

Unveiling The Gaps: A Comprehensive Analysis Of Influential Factors Affecting TVET Sector Performance In Punjab, Pakistan

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ABSTRACT

Context: Technical & Vocational Education & Training (TVET) is the backbone of a country's industry as well as its economy. Punjab, being the most developed and most populous province of Pakistan, contributes significantly to the national economy and has been the major contributor towards the national labor force for local as well as international employment. However, irrespective of the countless TVET sector interventions made by the government, the TVET sector has found it hard to meet the expectations of its stake holders. This study has been conducted with the definite objective to analyze the progress of TVET sector within the Punjab by investigating the factors that influence its performance by incorporating the input from all the interested parties including but not limited to Industrial bodies, Trade Associations, Chambers of Commerce & Industry situated within Punjab, TVET faculty and alumni, higher seats of learning and public as well as private TVET service providers.

Approach: Qualitative research method along with stratified sampling followed by purposive sampling technique was designed for the selection of participants for conducting semi structured face to face interviews. An interview guide was designed for data collection through interviewing process. Manual thematic data analysis using inductive approach was employed for extracting useful information and results from the data so collected.

Findings: Study revealed that in governance and institutional management through its policy and planning, fiscal limitations and quality assurance inadequacies. Weak industry academia linkage is manifested in the form of supply demand mismatch and limited employment opportunities. Human resource issues like shortage of teaching staff along with bleak prospects of professional development coupled with gender disparity has put a check on the growth of TVET sector thereby affecting the image and branding of TVET sector.

Conclusions: Quick remedial actions on emergency basis in the form of implementation of TVET policies as economic priority, setting tangible objectives, autonomy of TVET sector, active engagement of Boards of Management (BOMs) with industrial stakeholders and employing sophisticated approach towards female training and work-related needs can help TVET sector to achieve its intended goals.

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List of Abbreviations

BOMs	Boards of Management
CCI	Chamber of Commerce & Industry
GDP	Gross Domestic Product
GoB	Government of Balochistan
GoKPK	Khyber Pakhtunkhwa
GoP	Government of Pakistan
GoPb	Government of Punjab
GoS	Government of Sindh
NAVTTTC	National Vocational And Technical Training Commission
PBTE	Punjab Board of Technical Education
PSDA	Punjab Skills Development Authority
PSDF	Punjab Skills Development Fund
PVTC	Punjab Vocational Training Council
P-TEVTA	Punjab Technical Education & Vocational Training Authority
PYIP	Punjab Youth Internship Program
SDGs	Sustainable Development Goals
SLMIS	Skilled Labor Market Information System
TTB	Trade Testing Board
TEVTA	Technical Education & Vocational Training Authority
TVET	Technical & Vocational Education and Training
UN	United Nations
UNESCO- UNEVOC	United Nations Educational, Scientific and Cultural Organization - Vocational Education
UNFPA	United Nations Population Fund

1. INTRODUCTION

Pakistan ranks as the fifth most populous country in the world with a staggering number of more than 22 million as its population (The World Bank, 2021). Although such huge population poses threat to its development by way of unemployment and exhaustion of available resources (Nawaz & Anwar, 2021). However, as 61% of its population falls within the age group of 15-64 (United Nations Population Fund, 2022) such huge trainable group of population proves to be the only silver lining in such a precarious situation. Punjab, being the most developed and most populous province of Pakistan, contributes significantly to the national economy.

The education sector is divided into two streams namely General and TVET sector. The basic educational framework as depicted in Figure 1, consists of early education years of primary school level (year 1 to 5) followed by secondary school level (year 6 to 8) and finally High school level (year 9-10). After which further education can be pursued either in general education or TVET sector. Usually the TVET intake consists of the pass outs of high schools but there are some specialized trades where the intake criteria is softened to accommodate the less educated.

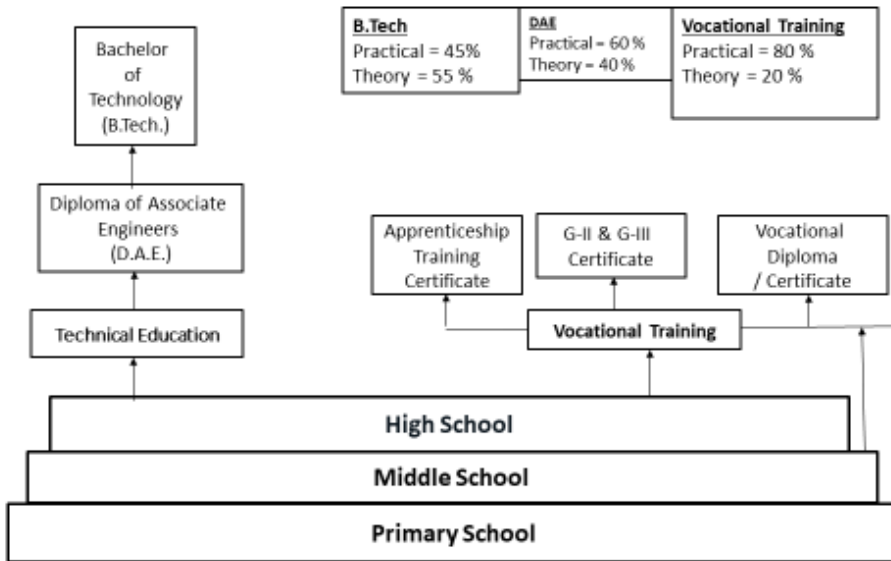


Figure 1: Education framework in Punjab

TVET differs considerably from General education in its methodology since it focuses on imparting practical skills rather than theoretical knowledge. General Education has a huge portion of theoretical knowledge as compared to practical one, whereas, TVET curricula emphasizes on a more hands-on approach towards learning. Public participation in both these sectors depicts a clear disparity in the form of enrollments. The participation of youth in vocational education per annum is 1% of the total population of Pakistan, which is in stark contrast with that of 69% net enrollment rate up to primary level and the same can be observed from pie chart as shown in Figure 2.

