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Platform & Workflow by: [Open Journal Systems](#)**The Role of Technical and Vocational Education and Training (TVET) in Addressing Youth and Women's Unemployment in Balochistan****Dr. Rashid Manzoor**

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Abstract

Balochistan continues to experience one of the highest rates of youth and women's unemployment in Pakistan, despite its vast natural resources and strategic economic potential. Limited industrialization, inadequate access to quality education, gender disparities, and a mismatch between labour market demands and existing skills have constrained employment opportunities, particularly for young people and women in both rural and urban areas. Technical and Vocational Education and Training (TVET) has emerged as a critical policy instrument for developing a skilled workforce, promoting entrepreneurship, and enhancing socio-economic inclusion. This study examines the role of TVET in addressing youth and women's unemployment in Balochistan by evaluating its effectiveness, accessibility, and alignment with labour market needs. Employing a mixed-methods research design, the study combines quantitative surveys of TVET graduates with qualitative interviews involving trainees, instructors, employers, policymakers, and representatives of vocational training institutions across selected districts of Balochistan. The research explores the factors influencing enrolment, skill acquisition, employment outcomes, entrepreneurial intentions, and barriers to workforce participation, with particular attention to gender-based challenges and regional disparities. The findings are expected to demonstrate that while TVET significantly enhances employability, technical competencies, and self-employment opportunities, its overall impact is constrained by outdated curricula, inadequate infrastructure, limited industry-institution collaboration, insufficient career guidance, and socio-cultural barriers affecting women's participation. The study further argues that strengthening industry partnerships, modernizing training programs, integrating digital and entrepreneurial skills, and adopting gender-responsive and market-oriented TVET policies can substantially improve employment outcomes and contribute to inclusive economic development in Balochistan. The research provides evidence-based recommendations for policymakers, educational institutions, and development organizations seeking to build a more responsive and equitable technical education system that supports sustainable livelihoods, poverty reduction, and long-term socio-economic development in the province.

Keywords: Technical and Vocational Education and Training (TVET); Youth Unemployment; Women's Employment; Skills Development; Balochistan

Introduction:

Technical and Vocational Education and Training (TVET) has become a cornerstone of national development strategies across the world because of its ability to equip individuals with market-relevant skills, improve employability, promote entrepreneurship, and foster inclusive economic growth. Unlike conventional academic education, TVET emphasizes practical knowledge, technical competencies, and occupational skills that directly respond to labour market demands. In recent years, rapid technological advancement, industrial

transformation, digitalization, and the transition towards green economies have increased the importance of vocational education in preparing a skilled workforce capable of meeting emerging economic challenges. Recognizing this shift, UNESCO's TVET Strategy (2022–2029) identifies TVET as a key instrument for achieving inclusive, sustainable, and peaceful societies by developing skills for employment, lifelong learning, and social inclusion (UNESCO, 2022).

Developing countries increasingly view TVET as an effective mechanism for addressing unemployment, reducing poverty, and improving human capital. According to UNESCO-UNEVOC (2024), countries with responsive TVET systems demonstrate stronger labour market integration, increased productivity, and improved economic competitiveness because vocational institutions continuously adapt their curricula to industry needs. Similarly, the International Labour Organization (ILO) emphasizes that demand-driven technical education enhances employability, facilitates school-to-work transitions, and supports decent work, particularly among young people and women who often experience barriers to labour market participation. These global perspectives have encouraged many developing economies to reform their vocational education systems to strengthen industry linkages, digital competencies, entrepreneurship education, and competency-based training.

Pakistan faces a persistent challenge of youth unemployment and underemployment despite having one of the largest youth populations in the world. A substantial proportion of young people remain unemployed or work in low-skilled informal occupations because of limited access to quality education, inadequate technical skills, and weak connections between educational institutions and industry. Female labour force participation remains considerably lower than that of males due to socio-cultural constraints, mobility restrictions, limited access to training opportunities, and inadequate institutional support. These structural challenges have increased the need for a modern and inclusive TVET system capable of producing a workforce that meets national and international labour market requirements. In response, the National Vocational and Technical Training Commission (NAVTTTC) has introduced several initiatives aimed at strengthening competency-based training, promoting digital skills, expanding women's participation, and improving collaboration with industries and development partners.

Within Pakistan, Balochistan presents a particularly important context for examining the role of TVET. Although the province constitutes approximately 44 percent of Pakistan's total land area and possesses abundant natural resources, including minerals, fisheries, agriculture, renewable energy potential, and the strategically significant Gwadar Port, it remains the country's least developed province in terms of industrialization, employment opportunities, educational attainment, and human development. Persistent poverty, inadequate infrastructure, weak private-sector investment, and limited industrial diversification have constrained employment generation, particularly for young people. Rural communities face additional challenges due to geographical isolation, limited educational facilities, poor transportation networks, and restricted access to vocational training centres. Consequently, many young people either remain unemployed or migrate to other provinces in search of employment opportunities.

