remedies (Government of Pakistan, 2015).

The importance of secondary education cannot be exaggerated. It helps the child acquire added awareness, skills and traits beyond the required level of education and its part as the bridge between primary and higher education (Meyer et al., 2019). The main factor that calls for the acquisition of secondary education in Pakistan is that, regrettably, lower than 20% of the youth completes

secondary education. Additionally, a meagre percentage of practical skills are acquired (Ministry of Education of Pakistan, 2018). Thus, there is the acute need to develop a robust pool of skills among young people so that they can earn a reputable living for their families (Ministry of Education of Pakistan, 2018).

Dual-style vocational education, which is already in use in several European nations, comprises of professional degrees that integrate employment and study in a dual program (Saari & Rashid, 2013). The dual system encourages collaboration among government, industry, and academic institutions. The Pakistani government may consider this program to aid Pakistan in its efforts to collaborate closely with both industrial and academic institutions, and to promote TVET. The main advantage of the dual system as a study paradigm is that students can immediately connect classroom knowledge with on-the-job experience. This program supports students in making a seamless transition from an education setting to a work-life setting (Omar et al., 2019; Rashid et al., 2009).

There is a dearth of studies in the literature on students' interest toward TVET programs in Pakistan, which can provide insight on whether Pakistani students are interested in the dual system of vocational education. Consequently, this study considers students' perceptions and levels of interest in TVET programs.

2. Literature Review

2.1 Students' Interest in TVET Programs in Pakistan

Social and cultural issues contribute to low enrolment in TVET program and affecting students' interest in the TVET program (Ayub, 2017). In the Pakistani context, TVET refers to the program of theoretical and hands-on training for the world of work, and on the actual attainment of proficiency in manual skills. Skilled workers are generally associated with doing jobs with their hands in Pakistan and many of the occupations and trades in TVET are regarded as ignoble and unbecoming. These trades are considered for the poor and underprivileged (Alam, 2015). Due to this belief, many parents do not want their children to earn a living as a full-time carpenter, motor-mechanic, plumber, farmer, and brick-layer.

In Pakistan, TVET faces many challenges: cultural and social norms play a vital role in developing individual interest and keeping pupils reluctant to enroll in technical institutes (Chamadia & Shahid, 2018). Personal interest is a construct that plays a crucial role in understanding human behavior and motivation. It is acknowledged that individual interest rises in early childhood and is mostly consistent from childhood to young adulthood. The combination of psychological factors and background variables can explain the development of individual interest. Human development occurs within a context of the system that is formed by one's affiliations (e.g., family, neighbor, or school), associations of the different social groups, and significant socio-political climate (Slot et al., 2020).

2.2 TVET Phases in Pakistan: A Historical Account

Pakistan inherited no formal TVET foundation at the time of independence in 1947. Technical and vocational teaching was first considered in Pakistan during

1950s when two polytechnic institutes in Rawalpindi and Karachi were founded. Since that time, Pakistan's technical education has undergone several changes (TEVTA, 2018). These eras can be divided into two significant periods in terms of technical and vocational education in the Punjab, namely the prior to the Technical Education and Vocational Training Authority (or TEVTA) and post-TEVTA eras in Punjab (Hassan, 2007). However, TEVTA divides the pre-TEVTA period into five phases.

The first phase in 1947-1957 involved sensitization and orientation in which the Council for Technical Education was set up in 1948 under the guidance of Quaid-e-Azam Muhammad Ali Jinnah. In 1947, Pakistan's first education conference introduced technical topics at secondary school level to provide opportunities for rural residents and alleviate pressure on the urban labor market (Government of Pakistan, 1947). In 1950, the Technical Educational Committee formulated the scope of vocational education at the secondary level. Later in 1951, a joint conference between the Central Education Board and the Inter-University Board (renamed the Higher Education Commission by the earlier University Grants Commission) advised that commerce and agriculture be made compulsory at the secondary level (Government of Pakistan, 1959).

The second era in TVET's history occurred between 1958 and 1969, during which the TVET program grew. Additionally, Lahore's first Polytechnic Institute for Women was founded in 1967 as part of an initiative for technical education.