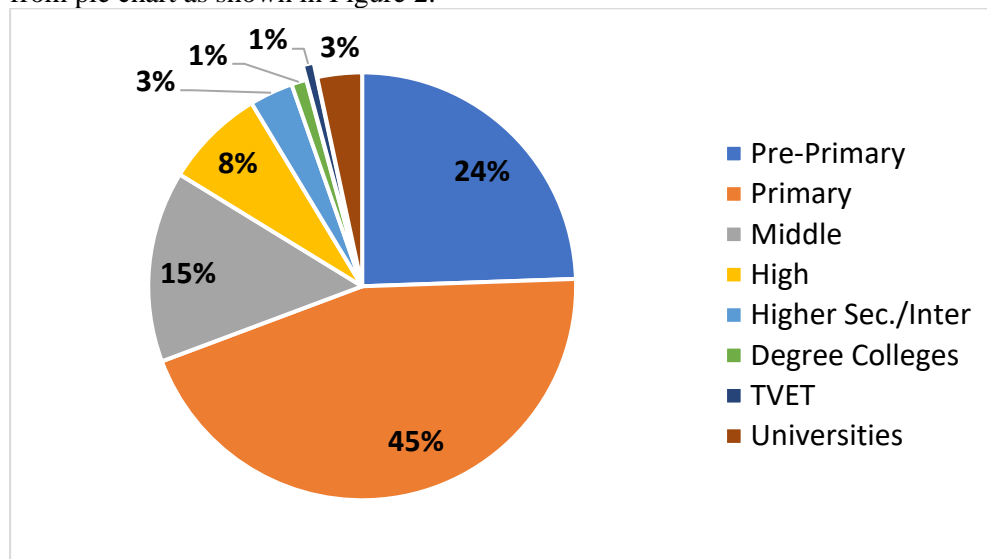


Figure 2: Enrollment statistics in General education and TVET sector (GoP Finance Division, 2022; UNESCO-UNEVOC, 2021)

It is clear from Figure-2 that the enrolment levels up to middle level are way higher than the meager figure of 1% for TVET enrolment. Keeping in view the significance of skilled labor, TVET sector can have a positive impact in the country's economy. However, the enrollment levels in TVET sector can be attributed to the extremely low number of TVET institutes.

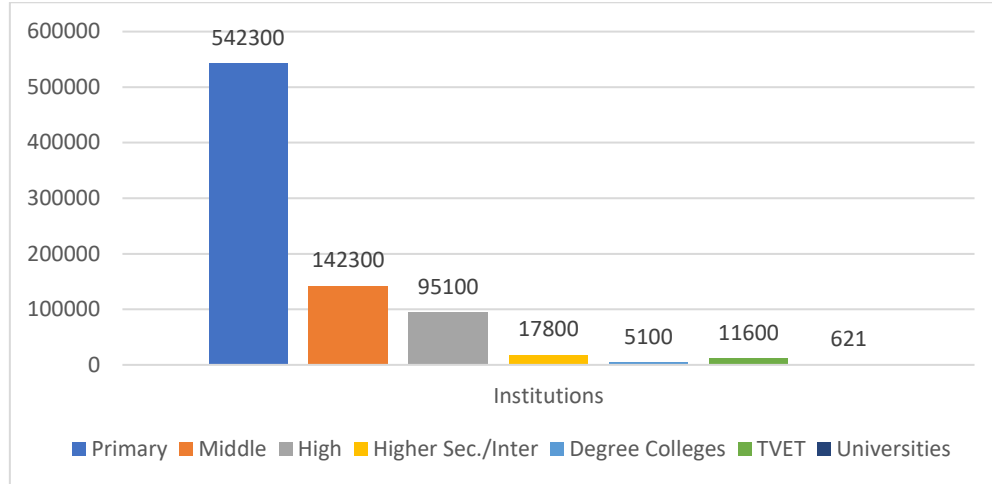


Figure 3: Educational institutes in Pakistan

Figure 3 clarifies the abject situation of the TVET sector with a total of only 11,600 institutes in the country which is nothing as compared to that of general education institutes up to High school level i.e. 779,700. Clearly, the low number of TVET institutes are not enough to accommodate the skills demand of the fifth most populous country of the world.

In Pakistan, the TVET landscape is quite diverse ranging from the Federal ministry of education to Provincial TEVTAs but after the 18th Amendment in the Constitution of the Islamic Republic of Pakistan, the provincial list of subjects has been updated and education has been made a part of it. Hence, in Punjab, TVET sector has been governed by legislations carved out by Provincial Government. Since then, the provincial government has been making efforts for improving the status of TVET sector. Within Punjab, the TVET governance model consists of:

- (i) PSDA with the aim of acting as a regulatory body to manage and look after the affairs of TVET sector of Punjab.
- (ii) P-TEVTA is the public sector organization that has been entrusted with the responsibility to impart skills training.
- (iii) PVTC which offers shorter duration of course when compared with P-TEVTA.
- (iv) PSDF which is funding agency in Punjab for skill.
- (v) NAVTTC has established a subsidiary branch in Punjab which is its representative at the provincial level in Punjab.
- (vi) Apart from the above-mentioned public-sector organizations, the TVET landscape in Punjab also comprises of private TVET service providers which are regulated by the PSDA.

The main difference among the organization lies in the duration of the courses and the market catered. However, BOMs are constituted by each organization for the purpose of liaising with external stakeholders mainly the industry.

The performance of TVET sector in addressing unemployment levels in the country is also quite appalling. The enrollment targets as compared to the capacity are not achieved in the first place. On the other hand, low placement figures against the enrollment made aggravate the already deteriorated condition of TVET Sector. For instance, Figure 4 portrays the dismal scenario where the placement figures for the largest TVET service provider in the province i.e.

P-TEVTA do not even cross the 50% mark as compared to the total enrolment made during that tenure (P-TEVTA, 2023).

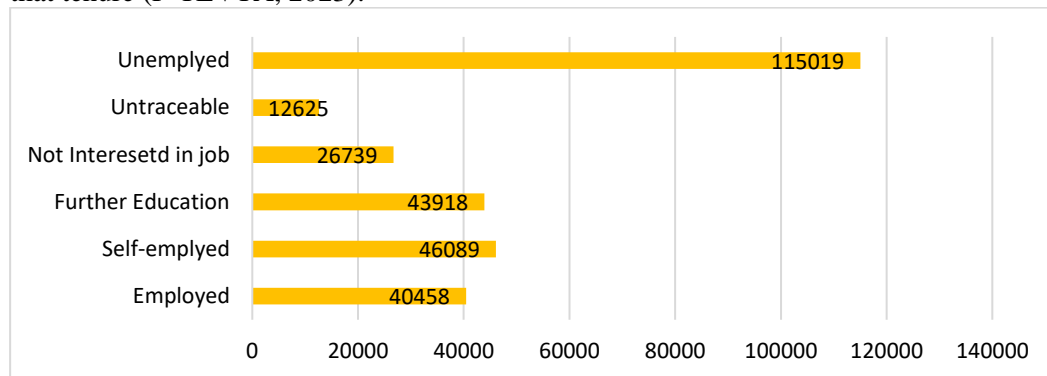


Figure 4: Placement of students passed during past 05 years (P-TEVTA, 2023)

Figure 5 depicts the situation of local economy which being reliant on agriculture has a strong contribution from agriculture sector in terms of employment, with majority of the workforce engaged in the sector. Although the sector has been witnessing gradual decline over the years in terms of employment but still the majority of country's workforce is saturated in this sector. Manufacturing sector has been the second emerging sector in terms of employed workforce, and its share has gradually increased over the years. This suggests the shifting of national as well as provincial economies towards industrial reliance thereby reducing the share of agriculture. Construction sector occupies the third place in employability numbers (Bureau of statistics, 2021).