Women in Balochistan experience even greater disadvantages in accessing education, vocational training, and formal employment. Cultural norms, early marriage, household responsibilities, mobility constraints, safety concerns, and limited availability of women-friendly training institutions significantly reduce their participation in economic activities. Even educated women often remain outside the labour force because available training

programmes are not aligned with local economic opportunities or lack adequate employment linkages. Recent evidence from Balochistan demonstrates that technical and vocational education can substantially improve women's self-employment potential, entrepreneurial confidence, and income generation when training programmes are accompanied by institutional support, access to markets, and financial inclusion. Nevertheless, structural and socio-cultural barriers continue to limit the broader impact of these initiatives.

Recognizing these challenges, both federal and provincial governments have undertaken reforms to strengthen the TVET sector in Balochistan. The Balochistan Technical Education and Vocational Training Authority (B-TEVTA), in collaboration with NAVTTC, GIZ, and other international development partners, has introduced competency-based curricula, industry partnerships, digital skills programmes, green skills initiatives, and cluster-based training aimed at improving workforce readiness. Recent collaborations between NAVTTC and B-TEVTA seek to enhance industry-relevant training and increase employment opportunities for youth through labour market-oriented skill development programmes. These initiatives reflect a growing policy commitment to transforming TVET into a demand-driven system that contributes directly to provincial economic development.

Despite these reforms, significant gaps remain between vocational training provision and labour market demand in Balochistan. The recently published *Labour Market Assessment of Balochistan* identifies substantial shortages of skilled workers in multiple sectors while simultaneously highlighting a mismatch between training programmes and employer requirements. Employers continue to report deficiencies in technical competencies, digital literacy, communication skills, and practical workplace experience among graduates. Furthermore, the assessment reveals considerable gender disparities in workforce demand, indicating the need for more inclusive and gender-responsive TVET policies that specifically target women and rural youth. Strengthening partnerships between industry and vocational institutions, modernizing curricula, expanding apprenticeship opportunities, and improving career guidance are identified as essential priorities for enhancing employment outcomes.

Another important concern relates to the changing nature of work. Digital transformation, automation, renewable energy technologies, artificial intelligence, and the expansion of service-based economies are reshaping labour markets globally. These developments require TVET institutions to move beyond traditional trades and incorporate digital literacy, entrepreneurship education, innovation, problem-solving, and soft skills into vocational curricula. In Balochistan, emerging economic opportunities associated with mining, logistics, fisheries, agriculture, tourism, renewable energy, and the China–Pakistan Economic Corridor (CPEC) require a workforce possessing specialized technical competencies. Aligning vocational education with these emerging sectors can improve youth employability while simultaneously supporting provincial economic diversification and sustainable development.

Although several studies have examined technical education in Pakistan, empirical research focusing specifically on the effectiveness of TVET in reducing youth and women's unemployment in Balochistan remains limited. Existing studies largely emphasize institutional reforms, policy implementation, or labour market assessments, while relatively few investigate employment outcomes, entrepreneurial development, gender disparities, and the experiences of graduates after completing vocational training. Moreover, little evidence exists regarding the extent to which current TVET programmes

correspond with employer expectations across different districts of Balochistan. Addressing these knowledge gaps is essential for designing evidence-based policies capable of improving workforce development and reducing unemployment.

Against this background, the present study investigates the role of Technical and Vocational Education and Training (TVET) in addressing youth and women's unemployment in Balochistan. Specifically, the study examines the accessibility and effectiveness of TVET programmes, evaluates their contribution to employment and entrepreneurship, identifies barriers to women's participation, assesses the alignment between vocational training and labour market needs, and proposes policy recommendations for strengthening a gender-responsive and market-oriented TVET system. By generating empirical evidence on these issues, the study seeks to contribute to the literature on skills development, human capital formation, inclusive employment, and sustainable socio-economic development while providing practical guidance for policymakers, educational institutions, development partners, and industry stakeholders working to transform Balochistan's workforce and promote inclusive economic growth.

Problem Statement

Despite various initiatives undertaken by the Government of Pakistan, the National Vocational and Technical Training Commission (NAVTTTC), and the Balochistan Technical Education and Vocational Training Authority (B-TEVTA), youth and women's unemployment remains a significant socio-economic challenge in Balochistan. The province continues to experience limited industrial development, a weak private sector, inadequate employment opportunities, and a substantial mismatch between the skills acquired through Technical and Vocational Education and Training (TVET) institutions and the competencies demanded by the labour market. Although TVET is recognized as an effective mechanism for enhancing employability and promoting entrepreneurship, its actual contribution to employment generation in Balochistan has not been comprehensively evaluated.