In the third period, TVET observed innovation and experimentation between 1970 and 1979. An administration unit in West Pakistan was also banished, and the provinces of Sindh, Punjab, Khyber Pakhtunkhwa (KPK) Province, and Baluchistan were revived. In 1972, the government of Pakistan announced the education policy for 1972-1980, which encouraged diversification in secondary education with a technical education stream at various levels (National Education Policy, 1972). This policy suggested that by 1980, enrollment in the technical stream should reach 33%. Another significant development was the introduction of matriculation numbers for students' identification purposes (Government of Pakistan, 1972).

The fourth phase between 1980 and 1990 became the implementation and expansion phase, and this involved the introduction of the National Training Ordinance during the first year in this phase. By 1988, the participation of women in technical education began to increase, and three women polytechnics were established in Faisalabad, Multan, and Bahawalpur (Chamadia & Shahid, 2018). The last period under the classification considered in this study, the qualitative improvement period in vocational training occurred from 1991 to 1999.

Technical education in Pakistan has made noticeable progress. It used to be considered something out of the mainstream of education but recently it has come to be looked upon as an integral part of education. TVET may have been neglected initially, but as presented in the five phases, it has been given attention.

2.3 Previous Research

In this section, recent works from the existing literature are summarized. Many research works on student attitude and interest toward TVET have been conducted from different perspectives and countries, which are discussed hereafter.

The study of interest is one of the central constructs in career psychology. For example, there have been over 2,000 research studies of interest among Holland's realistic, investigative, artistic, social, enterprising, and conventional (RIASEC) themes alone (Atitsogbe et al., 2018; Perera & McIlveen, 2018; Slot et al., 2020) in the STEM field. Some studies demonstrate the influence of students' interest on their decisions regarding TVET programs (Azeem et al., 2021; Aziz & Zulkifli, 2020; Ngugi & Muthima, 2017). The study conducted by Mansor and Rashid (2013) revealed that being uninformed about TVET and what it can offer may decrease students' interest in enrollment. Omar et al. (2020) indicated a high level of motivation ($M=4.23$, $SD=1.17$), interest ($M=3.84$, $SD=1.10$), and knowledge ($M=3.72$, $SD=0.95$) for choosing TVET, likely due to the promotion and strategy on empowering TVET for developing its positive image among Malaysian secondary school students.

The study by Ochieng et al. (2020) comprised of 291 Kenyan students and aimed to determine the relationship between attitude, motivation, interest, and career choice in science TVET programs. Proportionate sampling was used to select the students and a significant negative relationship was found among psychological factors and female students' career choices in TVET programs ($r = -0.16$; $p < 0.01$). This shows that the absence of positive attitude, interest and motivation toward particular TVET courses impacted their selected careers in science-based TVET programs.

Historically, vocational education programs were split into stereotypically male and female occupations. As a result, female students participated in occupational programs such as childcare, social work, nursing, household management, and secretarial jobs. Meanwhile, male students enrolled in auto mechanic work, electrical work, plumbing, carpentry, and metal work. Despite various efforts by governments, teachers, and international organizations, this legacy persists to progress gender inequality in terms of access to non-traditional jobs (U.S. Department of Education, 2016).

UNESCO (1999) has been an advocate for gender equality, notably female involvement in vocational and technical education, on a global scale. According to Second International Congress on Technical and Vocational Education report (UNESCO, 1999), traditional notions of men and women's acceptable responsibilities in the workplace should be questioned. TVET must respond by providing gender-inclusive education.

The study conducted in Pakistan by Ullah et al. (2020) discovered that the gender of students plays a significant role in their parents' decision to enroll them at schools. Boys were considered to be more talented compared to girls, and parents claimed that their sons outperformed their daughters. This tendency appears to be related to women's lower involvement rate (25%) in Pakistan's labor market, compared to the involvement of men (75%) (UNDP, 2019). Other

research indicated that more boys than girls attend vocational schools, implying that girls are more intellectually and conceptually oriented compared to boys (Adewale & Adhuze, 2017; Ngugi & Muthima, 2017). Additionally, Azeem and Omar, (2019) confirmed by systematically reviewing literature that students' interest in TVET programs is dependent on gender, location, and educational background. In contrast, Mahajan and Golahit (2017) discovered that students' interest in vocational education and training is not gender-dependent. Gender was not found to be a statistically significant predictor of attitude differences, implying that both females and males have a relatively neutral attitude toward vocational education.