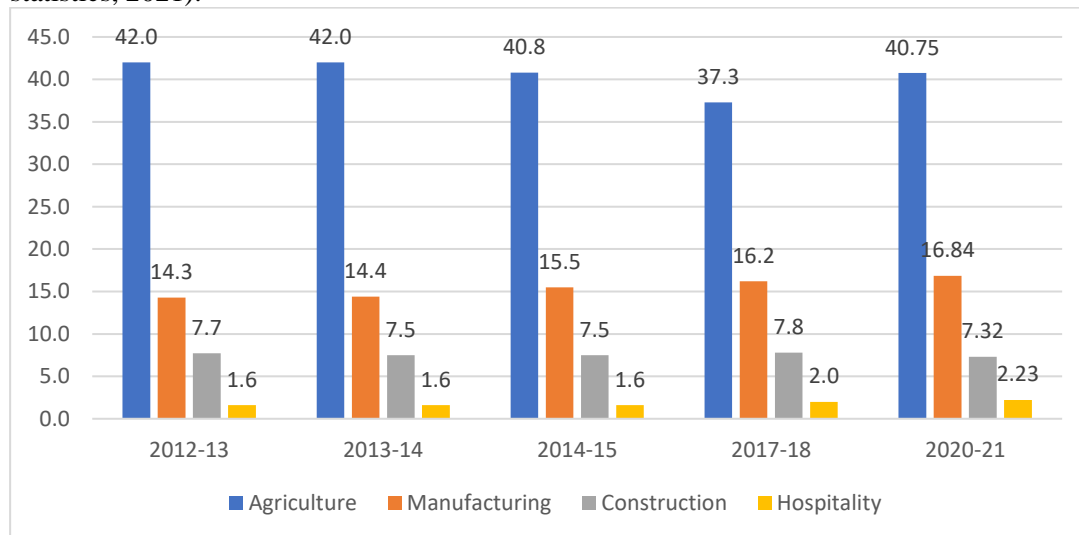


Figure 5: Percentage sectorial distribution with respect to employment (Bureau of statistics, 2022)

The majority of the workforce thorough out the country is employed in the informal sector of the economy with a very little emphasis on digitization of the workforce by the employers. Employers belonging to the industry have been forced to increase the hiring and wages of skilled labor due to the shift of national economy from agriculture to the manufacturing sector. However, a huge proportion of the workforce is still employed in the agriculture sector. The demand for TVET comes mainly from the manufacturing and construction sector where there is a need of skilled labor in various trades necessary for running the operations within these sectors. Agriculture sector on the other hand relies on the informal form of learning carried out

through knowledge transfer from a generation to another. The employment opportunities offered by hospitality sector largely attracts university graduates from higher education stream. The employment landscape within the country is characterized by low wages, discriminatory practices, and exploitative policies with very little to no attention towards continuous professional and skills development. To cope with the issues created by the disinterest shown by the employers in managing the affairs of TVET sector, a recent effort was undertaken by the Government of the Punjab through its leading skills organization i.e. P-TEVTA to constitute Sectors Skill Councils by giving a fair share of representation to the major employers in emerging fields of national as well as provincial economies.

The federal government in collaboration with the provincial governments had taken various steps by introducing youth reforms from time to time for enhanced socioeconomic growth. National youth Policy 2008 was introduced for youth skills development under needs assessed through mismatches in labor supply and demand. Treading in the footsteps of Federal government, The GoPb introduced “Punjab Youth Policy 2012” which targeted to reduce disparity in certain key socioeconomic parameters like skills development, employment, gender gaps and entrepreneurship. The program namely ‘PYIP’ was introduced in 2012 for redundant youth with an opportunity to work in Public sector offices and work establishments to gain necessary work experience. Similar kind of policies were introduced by GoB, GoKPK and GoS in 2015, 2016 and 2018 respectively. In 2018, Punjab Government introduced a 5-year socioeconomic development plan namely “Punjab Growth Strategy 2023” which highlighted the obvious issues within the TVET sector on a superficial level and provided for a macro-level strategy to address these challenges.

In line with SDGs, P-TEVTA provided skills training in emerging field of technology consonant with industrial demands by collaborating with a number of international agencies. Alongside these efforts, another initiative to facilitate the job seekers and employers through a common platform known as the SLMIS system was implemented the main object of which was to help with the placement of P-TEVTA skilled graduates. Recently in 2020, under the auspices of GoP, P-TEVTA commenced another project namely “Hunarmand Nojawan Programme” for skilling the youth of the province with an elevated target than before.

Paradoxically, these reforms and/or initiatives have either been of little significance or have no effect at all on the holistic level of TVET affairs. Despite the reformative claims, the economic outlook does not portray an encouraging image and it is expected that the GDP growth of the country is going to slow down to 2% in 2023 (The World Bank, 2022 January 11). Slow economic growth and shrinking economy can be associated with poor output of TVET sector and its suboptimal performance which makes a case that the TVET performance in the Punjab province is on the journey to deterioration, since skills development can be a viable option for accelerating economic growth (Jadoon, 2021; Shabbir, Shariff, Alshaibani, Faisal, & Salman, 2018).

Recently, a number of studies have been conducted both on organizational as well as individual level for investigating the issues Punjab’s TVET sector is being afflicted with (Bano et al., 2022; Chamadia & Shahid, 2018; Saeed et al., 2022) but since these studies are chiefly atomistic in nature with somewhat limited scope, there is room for further exploration in the form of a comprehensive study covering almost all the challenges and hurdles that are impeding the expansion and progress of TVET sector in Punjab, which this study aims to do.

