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RESEARCH PAPER

A Comparative Study of TVET Graduate Placement in Pakistan's Labor Markets and Industries: Evidence from PTEVTA and STEVTA

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ABSTRACT

This study aimed at comparing the two main provincial TVET bodies in Pakistan, the Sindh Technical Education and Vocational Training Authority (STEVTA) and the Punjab Technical Education and Vocational Training Authority (PTEVTA) and to find out how effective these institutions are in providing their graduates with skills relevant to the market that can assist them to get jobs, earn incomes, retain jobs and be aligned with the industry needs. The study used a convergent parallel mixed-methods design. Quantitative data was collected from 300 graduates (150 from each TVET authority) utilizing survey questionnaires. Qualitative data was collected through in-depth interviews from 40 participants (20 from each organization). The findings show that PTEVTA graduates are comparatively ahead of STEVTA graduates in terms of employment preparedness, income generation, employer satisfaction, and job retention, though the difference is marginal. Further, thematic analysis highlighted the significance of curriculum relevance, practical training, and employer engagement in enhancing workforce integration. By providing empirically supported information about provincial variation and the variables influencing vocational graduates' success, this study fills a significant gap in the literature on TVET in South Asia. Based on the study findings. policy makers are advised to provide competency-based training, integrate apprenticeship programs, strengthen industry ties, and regularly update curricula to increase the employability and economic opportunities of TVET graduates.

KEYWORDS TVET Sector, STEVTA, PTEVTA, Vocational Education, Employment Outcomes, Industry Alignment, Graduate Employability

Introduction

Technical and Vocational Education and Training (TVET) play a critical role in promoting national economic development. TVET programs are thought to be essential for giving students the skills they need to meet the demands of the job market and adapt to technological advancements (Becker, 1964; World Bank, ILO & UNESCO, 2023). TVET is also integrated into global strategies that link education with productive employment, particularly through competency-based learning, experiential education, and collaboration with employers, and all of which have been shown to enhance graduates' prospects for stable employment and career growth (UNESCO, 2022). Despite these recognized advantages, many low- and middle-income nations find it difficult to link vocational training with the demands of the labor market, which leads to ongoing skill mismatches, underemployment, and decreased productivity (UNESCO, 2022; ILO et al., 2023).

Effective vocational education is becoming more challenging in South Asia due to rapid population growth, fundamental economic changes, and unequal access to high-quality training. Recurring barriers that restrict TVET's ability to provide long-term employment results include poor employer participation, limited institutional capacity, and inadequate workplace exposure (Bano et al., 2022). The case of Pakistan is the best illustration of these problems since it has the highest unemployment rates and a higher number of youths. The development of national policy documents such as the National "Skills for All Strategy, which focuses on the importance of enhancing the quality and relevance of TVET since the existing system is insufficient in preparing students with the skills required by the modern industries (Government of Pakistan, Ministry of Federal Education and Professional Training, 2018). However, according to empirical findings, structural problems persist such as underfunded training programs, outdated training resources, and a lack of utilisation of labour market statistics to inform curriculum development (Sadiq, 2024).

TVET delivery is decentralized to provincial agencies under Pakistan's federal system, and institutional capacity and strategic aims differ greatly. The two largest provincial institutions, PTEVTA and STEVTA, work in different industrial and economic contexts, and Punjab's strong industrial base makes it an excellent location for vocational training in the manufacturing, automotive, and engineering sectors. While, Sindh has a more dispersed industrial environment with a wide spectrum of jobs in the service and informal sectors, despite being economically significant due to cities like Karachi. These differences make it possible for TVET institutions to differ in how they interact with local companies, develop their curricula, and help recent graduates in finding employment.

Most of the research on Pakistan's TVET system has focused on specific institutions or more general national patterns and often relying on single methods or isolated indicators. For instance, assessments of Punjab's vocational schools show that training that is in line with the demands of the local sector has a favorable effect on learners' abilities and career prospects (Hussain, 2021). According to other studies, employer involvement and hands-on training are crucial for enhancing job placement and retention results (Teferi et al, 2025). Study from Pakistan shows that graduates view industrial exposure and internships as an essential element of their job preparedness (Daily Times, 2024; World Bank, ILO & UNESCO, 2023). Nonetheless, there is a dearth of empirical data that specifically compares provincial TVET programs to determine how institutional practices and local economic conditions affect graduate outcomes. In the Pakistani context without empirical comparison, it is still unclear which provincial strategies are more successful and the potential causes of these variations. For this purpose, there is an immense need for a targeted comparison that can identify best practices that may be transferable across regions, recognize weaknesses that require targeted intervention, and provide evidence-based recommendations to design provincial and federal policy.