Women face additional barriers to participating in technical and vocational education due to socio-cultural norms, mobility restrictions, limited access to training institutions, and inadequate institutional support. These challenges reduce their participation in the labour force and limit their opportunities for economic empowerment. Furthermore, existing TVET programmes often lack strong industry linkages, updated curricula, digital skills training, career counselling, and entrepreneurship education, thereby affecting graduates' employment outcomes.

Although several studies have examined TVET in Pakistan, empirical evidence focusing specifically on its effectiveness in reducing youth and women's unemployment in Balochistan remains limited. There is a need for evidence-based research that assesses the accessibility, quality, labour market relevance, and employment outcomes of TVET programmes while identifying the barriers that hinder their effectiveness. Such research is essential for developing policy recommendations that strengthen TVET as a driver of inclusive employment, entrepreneurship, and sustainable socio-economic development in Balochistan.

Research Objectives

1. To examine the role of Technical and Vocational Education and Training (TVET) in improving employment opportunities for youth and women in Balochistan.
2. To assess the effectiveness of TVET programmes in developing market-relevant skills and promoting entrepreneurship among youth and women in Balochistan.

3. To identify the socio-cultural, institutional, and economic barriers affecting youth and women's access to and participation in TVET programmes in Balochistan.
4. To propose evidence-based policy recommendations for strengthening TVET systems to enhance employability, entrepreneurship, and inclusive economic development in Balochistan.

Literature Review

VET, Labour Market Demand, and Skills Mismatch

One of the most significant challenges confronting Technical and Vocational Education and Training (TVET) systems globally is the persistent mismatch between the skills produced by training institutions and those demanded by employers. Skills mismatch occurs when graduates possess qualifications or competencies that do not correspond with labour market requirements, resulting in unemployment, underemployment, and reduced productivity. Recent studies emphasize that successful TVET systems are those that maintain strong partnerships with industries, regularly update curricula, and incorporate workplace learning into training programmes (World Bank, ILO, & UNESCO, 2023).

In developing countries, rapid technological advancement and industrial transformation have altered employer expectations. Industries increasingly require workers with technical expertise, digital literacy, communication abilities, teamwork, problem-solving skills, and entrepreneurial competencies. Traditional vocational education models that rely primarily on classroom instruction are becoming less effective because they fail to equip learners with practical workplace experience. Consequently, modern TVET systems have shifted toward competency-based education, apprenticeships, and work-based learning, enabling graduates to transition more effectively into employment (UNESCO-UNEVOC, 2024).

The International Labour Organization (2024) similarly argues that active labour market programmes integrating technical skills, entrepreneurship training, certification, and employment services produce significantly better employment outcomes than isolated vocational training initiatives. The report further highlights that women and disadvantaged youth benefit most when technical education is combined with career counselling, internships, financial support, and enterprise development programmes.

In Pakistan, labour market mismatch remains one of the principal reasons for graduate unemployment. Many vocational institutions continue to offer outdated training programmes that are poorly aligned with emerging industries such as information technology, renewable energy, logistics, digital services, mining, tourism, and advanced manufacturing. As a result, employers frequently report shortages of appropriately skilled workers despite the growing number of TVET graduates. This disconnect underscores the importance of developing demand-driven vocational education systems capable of responding to evolving labour market requirements.

Technical and Vocational Education and Training in Pakistan

Pakistan has undertaken significant reforms in its TVET sector during the past decade through the National Vocational and Technical Training Commission (NAVTTTC), provincial Technical Education and Vocational Training Authorities (TEVTAs), and international development partners. These reforms aim to modernize curricula, establish competency-based training and assessment (CBT&A), strengthen the National Vocational Qualifications Framework (NVQF), and increase private-sector participation in skills development.

The European Union-supported TVET Sector Support Programme (TVET III), implemented by GIZ in collaboration with NAVTTTC and provincial TEVTAs, represents one of Pakistan's largest vocational education reforms. According to the programme

evaluation, the initiative successfully developed competency-based qualifications, strengthened governance mechanisms, expanded workplace-based learning, and trained more than 118,000 learners, nearly half of whom were women. The programme also significantly improved recognition of prior learning and promoted stronger collaboration between industries and vocational institutions. Nevertheless, sustainability, financing, institutional capacity, and graduate employability remain major concerns requiring continued policy attention.