1.1. Research Question

Investigate the impediments causing suboptimal performance of TVET sector in Punjab and possible solutions to improve the quality of TVET service delivery in terms of efficiency as well as effectiveness for achieving the intended goals.

1.2. Scope of the study

The objective of this study is to highlight the TVET sector in Punjab and investigate the factors that play a crucial role in the progress of TVET. Moreover, to achieve the SDGs as elucidated by the UN, this study also aims to explore the panacea for all the challenges, the TVET sector has been facing, in order to facilitate the policy making i.e. Provincial Assembly and executing bodies i.e. P-TEVTA, PVTC etc. to accurately legislate and effectively implement public policies pertaining to TVET sector respectively.

2. Literature Review

Skills training is one of the burning issues when it comes to national development through enhanced quality of life of the masses. Efforts were made by the government in the past by introducing policies like “Punjab Youth Policy 2012”, “Punjab Growth Strategy 2023” etc. in this regard. Despite these efforts, the state of TVET system within the country is on the decline due to similar impediments found in other countries. Keeping in view the monumental importance of TVET sector, it has not got its fair share of respect that it deserves chiefly due to the reason that over the years, limitation of TVET to low level skilled workers only within certain industrial sectors contributed largely towards its dismal image and lowly perception (Haider & Iqbal, 2021). Moreover, the intake of TVET sector programs are mostly from low level pass outs of General education since the bright students opt further higher education through colleges and universities instead of TVET institutes (Omar et al., 2020).

Such unfortunate state of TVET sector can be ascribed to the minimal interest shown by the public in participation towards TVET sector in addition to other issues of skills supply demand mismatch and lack of access to TVET for population of far flung areas (Chamadia & Shahid, 2018). Study of Agrawal, (2012) regarding Indian Vocational Education and Training system find a strong mismatch between supply and demand sides. Likewise, Lloyd, (2008) mentioned in her study that the initiative for establishing Sector Skills Councils in the United Kingdom was faced with the serious problem of identifying industrial needs while linking them with education and training gaps. Where on one hand it can be argued that low public participation poses a challenge towards TVET advancement, the role of government, on the other hand, cannot be ignored. In Pakistan, through the imperfect policies, the negligence shown by the government in promoting the TVET sector has more far reaching effects in the form of disinterest by private Industrial bodies in the TVET operations (Javed, 2020; Rathore et al., 2020). This is in line with the absence of coordination between the government and other stakeholders faced by Bangladesh, as revealed by (Mahmood & Akhter, 2011). Subsequently, lack of industry Academia Linkage gives birth to other issues in TVET system, which are otherwise considered to be independent and absence of such linkage plays a key role towards failure in improving the chances for earning a respectable livelihood (Ali, 2021; Saeed et al., 2022). In reality, the absence of coordination and cooperation between industry and TVET institutes is not a secluded problem but it inflicts other secondary hurdles in the form of Low employment opportunities (Bano et al., 2022) and less trained teaching staff (Rathore et al., 2020). Since Industry-academia ties are crucial for driving innovation, weak linkages widen the gap between industrial demands and TVET solutions (Bano et al., 2022). Inconsistency between TVET curricula and the required competence in professional life in work setups thus pose another problematic area to be addressed (Sylte, 2020). Low employability of TVET graduates is also linked to career counseling and guidance by the administration of TVET institutes which hold significant importance for the trainees and pass outs due to majority of them belonging from underprivileged strata of society (Ali, 2021; Tahir et al., 2018). However, there have also been shortcomings on the part of employers who do not contribute meaningfully to further professional development of the TVET graduates once employed, showing a need of improvement and development of the TVET professionals as found by (Anselmann et al., 2022).

TVET sector provides an individual with skills using pragmatic approach rather than theoretical approach. It is quite different than general education and the teaching staff needs to be equipped with a mixture of theoretical as well as practical education. Unfortunately, there has been an abundance of less prepared and less qualified teaching/instructional staff (Ali, 2021; Gull et al., 2019) which possesses relevant skills. In most cases junior teachers are engaged in the academics process with insufficient qualification (Bano et al., 2022). In addition, very little attention is paid towards teacher training making it hard to impart skills training and learning effectively (Rathore et al., 2020). Teachers who have attended more trainings relevant to their own academic field are better in their teaching approaches as compared to those who haven't attended such trainings (e Nayab et al., 2021). However, teacher's trainings could prove to be beneficial but despite being conducted after regular intervals, most of the teaching staff does not have the opportunity to attend these trainings (Chaudhry & Fatima, 2021; e Nayab et al., 2021). Consequently, the academic and training objectives in TVET institutes are not accomplished. Like other TVET systems around the world, Punjab also views TVET as a matter of educational policy whereas it has been established that the relevance of TVET systems with the demands of world of work is directly linked to the effect of skills interventions, since professional life demands altogether different qualities and skills than those needed in a school setting (Sylte, 2020).

Despite having a huge pool of youth, Punjab is unable to transform that raw and non-skilled population into useful and productive workforce which is due to another underlying issue of low enrollments (Ali, 2021; Gull et al., 2019). Deficit in achieving enrollment targets is magnified in the form of low labor participation in the Punjab. Women participation in TVET sector is also on the low side (Bano et al., 2022), mainly due to poor image, cultural barriers, male dominant training fields and little financial support (Jadoon, 2021). Gender disparity in training setups across the Punjab can also be attributed to the overall cultural inclinations of the region i.e. South Asia, since socio-cultural barriers have also caused a sharp decline in women inclusiveness in TVET system in India too (Sheshadri et al., 2020).

Resource shortfall in the form of inappropriate machinery/equipment, scanty training materials and inadequate infrastructure is also hampering the progress of TVET (Ali, 2021; e Nayab et al., 2021). The resource shortfall is accompanied by a dilemma of outdated curricula (Ali, 2021; Gull et al., 2019; Saeed et al., 2022) which has significant gaps when compared with evolving scientific, industrial and technological needs. Curricula for TVET sector is designed without considering the local demands and instead of driving innovation and problem solving skills, it produces graduate with conventional knowledge only (Younis et al., 2020). Low volume of public expenditure in TVET sector also hampers its operations and affects the quality of skills trainings negatively (Jadoon, 2021). Number of TVET institutes in Punjab is also quite small (Rathore et al., 2020) which is attributed to the lack of attention from provincial government owing to insufficient funding (Javed, 2020). In addition to these challenges, in (Ali, 2021), the researchers have highlighted other secondary problems like substandard buildings of TVET institutes, absence of research material in TVET, old-fashioned examination and certification system and excessive focus on theory rather than practical.