Due to the difficulty in locating vocational or technical work in rural areas, particularly for females, students from these areas are more academically-oriented compared to those from urban areas (Al-sa'd, 2007). Neusuess (2020) discovered that area of residence affects children's choice of TVET. Rural students tend to be more interested in technical education than their urban counterparts. Alnaqbi (2016) confirmed that attitudes of TVET are different in urban and rural locations. According to Song et al., (2013), vocational pathways are not favored by students from rural areas. These students would rather pursue their academic careers.

This article descriptively analyzes the level of secondary school students' interest in TVET programs, and the difference in the demographic variables in Punjab, Pakistan. The following research objectives were formulated for this study:

- i. To determine the level of interest in TVET programs among secondary school students in Punjab, Pakistan.
- ii. To assess the difference of students' interest in the TVET programs in secondary school students in Punjab, Pakistan based on gender.
- iii. To examine the difference of students' interest in TVET programs in secondary school students in Punjab, Pakistan based on field of education.
- iv. To determine the difference of students' interest in TVET programs in secondary school students in Punjab, Pakistan based on location.

The following research hypotheses were formulated for this study with a significance level of 0.05:

H₀₁: No significant difference exists in students' interest in TVET programs in secondary school students in Punjab, Pakistan based on gender.

H₀₂: No significant difference exists in students' interest in TVET programs in secondary school students in Punjab, Pakistan based on field of education.

H₀₃: No significant difference exists in students' interest in TVET programs in secondary school students in Punjab, Pakistan based on location.

3. Methodology

3.1 Research Design and Participants

A cross-sectional quantitative research design was employed in this work. This approach is suitable for collecting numeric data from the formal measurement, which was analyzed using statistical procedures (Ary et al., 2018). A set of self-reported questionnaires was used to assess secondary school students' interest in the TVET program.

For this research, Cochran's formula was used to compute the sample size with 95% confidence level (Cochran, 2007). The sample size formula is presented as below:

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \quad (i)$$

where N = number of people in the population

where n_0 = sample size

$$n_0 = \frac{z^2 pq}{d^2} \quad (ii)$$

where Z = 1.96, and $q = 1 - 0.5 = 0.5$, where $q = 1 - p$

where d = acceptance margin error for mean being estimated = 95% (0.05)

$n_0 = 384$, and therefore, $n_1 = 384$

However, another 5% was added to the minimum sample in order to avoid non-responses from the students during the data collection phase (Fraenkel et al., 2017). The 5% sample size was obtained by summing another 5% (i.e. 19 samples) to the existing 384 samples. The total sample size used was 403 secondary school students in the Punjab province, Pakistan. From the 403 questionnaires distributed, 386 were fully-filled and returned. Thus, data from 386 questionnaires were analyzed in this research, which comprised of 197 girls and 189 boys. The students were from 10th grade and were aged between 15 and 17 years.

3.2 Sampling Technique

The present study used a multistage proportionate stratified random sampling technique to collect data. In the initial stage, 12 districts were chosen randomly among Punjab's 36 districts (four districts were randomly selected from each high, high medium, medium and low medium social stratum). The researcher then used computer-generated digits to randomly select three schools with equal sample sizes from the 12 districts in Punjab ($3 \times 12 = 36$ schools). The sample size was calculated in accordance to its proportion (%) in each district on the assumption that all government high and higher secondary schools had similar standards and environments. Lastly, the respondents of the research were randomly selected at the school level to complete the questionnaires.

3.3 Research Instrument

A student's interest scale was used to measure the secondary school student's interest towards the TVET programs. It involved a demographic section, and

students' interest in TVET programs. The demographics consisted of three items for identifying students' gender, age, study field, and location.

The set of 19 items were adapted from Ainley (2011) and Baker et al. (2015). The items were grouped into three categories according to content, including affection (7 items), cognition (5 items), and conation (7 items). Some samples are "I like working with my hands" (affection), "I know different ways to create a design" (cognition), and "I am persistent and willing to try new processes to get an invention to work" (conation).