The current study is an endeavor to bridge this gap by comparing PTEVTA and STEVTA, comparing their graduate employment rates, wages, job retention, curriculum alignment and employer satisfaction. More so, by combining quantitative methods with qualitative insights, the research seeks to enhance the understanding of the differences among the provincial TVET authorities in preparing graduates to enter the labor market. Moreover, the research helps to fill the gap in the literature review on the effectiveness of vocational education by shedding light on intra-national diversity and presenting policy-relevant information that can be used to justify the reforms based on provincial realities.

Material and Methods

To explore the employment outcomes of the graduates of STEVTA and PTEVTA, the study adopted a convergent parallel mixed method design. The qualitative data obtained through in-depth interviews, and on-the-ground observations at TVET institutions. The quantitative data regarding employment status, income, curriculum alignment, practical training, employer satisfaction, and job retention were collected through survey methods. The given research method allowed not only to receive the quantitative results but also to understand the lived experiences, opinions and challenges faced by graduates in the labor market.

Participants and Sampling Technique

The sample of the current study consisted of 300 graduates (150 from PTEVTA and 150 from STEVTA) who completed their degrees between 2020 and 2025 and were employed at the time of data collection. A purposive sampling technique ensured that participants were aligned with relevant vocational sectors i.e., automotive, manufacturing, engineering, and IT. The requirements for inclusion were completion of formal technical or vocational training at PTEVTA or STEVTA, current work in a sector-relevant position, and willingness to give informed consent.

Data Collection Procedures

Structured online and in-person surveys in English and Urdu were used to collect quantitative data, while the following methods were used to acquire qualitative data: semi-structured interviews with 20 graduates from each province. From January to March 2025, data was gathered using a variety of methods to increase response rates and promote inclusion. Both quantitative and qualitative data were collected simultaneously and analyzed independently, and results were later integrated for triangulation.

Data Analysis

Multiple regression analysis, t-tests, chi-square tests, correlations, and descriptive statistics were used to evaluate quantitative data using SPSS 20. While qualitative data were examined using a thematic analysis technique by following a methodical six-step process (Braun & Clarke, 2006). (i) Data Familiarization: to ensure thorough comprehension of the material, all the data including observation notes, open-ended questions, and interview transcripts were read several times. (ii) Developing initial Codes: Significant textual units were identified and coded through open coding, and recurrent themes of interest were curriculum, hands-on training, industry exposure, employer involvement, and job transfer. (iii) Finding Themes: Codes were grouped into more general themes that indicated meaningful trends in the data. As an example, such codes as the lack of practical exposure and theory-heavy curriculum were combined in the theme Curriculum Relevance. (iv) Themes Review: Themes were reviewed to make sure that the themes were correctly represented in the dataset and were not similar. (v) Defining and Naming Themes: The themes were defined clearly with sub-themes (codes) and participant illustrative quotes. This ensured transparency and clarity in reporting. (vi) Reporting Results: The final step was to report the findings in the Results and Discussion sections with the presentation of the themes on a structured table (Table 6). Two independent researchers coded the data and compared it to ensure consistency and in case of any discrepancy, discussed the data attain a high level of rigor and minimize bias. Triangulation of data was done through open-ended questions, interviews, and observation to validate the findings. Member checking was also conducted by sending out summaries to a group of graduates to understand the accuracy of the interpretations.

Results and Discussion

Table 1
Descriptive Statistics of PTEVTA and STEVTA Graduates

Variable	Group	n	M	SD	Employment Rate (%)
Monthly Income (PKR)	PTEVTA	150	42,300	8,500	–
	STEVTA	150	38,100	7,200	–
Employment Rate (Apprentices/Interns)	PTEVTA	150	–	–	92
	STEVTA	150	–	–	86
Employment Rate (Graduates)	PTEVTA	150	–	–	41
	STEVTA	150	–	–	22
Curriculum Alignment	PTEVTA	150	3.8	0.9	–
	STEVTA	150	3.5	0.8	–
Employer Satisfaction	PTEVTA	150	4.0	0.7	–
	STEVTA	150	3.7	0.8	–
Job Retention (years)	PTEVTA	150	2.9	1.4	–
	STEVTA	150	2.5	1.3	–

Table 1 shows descriptive comparisons between PTEVTA and STEVTA graduates. PTEVTA graduates reported higher mean monthly income (M = 42,300, SD = 8,500) as compared to STEVTA graduates (M = 38,100, SD = 7,200). Mean scores for curriculum alignment and employer satisfaction were also slightly higher among PTEVTA graduates (3.8 and 4.0) than STEVTA graduates (3.5 and 3.7). Job retention was marginally longer for PTEVTA (M = 2.9 years, SD = 1.4) compared to STEVTA (M = 2.5 years, SD = 1.3). Employment rates were higher for PTEVTA apprentices/interns (92% vs. 86%) and graduates (41% vs. 22%). Overall, descriptive trends demonstrate relatively better outcomes for PTEVTA graduates across most indicators.