3. Research Methodology

The research question that needs to be answered requires a more pragmatic outlook by incorporating the input and feedback from all the stakeholders that are engaged in the TVET sector. An atomistic approach would prove to be insufficient since unearthing the details of an intricate system like that of TVET in Punjab needs an all-inclusive view of the opinions and inputs from all interested stakeholders. This research study encompasses the TVET sector and its operations in Punjab, hence the challenges confronted, investigated and solutions thus

recommended are meant specifically for the TVET institutes and their governance in Punjab. This study is qualitative in nature due to its scope and objective which necessitated the use of qualitative research tools like observations or interviewing techniques for the purpose of gathering the data. The participants shared their opinions in response to open ended questions in compassionate perspectives and their perspectives were analyzed to find out the probable challenges that the TVET sector face.

3.1 Research tools

Based on the scope of study, open ended and semi structured interview was designed, the responses against which were audio-recorded in order to gain in-depth information and further exploration.

3.2 Population and Sample

Researchers developed a strata-based criteria in which participants were selected from (i) major public sector organizations i.e. P-TEVTA, PSDA, PVTC, NAVTTC, TTB, PBTE etc along with private sector TVET service providers, having minimum 16 years of education with an experience of at least 5 years within the TVET sector, (ii) leading industrial stakeholders working at strategic, tactical and operational levels within the industrial establishments in Punjab and having experience of at least 5 years within the concerned industry, (iii) Existing trainees as well as employed alumni belonging to emerging sectors of the economy. Self-employed TVET graduates were also included in this study.

Stratified sampling was used by classifying the population in three distinct strata as depicted in table 1. Since the authors belong to the research wing of a leading public sector TVET organization in Punjab, so purposive sampling was employed for the selection of participants having desired characteristics as follows:

Table 1: Sample Bifurcation

Sr. No.	Strata	Sub-Class	Total participants	Qualification Minimum	Experience Minimum (in years)	Gender	
						Males	Females
1	TVET Personnel	Pure teaching background	08	Bachelor's Degree	5	04	04
		Pure management background	08	-do-	5	04	04
		Mixed experience of teaching as well as management	04	-do-	5	02	02
		Sub Total	20				
2	Industry	Strategic level	05	Master's Degree	5	03	02
		Tactical level	07	Bachelor's Degree	5	05	02

		Operational level	08	Diploma Certificate	5	07	01
		Sub Total	20				
3	Trainees	Enrolled	08	Secondary School Certificate (SSC)	-	04	04
		Employed Pass outs	12	SSC with Diploma Certificate	1	09	03
		Sub Total	20				
Total			60			38	22

Among these three strata, further classification was also made to obtain diverse opinions without missing any important piece of information crucial to the study. Participants from pure teaching background were classified into three groups belonging to the following categories:

- One third of the total was the faculty engaged in teaching activities in Technical education, comprising of 36 months courses.
- Two third of the total was the faculty engaged in teaching TVET programs of vocational stream (Courses ranging from 03 to 24 months)

TVET graduates were also further classified on similar lines with respect to the duration of programs they had attended and passed.

The participants from management stratum were divided equally into two classes i.e. Senior management and middle management handling the affairs of TVET sector.

Since the industrial landscape in Punjab comprises largely of small and medium enterprises, so a total of 70% of the participants belonging to industrial stratum were selected from small and medium enterprises, while the remaining 30% belonged to large industrial organizations and businesses.

Repetitions in participants' responses resulted in discontinuation of interviews as no new information was provided by further participants. Additionally, the sample size of 60 was deemed enough since in a qualitative research the acceptability of sample size is determined; as soon as the researchers feel satisfied that the theoretical points are established (Bryman, 2003).

3.3 Data Collection

Data was collected through face to face interviews with the volunteer participants through open ended questions, which were also audio-recorded. The following questions were asked:

- a. What do you know about TVET sector in Punjab?
- b. Do you know about the goals and objectives of Punjab TVET sector on a holistic level?
- c. How would you describe the progress of Punjab TVET sector in achieving the objectives it was established for in light of recent initiatives from national as well as international bodies? (Excellent/Average/Poor)
 - How would you justify your answer?
- d. In your view, what are the main impediments/challenges for Punjab TVET sector in achieving its intended goals and objectives?
- e. In your view, what are the possible solutions to these challenges?

4. DATA ANALYSIS

Data collected through the interviewing process during the study was analyzed using inductive approach. Interviews were transcribed and manual thematic analysis resulted in articulation of themes described below. The thematic analysis of data, thus collected, has unearthed some known as well as unknown details. Following challenges have been identified that hinders the progress of TVET directly or indirectly.

4.1 Governance and Institutional Management

The state of affairs of TVET sector is quite dismal and it has been pointed out by various participants that instead of focusing on the bigger picture by adopting an inclusive strategy, the policy makers, without in depth knowledge of the requirements and demands of the sector, have not been paying enough attention to address the issues identified as under:

4.1.1 Policy and Planning

TVET management is based on outdated data with old-fashioned thinking along with centralized decision-making pointing towards repeated experimentation with same input parameters with no fruitful results. Despite extreme importance of quality output for industry, TVET sector has misaligned its priorities. One of the participants described the situation with disappointment by remarking, “There is a need to implement innovative thinking in the policy making process. The policies once developed should not be final and must be updated with time”.

The skills development objectives are embedded in Punjab Growth Strategy 2023 but a concrete strategy for accomplishing the objectives still needs to be formulated and implemented. Not much attention is given towards setting short, medium- and long-term goals under the scope of vision and objectives for sustainable service delivery. Although only two participants mentioned this dilemma but it is of more significance since the participants were high ranking management officials within the TVET sector. They described the situation as:

There is no vision, mission and goal under which TVET sector may function. We have no medium- or long-term goals through which we can measure our success or strive to achieve them...Every time the regime changes, we run after new goals set by the new government and management ignoring the previous ones.

The policies focus on introducing courses of shorter duration which were and are still highly discouraged by the industrial as well as academic circles. This resulted in a huge boost in the pool of TVET graduates but at the same time the unemployment ratio soared to an unprecedented level ruining public image of TVET sector. 35% participants expressed their views with almost similar words as: “The focus is on increasing the quantity of TVET graduates only. Emphasis is on playing the number game well no matter quality is compromised”.