Participants were requested to fill out a five-point Likert scale ranging from 1 to 5 (1 = strongly disagree; 2 = disagree; 3 = neutral, 4 = agree, and 5 = strongly agree). The survey instrument was validated by experts from academics and practitioners with PhD qualifications and experiences of the TVET field. The internal consistency reliability value for the instrument was measured using Cronbach's alpha. For the affection, cognition, conation, the values were 0.77, 0.71, 0.78 respectively. The reliability of the predefined questionnaire was 0.95. These values indicate good internal consistency for the scale as a whole and for the three subscales.

3.4 Data Analysis

Descriptive analysis was employed to analyze Research Objective 1: To identify the variable level by the mean score. The level of students' interest in TVET programs was measured according to the interpretation chart mean score by Ishak et al. (2018). The level of acceptance is shown in Table 1. An independent t-test and ANOVA were used for comparing the means of the variables.

Table 1: Interpretation of Mean Score

Mean Score	Acceptance Level
1.00-2.00	Low
2.01-3.00	Moderately Low
3.01-4.00	Moderately High
4.01-5.00	High

Ishak et al. (2018)

4. Results and Discussion

4.1 Profile of the Participants

The respondents' demographic data showed 189 (49.0%) male and 197 (51.0%) female respondents. For location, 188 (48.7 %) of the respondents were from rural areas and 198 (51.3%) were from urban areas. It is depicted from the results that a larger portion of the data were collected from the urban location. With regards to the field of education of the respondents, the computer science group were in the majority constituting (34.7%) of all participants; 128 (33.2%) of respondents were from humanities group; and the remaining 124 (31.1%) were from the bioscience group.

Table 2 indicates the demographic variables (gender, location, and the field of education) frequency distribution and percentage of respondents.

Table 2: Respondents' Demographic Profile (n=386)

Profile	Frequency	Percentage (%)
Gender		
Male	189	49.0%
Female	197	51.0%
Location		
Rural	188	48.7%
Urban	198	51.3%
Field of Education		
Computer science	134	34.7%
Bioscience	124	32.1
Humanities	128	33.2

4.2 Level of Students' Interest in TVET Programs

The descriptive analysis of the students' interest in TVET programs is discussed in this section. A total of 19 statements were asked to measure the self-perception of students' interest in TVET programs among secondary school students. A five-point Likert scale was used to measure the responses for each item. Descriptive statistics such as mean and standard deviation were used to show students' interest in TVET programs.

Additionally, the results suggest that the top mean scores for students' interest in TVET programs among secondary school students in Pakistan were affection ($M=2.66$, $SD=.95$), cognition ($M=2.60$, $SD=1.0$), and conation ($M=2.54$, $SD=1.02$). The remaining scores in each construct were found between these two extremes of mean scores and standard deviation values, as presented in Table 3. The overall students' interest in TVET programs ($M=2.61$, $SD=.94$) was moderately low. Thus, the three dimensions (affection, cognition, and conation) all stood at a moderately low level.

Table 3: Levels of Students' Interest in the TVET Programs

Variable	Dimension	Mean Score	Acceptance Level	F	%	M	S.D
	Affection	1.00-2.00	Low	122	31.6	2.6	0.95
		2.01-3.00	Moderately Low	169	43.8		
		3.01-4.00	Moderately High	44	11.4		
		4.01-5.00	High	51	13.2		
Interest	Cognition	1.00-2.00	Low	110	28.5	2.6	1.00
		2.01-3.00	Moderately Low	206	53.4		
		3.01-4.00	Moderately High	42	10.9		
		4.01-5.00	High	28	7.2		
	Conation	1.00-2.00	Low	105	27.2	2.5	1.02
		2.01-3.00	Moderately Low	199	51.5		
		3.01-4.00	Moderately High	42	10.9		
		4.01-5.00	High	40	10.4		
				386	100	2.6	0.94

This means that secondary school students in Punjab have a moderately low interest in TVET programs. The findings may be due to the lack of awareness, low affection and low motivation regarding TVET programs. The findings are in line with the study by Ohieng et al. (2020), showing that a lack in positive attitude, motivation, and interest in particular TVET programs impacts their selected careers in science TVET programs. These results are also in agreement with prior studies conducted by Ngugi and Muthima, (2017) and Azeem et al. (2021). However, the findings are contrary to those by Aziz and Zulkifli (2020), who indicated high student interest in TVET programs, and highlighted interest in TVET programs as the main factors that impact student enrollment in TVET institutions.