Table 2
Chi-Square Test for Association Between TVET Provider and Employment Status

Relationship	χ^2	df	p	Cramer's V
Training Provider × Employment Status	4.56	1	.033*	0.12

A chi-square test of independence (table 2) was employed to examine the relationship between TVET provider and employment status. Results show a statistically significant association, χ^2 (1, N = 300) = 4.56, p = .033, Cramer's V = .12. This finding is consistent with descriptive data. A higher proportion of PTEVTA graduates (92%) were employed than STEVTA graduates (86%). However, the small effect size indicates that while PTEVTA graduates have a slightly higher employment rate, other factors may also influence employment outcomes.

Table 3
Independent Samples t-Test Comparing PTEVTA (n=150) and STEVTA (n=150) Graduates

Variables	PTEVTA		STEVTA		t	df	p	Cohen's d
	M	SD	M	SD				
Monthly Income (PKR)	42,300	8,500	38,100	7,200	4.12	298	<.001	0.48
Employer Satisfaction	4.0	0.7	3.7	0.8	3.25	298	<.001	0.38

Independent sample t-test (table 3) results show that PTEVTA graduates (M = 42,300, SD = 8,500) earned significantly higher monthly incomes compared to STEVTA graduates (M = 38,100, SD = 7,200), t(298) = 4.12, $p < .001$, Cohen's d = 0.48. The effect size indicates a moderate difference between the groups. The average salary difference between PTEVTA and STEVTA graduates was about 11%. Employer satisfaction scores also showed a small-to-moderate effect, with PTEVTA graduates reporting significantly higher ratings (M = 4.0, SD = 0.7) than STEVTA graduates (M = 3.7, SD = 0.8) (t (298) = 3.25, p = <.001, Cohen's d = 0.38). Although the magnitude of the differences is statistically significant, it should be viewed as moderate rather than substantial. Overall, these data indicate that PTEVTA graduates have relatively higher labor market outcomes.

Table 4
Multiple Regression Predicting Monthly Income of TVET Graduates

Predictor	B	SE B	β	t	p
Constant	15,200	2,100	–	7.24	< .001
Curriculum Alignment	2,900	800	.26	3.63	< .001
Hands-on Training	3,500	900	.30	3.89	< .001
Employer Satisfaction	2,400	700	.20	3.43	< .01
Job Retention (years)	1,100	500	.12	2.20	.03

Model Fit: F (4, 295) = 38.82 $p < .001$ $R^2 = 0.34$

A multiple regression analysis model (table 4) explains 34% of the variance (R2 =.34) and significantly predicts monthly income among TVET graduates (F (4, 295) = 38.82, p <.001). The best indicators of income are hands-on training (β =.30, p <.001) and curriculum alignment (β =.26, p <.001), followed by employer satisfaction (β =.20, p <.01). The effect of job retention is small but still significant (β =.12, p =.03). These results show that practical training and industry-aligned curricula are substantially linked to greater earnings.

Table 5
Correlation Analysis

Variable	1	2	3
Curriculum Alignment	–		
Employer Satisfaction	.42**	–	
Job Retention (years)	.45**	.42**	–

Note: **p < .001

The analysis of Pearson correlation (table 5) shows that study variables have moderate positive correlation. Employer satisfaction (r =.42, p <.001) and job retention (r =.45, p <.001) had a significant correlation with curriculum alignment. Job retention is moderately correlated with employer satisfaction (r =.42, p <.001). These results highlight that industry-aligned training is linked with improved employer perceptions and longer job duration.

Table 6
Qualitative Result

Theme	Sub-theme / Code	Representative Participant Quote	Institution
Curriculum Relevance	Alignment with Industry Needs	"The courses at PTEVTA were very focused on automotive and IT skills required in my current job."	PTEVTA
	Gaps in Practical Application	"I am good at theory, but I was not exposed to real-world industrial tools."	S TEVTA

Hands-On Training	Workshops and Labs	"Hands-on projects made me confident to operate machines independently."	PTEVTA
	Limited Practical Exposure	"Practical training was minimal, mostly classroom exercises."	STEVTA
Employer Engagement	Internship/Apprenticeships	"I secured my internship through PTEVTA's partnership with Millat Tractors."	PTEVTA
	Certification & Digital Skills	"I was able to obtain a digital credential through STEVTA's Certiport program, but I was unable to secure an actual industrial internship'.	STEVTA
Job Transition Challenges	Placement Support	"Finding a relevant job took longer; guidance from the institute was limited".	STEVTA
	Competitiveness & Geographic Limitations	"Jobs are mostly in Lahore; we had to relocate to search relevant job."	PTEVTA

The thematic analysis identified four categories, which are interrelated and influence graduate employment experiences (table 6). The important theme identified for workplace preparedness was hands-on training and industry-related exposure. STEVTA graduates identified that their training was more theoretical and they had less industrial exposure. PTEVTA graduates reported having formal industry partnerships and applied training experiences.