4.1.2 Decision Making

Policy matters in TVET sector is quite centralized and intuitive. The process is carried out in isolation without getting input from all the interested parties including TVET faculty, lower tiers of TVET administration at institutional level, enrolled trainees as well as graduates, industrial bodies including CCIs and trade associations. Hence, the policies are designed without even consulting those who are going to be affected by them.

05 Participants raised their concern with almost similar words as:

Teaching staff, above all, is not even consulted when it comes to making any decision. Whatever we communicate, either through verbal or written means, falls on deaf ears; whereas being the only stakeholder constantly engaged with both the supply and demand side, it is essential to engage the teaching staff for better policy making.

A participant also mentioned “Availability of valid/verifiable placement data for future planning and strategy making” as one of the major challenges currently faced by TVET sector

since there is deficiency of accurate and reliable data which can serve as a guiding light. TVET sector in Punjab is quite dispersed and each player within this sector acts independently according to their own data which is inaccurate, unreliable, atomistic in nature and not shared with others. The somewhat available data of enrollments and placements which serves as the backbone of whole data system is inaccurate and cannot be used to visualize and predict the supply-demand trends.

4.1.3 Fiscal Limitations

Despite being one of the prime factors in driving economy, the budgetary allocation for TVET sector does not match its pecuniary demands and proves to be inadequate. At the front, new initiatives are always discouraged owing to the scarcity of funding and if by any chance, an initiative gets through, the execution faces indefinite delay in consequence of scanty pecuniary resources.

Talking about this dilemma 8 participants expressed their views as:

...TVET sector does not want to spend a penny because of the tight financial situation. It has been clearly directed by the management not to enter any agreement with other entities under which we (TVET sector) have to bear any kind of financial implications.

TVET sector is often confused with General education in terms of financial allocation but the difference lies within the requirements since industrial machinery and equipment is quite necessary for imparting skills training. The severity of situation was highlighted by 12 participants in an almost identical manner as under: "...The persistent issues relating to the unavailability of training essentials, machinery and equipment, repair work of faulty tools and other allied issues have its root cause as mismanagement of funds at all levels within the TVET."

4.1.4 Quality Assurance

Although separate departments for monitoring and evaluation have been established within public sector TVET providers but have been unsuccessful so far in contributing positively towards TVET improvement. At first, the interventions introduced in TVET sector cannot be executed successfully due to weak monitoring for identifying possible loopholes and if by any coincidence, these loopholes are identified, the system fails to investigate the reasons behind these failures and holds accountable the ones who are responsible. 08 participants termed it as "...Poor follow-up on observations and recommendations raised by concerned wing/section."

4.2 Industry Academia Linkage

This problem is one of the key reasons behind the failure in achieving those desired goals, which are guaranteed by the successful implementation of an organized TVET system. Lack of such link between industry and institutes also gives birth to other issues in TVET systems, which are otherwise considered to be independent. Due to low interaction between industrial entities and TVET institutes, there is an ever-widening gap present between the industrial demands and the solutions that TVET sector offer. The interventions thus introduced are rendered ineffective and effect paradoxically by further widening the gap between industry and academia. The effects of poor bond between the worlds of work and study are magnified in the form of the following predicaments:

4.2.1 Limited industrial exposure

Knowledge and training without exposure to the world of work, where the theory is put to practice, renders the whole teaching-learning process useless. There is a common notion that this factor of industrial exposure holds weight only in the case of trainees, but it was observed

that such exposure is useful as well as necessary for both the trainees and the teaching faculty. Where on one hand, lack of such exposure results in the TVET pass outs being devoid of crucial work-related skills, on the other hand, it also causes imperfect academic activities largely due to the deficiencies of properly trained TVET faculty. The apprenticeship programs currently implemented has a mandatory dimension of “On the Job Training”; however, the practical aspect of skilled workers produced remains weaker as ever. 30% participants said in almost identical words that: “...if we look at the overall situation of TVET sector in Pakistan, the only major gap visible is the absence of industry academia linkage, primarily because both are unaware of what is occurring in other field”.

4.2.2 Supply Demand mismatch

The effect of ignoring what industry actually wants, is magnified in the form of severe mismatch between the supply and demand of TVET graduates. Ironically, the needs of industry remain in oblivion amidst the swarm of TVET graduates. External pressure also effects the blatant disregard of area specific training needs and institutes, with outdated training programs, are established at places where there is no such need. The predicament of irrational spread of TVET institutes that further deteriorates the situation in the form of:

- i. Competing TVET institutes within the same locality and offering same courses most of the time.
- ii. Shortfall in enrollments due to mutual competition
- iii. Wastage of available resources at the disposal of competing institutes
- iv. Deprivation of areas/localities where TVET interventions are most needed.
- v. Difficulty in access to TVET as opposed to the intended purpose of ease of access.
- vi. Failure to operationalize the ill-planned TVET institutes
- vii. Closing/merger/shifting of ill-planned TVET institutes after utter failure in operationalization of these institutes seems imminent or inevitable.

Almost all the participants from industry expressed their thoughts on this issue in similar words as:

The courses being offered do not meet the industrial demands. It’s not about the content of a course; instead it is about the course itself. For example, a trade namely “Fitter General” is currently offered but there is also another course namely “Aluminum Fabricator”. If we talk about industrial need, then “Aluminum Fabricator” is far more in demand than “Fitter General” but it is not being offered.

4.2.3 Low employment opportunities

As opposed to General education, the main concern of TVET sector is to turn unskilled population into skilled labor purely for economic reasons both on personal as well as national level. Where weak industry academia linkage upsets the local industry in terms of unavailability of suitable skilled personnel as per their needs, it also aggravates the unemployment level within the country. Almost half of the participants expressed similar words as “...the inconsistency created in supply-demand of TVET graduates due to overlooking industrial demand results in soaring levels of jobless graduates in useless or outdated specialties or trades”.

4.3 Academic Shortfalls

Almost all of the participants with teaching background had this view that neglecting input from the interested parties also results in outdated curricula and the machinery/equipment associated with it. This issue is not as simple as it may seem; rather it is kind of multifaceted with two distinct aspects i.e.

- a. Curricula and the machinery/equipment remain outdated over extended period of time.
- b. If, however, the curricula are updated, implementation of the revised curricula without industrial support ends in failure.