The moderately low level of students' interest in TVET programs among secondary school students' might be attributed to the Pakistani society, where manual work has been primarily held in low esteem. This may lead to a relatively low interest. Also, some students from secondary schools have developed fears about career interest in TVET programs, due to the negative impressions passed on to them, either by their senior peers/classmates or by friends. Such expectations in learning TVET can have a significant direct effect on their interest and intention to join the TVET programs.

4.3 Difference in Students' Interest in TVET Programs by Gender

A t-test was used to determine the difference in students' interest in TVET programs. The inferential analysis shows that males ($M=3.7$, $SD=.89$) have a higher interest than females ($M=1.87$, $SD=.97$). The summary of the results is shown in Table 4. Therefore, the null hypothesis for "there is no significant difference in students' interest the TVET programs ($t=1.98$, $p>0.05$) according to gender" was rejected.

Table 4: Mean Scores of Students' Interest with Respect to Gender

Variables		N	Mean	SD.	t	df	Sig.
Gender	Male	189	3.74	.89	1.98	384	.268
	Female	197	1.87	.97			

Note: Level of significance: 0.05, N= Sample size, df= Degree of Freedom

These findings support the study conducted by Neusuess (2020), which found that the dominant perception about the TVET field is that it is considered a masculine domain. Most girls are hesitant to attempt to excel in these subjects, as they perceive this as drawing unwanted attention to themselves. Any success may also isolate them from other females and even males, who were frequently reported to dissuade girls from positively participating in and achieving well in these subjects.

According to this study's findings, traditional technology education teaching that emphasizes technical concepts is unlikely to appeal to females. As a result, females will opt out of technology and engineering courses (Ngugi & Muthima, 2017). However, when teachers of engineering and technology add compelling,

real-world activities, both males and females become more interested (Adewale & Adhuze, 2017).

Ullah et al. (2020) considered capability, or the capacity for functioning, as the variable that should be equalized amongst persons while taking into account their diverse characteristics. Men and women are equally well-off if they possess equal primary commodities, although women may be at a disadvantage in Pakistan, owing to personal qualities or gender roles. The realization of the potential in full human resources and sustainable development are impossible if one-half of humanity (i.e., females) continues to be denied basic human rights and opportunities. Females are a significant constituency in the economy, and their entitlement to equal access to education and training as males has been incorporated into the globally accepted Millennium Declaration and Millennium Development Goals (MDGs), or 'Education for All' (United Nation, 2005). This has laid the groundwork for development and advancement, and major strides have been made in terms of access to education for females.

4.4 Difference in Students' Interest in TVET Programs in Punjab, Based on Field of Education

One-way analysis of variance (ANOVA) was used to determine the difference in students' interest in TVET programs, with respect to field of education. The results suggest that there is a difference in students' interest in TVET programs, based on field of education. Therefore, the null hypothesis for "there is no significant difference in students' interest the TVET programs ($F=3.37$, $p>0.05$) according to field of education" was rejected. A summary of the results is shown in Table 4.

Table 4: One Way ANOVA for Students' Interest with Respect to Field of Education

	SS	Df	MS	F	Sig.
Between groups	5.85	2	2.92	3.37	.39
Within groups	332.53	383	.87		
Total	338.378	385			

Note: Level of significance: 0.05

To identify which of the three field mean scores differed significantly from one another; Tukey's honestly significant difference (HSD) post hoc test was applied for the analysis. The mean scores indicated that students in the humanities group were more interested in TVET programs, followed by bioscience, and finally computer science. These results are in accordance with the study that showed that individuals with a business background had a more positive attitude toward a TVET program like entrepreneurship compared to those with an engineering background (Chaudhary & Chaudhary, 2017).

4.5 Difference in Students' Interest in TVET Programs in Punjab, Based on Location

A t-test was used to determine the difference in students' interest in TVET programs. The inferential analysis shows that the urban students ($M=2.8$, $SD=.92$) have higher interest in TVET than rural students ($M=2.3$, $SD=.90$). A summary of the results is listed in Table 5. Therefore, the null hypothesis "there

is no significant difference in students' interest in TVET programs based on location" is rejected ($t=1.35, p>0.05$).