The graduates of these two institutions highlighted structural labour market issues such as inadequate institutional placement service and concentration of labour markets in a region. These qualitative findings give a contextual interpretation of the perception of employment transitions in comparison to the relationships and training experiences which employers have. These perceptions mirror subjective experiences and not a causal relationship although they may conform to quantitative findings and trends of employment and income outcomes.

Discussion

The findings of the research confirm that the success of the TVET programs in Pakistan is directly related to the correspondence of the curriculum, the practical training and involvement of the employers. The PTEVTA graduates were ahead of STEVTA in employment, monthly earnings, satisfaction of employers and retention of their jobs. The PTEVTA graduates have a higher level of employment and retention of their jobs and earn an average of PKR 42,300 compared to STEVTA PKR 38,100. The regression analysis confirmed curriculum alignment and practical training to be the strongest predictors of income. The observation is in line with global research which reveals that the TVET systems have higher success labor results by encompassing structured apprenticeship courses in curriculum and periodically updating it in view of industry demands (UNESCO, 2022; Mehrotra et al., 2018).

Qualitative data also clarifies this image as PTEVTA graduates emphasized the importance of practical workshops, laboratory exercises, and industrial internships, which have helped them directly upon their entry into the workforce. Nonetheless, STEVTA graduates reported a lack of practical experience and reliance on theoretical training, even though they were able to receive digital certificates through programs like Certiport. STEVTA lacks strong connection to the industry (Sindh Technical Education and Vocational Training Authority, n.d.), thus, placing graduates in jobs and providing them with proper assistance is harder, PTEVTA has direct contacts with the companies operating in the automotive and manufacturing industries (Punjab Technical Education and Vocational Training Authority, n.d.). These results align with research conducted in South Asia that has shown that industry-related and practical TVET programs can enhance employability, decrease job turnover, and increase employer satisfaction (Asian Development Bank, 2021; Rahman and Khan, 2020).

The moderate positive correlation between the alignment of the curriculum and the level of employer satisfaction and retention of employees in the present study suggests that the exposure to the relevant and well-designed training encourages the increase in wages and the period of employment. This result highlights the importance of introducing a global best practices model with a feedback loop enabling the adjustment of curricula to the needs of the business and graduates' job performance (UNESCO, 2022). Adding to this finding, the evident differences between PTEVTA and STEVTA are minor but significant, indicating that the other factors affecting graduate outcomes are the sectoral demand, institutional competency, and the economic conditions of the region. This finding is in line with the studies that indicate that there is variability in the South Asian labor market (Mehrotra et al., 2018; Asian Development Bank, 2021).

Overall, the results indicate that a comprehensive plan is needed to attain significant employment results within the TVET sector in Pakistan. Although STEVTA has achieved a breakthrough in enacting competency-based frameworks and digital certifications, the success of PTEVTA should be replicated by stronger industry-wide relationships, organized internships, and ongoing curriculum modifications. Policymakers and institutional leaders can enhance workforce development plans by aligning provincial TVET programs with both regional economic interests and international standards (Rahman & Khan, 2020; UNESCO, 2022).

Conclusion

This is the first research to compare the effectiveness of PTEVTA and STEVTA (two largest TVET organizations in Pakistan), and integrated both the quantitative and qualitative results. The research has addressed a significant gap in the literature regarding the provincial TVET outcomes in South-Asia, and has determined that the alignment of curriculum, hands-on training, and close employer relationships are the key factors contributing to the workforce preparedness and bridging the skills gap.

Recommendations

- To increase the number of learning opportunities in the workplace (formal internships, and apprenticeships), institutions ought to formalize relationships with industry.
- To improve the learning of practical skills, investments in modern labs, and latest industrial equipment are crucial.
- The curricula must be regularly revised in collaboration with industry representatives to ensure alignment with current technological and sectoral needs.
- The institutions need to enhance career counseling, job placement offices and employer-networking sites to aid in facilitating school-to-work transitions.

- The policy interventions must also be mindful of the differences in the labor market of the region by encouraging the development of industries in underrepresented areas and facilitating graduate mobility.
- There must be institutionalization of strong tracer studies and outcome-based evaluation systems to evaluate the employment patterns of the graduates continuously and to guide the policy reform.
- Regularly upskill instructors in pedagogy, soft skills, and new technologies.
- Longitudinal studies are suggested to study the causal connection between training qualities and long-term labor market outcomes. Future research can also focus on how gender, socioeconomic status and industry specific factors affect it.

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