The TVET graduates hence produced have outdated knowledge and they only add to the bulk of unemployed population with obsolete skills. It also affects the overall interest of public and most of the time, the TVET enrollments take a massive blow due to the general public thinking that there is nothing to teach and learn in TVET institutes

Apart from this, absence of industry academia linkage is also exhibited in the form of teaching-learning deficits. Trainees, being the pivot point of the TVET system, are more deserving of the attention that is given to achieve secondary objectives. In view of the current academic backdrop, majority of the participants identified the following areas where TVET sector is lagging:

- i. Plagiarism free textbooks and manuals
- ii. Cultivation and development of workplace ethics and soft skills
- iii. To achieve enrolment targets, the intake criteria for most of the programs introduced is softened to the level where the bulk of enrolled trainees in these programs consists of school dropouts of the lowest intellect level, which further deteriorates the image of TVET sector. Additionally, the examination and certification system have to compromise the standards of quality assurance to enhance the pass out ratios of TVET programs. Consequently, the output of TVET programs is of inferior quality.
- iv. A huge proportion of TVET programs lack vertical mobility. As opposed to general education, the TVET sector programs ranging from 03 months to 02 years does not have any further channel, if pass outs of these courses intend to pursue further qualification.
- v. Lately, the TVET sector has made a transition from conventional mode of training to Competency Based Training & Assessment (CBT&A). The decision was made without taking all interested parties into confidence. The programs thus introduced under CBT&A are not recognized by industry and the pass outs of these programs face serious issues concerning acceptance in the industry.

4.4 Human Resource Management

The personnel in TVET sector have been mishandled in contradiction to the basic tenets of Human Resource Management i.e. Right man for the right job at the right time in the right place. Useful human resource is being wasted due to the following challenges:

4.4.1 Bleak opportunities for Professional development

The public sector TVET bodies engaged in skills training have not come up with a comprehensive and robust service structure that guarantees career development. Promotion framework in most of these organizations is either missing or lame. With little to no prospects of promotion and career development, the available human resource within TVET sector loses motivation. Instead, they turn to other avenues where they find more pecuniary benefits with better options of career development. Participants employed in the TVET sector expressed their disappointment alike as, "...sitting at the same position since our joining without any prospect of career development, what charm is there to work in this sector and waste our lives"?

Continuous professional development is an essential element in achieving the objectives of an organization. TVET sector has overlooked this crucial factor for quite some time now. Like

other arenas of TVET management, this too is marred by the blatant disregard of merit. 14 participants were of the view that,

...Another issue that has the TVET sector in constant regression is the multitude of undue favors bestowed upon the selected ones. Even the skills up gradation trainings meant for the teaching faculty of a specific sector are attended by irrelevant persons and everybody knows the reason behind this practice...

Apart from scarce technical expertise, the human resource engaged in management as well as academic activities is in want of professional ethos and through their unprofessional conduct the routine operations suffer as well as the public image of TVET sector is damaged. Almost 15% participants highlighted the issue in similar words as:

The teachers do not know how to behave like a teacher. The administrative staff of institute do not have any clue as to how to treat the trainees. Some of the staff members in the institute behave in an ethically objectionable manner.

On the top of that, more than 60% participants expressed the lack of industrial exposure and skills upgradation trainings as a huge said challenge in these words: "...If our instructors do not have the requisite industrial exposure, how are they going to know what is industry demanding from them?"

4.4.2 Shortage of Teaching faculty

Due to fiscal crunch, every now and then the government imposes ban on recruitment which results in a huge portion of vacant positions. Shortage of staff at managerial as well as operational level disrupts the functioning of TVET sector. The most affected parties in this scenario are the teaching faculty and the trainees. Administrative and teaching faculty has to manage the routine affairs of the institutes with meager financial and human resources. Unavailability of regular heads of institutes and teaching staff at various institutes severely affects the performance of these institutes. To counter these issues, staff on daily wages or visiting basis is hired but due to temporary nature of the job with no service security, such staff takes no interest in disposing the official duties effectively and efficiently.

4.5 Gender Disparity in TVET participation

The ever-present dilemma of gender discrimination and lack of equal opportunities has also a deep-rooted existence in TVET sector. Having almost half of its total population as female, Punjab has failed to utilize the potential of such huge number of human resources. The religious and cultural morals and values as dictated by the other half of the population has stressed upon women subordination. Denial of facilities and proper opportunities makes it difficult for women to express their potential up to their fullest. Hence, the participation and acceptance ratio of females in TVET programs is minimal as compared to those of male trainees. The workplace environment in TVET organizations is also inappropriate for females as it is marred with discrimination, harassment, unacceptability and misogyny. Conservative thinking, narrow mindedness and parochial mentality makes women participation in management of TVET affairs practically impossible.

More than 50% of the participants viewed various cultural and social barriers as the factors responsible for low women participation in TVET sector, which are:

- a. Cultural, social and religious barriers
- b. Discriminatory practices
- c. Discouragement of co-education in the society
- d. Common perception about women being a mismatch in TVET sector
- e. Unprofessionalism on the part of TVET officials
- f. Ethically unacceptable and discriminatory treatment of women

4.6 Branding of TVET

When compared with General education, TVET is always the secondary option for most of the potential TVET entrants. The enrollment targets are often not met and the public choice is inclined towards general education. TVET as a brand has earned disrepute since the beginning due to the following reasons:

- a. Public perception about TVET sector is poorly shaped due to its dismal state.
- b. There is little to no awareness among the masses and TVET is still considered as an afterthought.

More than 70% participants expressed with almost undistinguished words as “public don’t know about TVET and if it happens that somebody knows what TVET is...they have a very humiliating image in their minds because of the poor conditions of TVET”.

In fact, the undesirable branding of TVET is the combined effect of all the challenges and issues that have been prevalent in TVET sector.