Table 5: Differences in Mean of Students' Interest with Respect to Location

Variables		N	Mean	SD.	T	df	Sig.
Location	Rural	188	2.3	.90	1.35	384	.179
	Urban	198	2.8	.92			

These findings are in agreement with Yingquan et al. (2014), that students from urban areas had a higher inclination towards vocational education in comparison to rural students. Vocational pathways are not favored by students from rural areas. These students would rather pursue their academic careers.

In contrast, Neusuess (2020) discovered that the area of residence has an effect on children's choice of TVET. Rural students tend to be more interested in technical education than their urban counterparts. Alnaqbi (2016) confirmed that attitudes of TVET are different in urban and rural locations.

5. Conclusion

The findings in this study reveal that students' perceptions of their interest in TVET programs across all three dimensions (affection, cognition and conation) were somewhat low, and that students' interest in TVET programs varies by gender, field of education, and location (rural or urban). However, it is vital to include the influence of other elements, such as parental education level and family socioeconomic circumstances.

This research aims to serve as a guide for future researchers conducting similar studies. The findings can also assist the relevant authorities in their efforts to increase youth participation in TVET programs.

6. Limitations

The results obtained were limited by the small sample size considered, the presence of some categorical data that constrained the types of analyses, as well as the examination of only demographic characteristics. Continuous measures and expanding the study to incorporate additional factors, such as vocational self-efficacy and outcome expectation, would result in more robust findings.

Future studies utilizing more rigorous designs and randomly selected subjects might produce more conclusive findings. Future research should also include an equal number of males and females to eliminate gender skewness. Additionally, this study did not consider additional demographic variables such as religion or ethnic origin. Future research should take these characteristics into account.

It is critical to detect and offer interventions such as individual counselling, not only to tenth grade students, but also to senior students, who may also be concerned about their future transition after graduation.

7. Practical Implications

According to the findings, it is proposed that the recognition of TVET qualifications, the capacity to develop a high-quality workforce with knowledge and capability, innovation, strong work ethics, and social values, be extensively

promoted via online media. Additionally, the yearly technical education and vocational training expos hosted by the Department of Technical Education and Vocational Training of the Ministry of Education at a provincial level should be utilized to attract and encourage secondary school students to enroll in TVET programs. The public impression of technical and vocational education can be further enhanced by documentary films about work success, mobility, and by individuals who work in Pakistan and abroad.

This study has significant implications for the relevant authorities, as it will assist them in increasing their focus on TVET promotion among family, teachers, and parents. Training activities can be conducted to keep them informed of the latest developments in the TVET domain, enabling them to urge their children to pursue TVET programs. It is also recommended that short courses need to be offered to secondary schools regarding TVET programs. These courses can be tailored to address the problems that affect the everyday living of these students, and it will strengthen the reputation and image of TVET programs as reliable centers for learning and holistic development.

To better engage women, policymakers should review their curriculum and incorporate a variety of activities that appeal to both men and women. If women lack confidence in their ability to succeed in TVET programs, teachers should provide an opportunity for them to develop their skills or gain the knowledge they believe they lack.

Teachers should become familiar with the various approaches in which students' TVET interests are supported at school and in the community, and they should spread information about informal TVET-related programs. Secondary schools should also offer parents and school counsellors with updated information on the workforce demands for TVET occupations, and the advantages of encouraging both male and female students to pursue these careers.

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Appendix 1

DEMOGRAPHIC DATA

(Please tick the appropriate box)

Gender	Male	Female

Location	Rural	Urban

Field of Education	Computer Science	Bio-Science	Humanities

Student Interest Scale

This section contains 19 item-scales that measures respondents' interest in TVET programs. Please tick the option relevant to your opinion

Items

Affection

I like making projects that people can see and use.

I like working with my hands.

I like using tools to fix things

I like discovering how things work

I like to solve technical problems.

I like to get a little dirty from time to time.

I like expressing myself artistically.

Cognition

I know different ways to create a design

I have the knowledge and technical skills to create mechanisms/ devices.

I know how to use tool.

I know enough about a system to explore.

I understand technical drawings such as wiring diagrams.

Conation

I can build something with my hands.

I can visualize a product from the description of a problem.

I am persistent and willing to try new processes to get an invention to work.

I am inquisitive.

I try to understand how things work in order to fix problems

I have creative abilities.

I can take things apart and put them back together.