Table 2: Thematic Analysis of Interviewee’s responses

Interviewees’ Statements	Code	Sub-theme
Main Theme 01: Governance and Institutional Management		
There is a need to implement innovative thinking in the policy making process.	policy making	Policy and Planning
There is no vision, mission and goal under which TVET sector may function. We have no medium- or long-term goals through which we can measure our success or strive to achieve them.	Lack of vision, & mission medium- or long-term goals	
The focus is on increasing the quantity of TVET graduates only. Emphasis is on playing the number game well no matter quality is compromised.	Quantity over quality	
Teaching staff, above all, is not even consulted when it comes to making any decision.	Engaging teaching staff for better decision making	Decision Making
Availability of valid/verifiable placement data for future planning and strategy making.	valid/verifiable placement data	
[...]TVET sector does not want to spend a penny because of the tight financial situation.	financial implications	Fiscal Limitations
Poor follow-up on observations and recommendations raised by concerned wing/section.	Monitoring lapse	Quality Assurance
Main Theme 02: Industry Academia Linkage		
The only major gap visible is the absence of industry academia linkage, primarily because both are unaware of what is occurring in other field.	Absence of industry academia linkage	Limited industrial exposure
The courses being offered do not meet the industrial demands. It’s not about the content of a course; instead it is about the course itself.	Dismissing Industrial demand	Supply Demand mismatch

The inconsistency created in supply-demand of TVET graduates due to overlooking industrial demand results in soaring levels of jobless graduates in useless or outdated specialties or trades.	Jobless graduates with outdated specialties	Low employment opportunities
Main Theme 03: Academic Shortfalls		
The courses being offered do not meet the industrial demands. It's not about the content of a course; instead it is about the course itself.	Inconsistency in curricula and industrial demands	Academic Shortfalls
Main Theme 04: Human Resource Management		
Even the skills up gradation trainings meant for the teaching faculty of a specific sector are attended by irrelevant persons and everybody knows the reason behind this practice.	Irrelevant persons in skills upgradation training	Bleak opportunities for Professional development
The teachers do not know how to behave like a teacher. The administrative staff of institute do not have any clue as to how to treat the trainees.	Behavior of teaching and administrative staff	
If our instructors do not have the requisite industrial exposure, how are they going to know what is industry demanding from them?	Ignorance of industrial demands	
Main Theme 05: Gender Disparity in TVET participation		
Some of the staff members in the institute behave in an ethically objectionable manner.	<ul style="list-style-type: none"> a. Cultural, social and religious barriers b. Discriminatory practices c. Discouragement of co-education in the society Common perception about women being a mismatch in TVET sector d. Unprofessionalism on the part of TVET officials 	
Main Theme 06: Branding of TVET		
Public don't know about TVET and if it happens that somebody knows what TVET is[...]they have a very humiliating image in their minds because of the poor conditions of TVET.	Public unawareness and low image	

5 RECOMMENDATIONS AND CONCLUSION

5.1 Recommendations

The deplorable plight of TVET sector in Punjab has been afflicted with severe challenges that are interconnected and act in consonance with each other thereby creating an unusual degree of dissonance within the TVET sector. To address the challenges currently faced by TVET sector, there is a need to act in a manner that must take into account the data-driven parameters which are evident on the outlook of TVET sector. Keeping in view of the current scenario that has become manifest by the analysis of data, the following remedial actions are hereby made to cope with the issues of TVET sector:

- a. It is an established fact that TVET is closely related to economy of a region. The government must realize that TVET is in fact a part of country's economic policy and is linked with the financial performance of the country's population. The provincial as well as federal government must implement TVET policies as a matter of economic priority rather than a social policy.
- b. TVET sector must have a vision and tangible objectives. It must act under some strategic planning where the resources and actions are guided under definite goals of long, medium and short terms.
- c. Instead of employing an isolated approach, the planning and policy making in TVET sector should be inclusive by taking input from and addressing reservations of all the interested parties in true letter and spirit. More importance should be given to the opinions and feedback of those parties that are directly in contact with the operational side i.e. teaching faculty and Industrial establishments.
- d. For a sound plan to formulate and execute subsequently, a broad data management and information system should be established that must provide accurate, reliable and timely data to aid in fool proof planning.
- e. TVET sector should be made autonomous in true sense without any external interference.
- f. Fiscal limitations should be addressed by introduction and implementation of a self-sustainable TVET model instead of relying on a single source of public funding.
- g. Industry academia linkage should be made stronger. A mechanism should be actively implemented wherein the industrial stakeholders may be granted some pecuniary benefits or tax relief in return for support, cooperation and guidance in TVET sector on issues pertaining to outdated curricula, teachers training, industrial exposure, machinery and equipment and employment of TVET graduates. Moreover, Industry must be consulted in every matter having strategic importance and their input/feedback must be valued, through active engagement with the BOMs constituted at various levels in TVET.
- h. Effective monitoring system should be implemented for ensuring efficiency and effectiveness in achieving organizational goals while improving quality of services.
- i. Meritocracy should be promoted in each and every aspect of TVET sector, with right person for the right job at the right place so as to counter the shortage of human resource.
- j. To reduce gender disparity and increase women participation in the TVET, organizational viewpoint should be broadened and unprofessional attitude towards female trainees as well as staff must be eradicated. However, to encourage female participation amid all the barriers mentioned previously, training activities should be carried out in separate facilities with proper infrastructural facilities.
- k. Efforts for public awareness and image building should be made only after all other issues are addressed sufficiently.

5.2 Conclusion

A deeper analysis of the skills sector in Punjab has unearthed a set of interdependent challenges which are obstructing TVET development, at the center of which lies the fundamental issue pertaining to governance and institutional management, in the form of policy and planning, decision making, fiscal limitations and quality assurance. These deficiencies give birth to and aggravate other ancillary problematic areas industrial academia linkage in the form of limited industrial exposure, supply demand mismatch, limited employment opportunities, academic shortfalls, human resource management, bleak professional management, gender disparity and

branding of TVET sector. Keeping in view the severity of the situation, there is a need to implement swift corrective actions as an elaborated scheme covering broad points like strategic planning, inclusive policy making effective BOMs, accurate & reliable data management system, effective monitoring, elimination of gender discriminatory practices; implementation of meritocracy in true letter and spirit and public image building. In future, unemployed TVET graduates will be included for getting broader picture of the effects. In addition to this, possible effects of the identified challenges on the interested parties as well as the economy also presents further room for investigation. Besides, within each challenge there is ample room for exploration regarding its causes, subsequent ramifications and possible solutions. Based on such factors, an efficient TVET system may also be developed as a part of prospective research.

Ethics approval and consent to participate

Yes, we obtained approval from the participants through a consent form, allowing us to use their interviews for the purpose to conduct and publish this study.

Availability of data and materials

The data utilized and/or examined in the present study can be made available upon a reasonable request.

Competing interests

The authors affirm that they do not possess any conflicting interests.

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Authors' contributions

This research undertook an exhaustive examination of the obstacles and hurdles encountered by the Technical and Vocational Education and Training (TVET) sector in Punjab. The study specifically concentrated on the factors affecting its performance and provided well-founded recommendations to improve the quality and effectiveness of TVET service delivery, with a particular focus on achieving intended objectives. It's worth noting that this inductive approach for identifying challenges in the TVET sector represents a novel and innovative approach.

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