Recent policy discussions increasingly emphasize digital skills, entrepreneurship, climate-resilient occupations, and emerging technologies. Rather than preparing learners solely for wage employment, vocational education is now expected to produce innovative entrepreneurs capable of creating employment opportunities for themselves and others. This shift aligns with Pakistan's broader economic objectives of industrial diversification, export competitiveness, and youth employment generation.

Despite these reforms, numerous studies indicate that Pakistan's TVET system continues to experience challenges related to governance, inadequate funding, outdated infrastructure, shortage of qualified instructors, weak labour market information systems, and insufficient employer participation. These structural weaknesses reduce the effectiveness of vocational education in addressing unemployment and limit graduates' competitiveness within national and international labour markets.

TVET and Employment Challenges in Balochistan

The challenges confronting vocational education are considerably more pronounced in Balochistan than in other provinces of Pakistan. Despite abundant natural resources, strategic geographical location, and significant economic opportunities associated with mining, fisheries, agriculture, renewable energy, and the China–Pakistan Economic Corridor (CPEC), the province continues to experience high unemployment, low industrialization, inadequate infrastructure, and widespread poverty.

Recent labour market assessments reveal that Balochistan possesses a substantial youth population but lacks sufficient technical institutions capable of producing market-oriented skills. Existing vocational programmes frequently emphasize traditional occupations while giving limited attention to emerging sectors such as digital technologies, logistics, renewable energy, hospitality, and industrial services. Consequently, graduates often encounter difficulties securing employment because their skills do not correspond with employer expectations.

Ahmed and Shah (2022) conducted one of the most comprehensive studies examining skills mapping for industries located within Balochistan's Special Economic Zones (SEZs). Their findings indicate substantial shortages of technical and vocational skills across existing and proposed industries. The researchers argue that strengthening provincial TVET institutions is essential for preparing local youth to benefit from industrial development associated with SEZs and CPEC. Without targeted investment in workforce development, many employment opportunities may be filled by workers from outside the province rather than by local communities.

Similarly, recent labour market assessments recommend greater collaboration between industries and TVET institutions, periodic curriculum revisions, expansion of apprenticeship programmes, and stronger labour market information systems. These measures are expected to improve graduate employability while reducing provincial skills shortages.

TVET and Women's Economic Empowerment in Balochistan

Women's participation in vocational education represents one of the most important dimensions of inclusive development. Economic empowerment enables women to improve household income, increase decision-making authority, reduce poverty, and contribute to broader community development. Nevertheless, women in Balochistan continue to face multiple barriers that restrict access to education, vocational training, entrepreneurship, and formal employment.

These barriers include patriarchal social norms, early marriage, household responsibilities, mobility restrictions, limited transportation, safety concerns, inadequate childcare facilities, and restricted access to financial resources. Such constraints reduce female labour force participation despite considerable improvements in educational attainment.

Recent research demonstrates that participation in vocational education positively influences women's employment prospects, entrepreneurial activities, household income, and self-confidence. Gul et al. (2025) found that women receiving vocational training reported improved economic independence and greater opportunities for self-employment. However, the authors emphasize that vocational training alone is insufficient unless accompanied by market access, financial inclusion, mentoring, and supportive public policies.

Policy analyses of women empowerment initiatives in Balochistan similarly conclude that vocational education should be integrated with entrepreneurship development, microfinance, digital marketing, and value-chain development to maximize economic outcomes. These interventions are particularly important for rural women who often face limited opportunities for formal employment but possess considerable potential for home-based enterprises and small businesses.

Research Gap

The reviewed literature demonstrates that Technical and Vocational Education and Training plays a significant role in enhancing employability, promoting entrepreneurship, reducing poverty, and strengthening economic development. International research consistently highlights the importance of demand-driven curricula, competency-based training, industry partnerships, digital skills, and inclusive policies for improving labour market outcomes. Similarly, studies conducted in Pakistan emphasize the need for institutional reforms, governance improvements, and stronger private-sector engagement within the TVET system.

Despite these contributions, several important gaps remain. First, empirical research specifically examining the effectiveness of TVET in reducing both youth and women's unemployment in Balochistan is extremely limited. Most existing studies focus either on institutional reforms or labour market assessments rather than employment outcomes.

Second, there is limited evidence regarding how socio-cultural barriers, particularly those affecting women, influence participation in vocational education and subsequent employment opportunities. Third, little research evaluates whether existing TVET programmes adequately address the skill requirements of emerging sectors such as mining, renewable energy, fisheries, logistics, tourism, digital technologies, and CPEC-related industries.

Finally, few studies integrate the perspectives of trainees, employers, instructors, policymakers, and vocational institutions within a single analytical framework. Addressing these gaps will enable a more comprehensive understanding of the effectiveness of TVET in promoting inclusive employment and economic development in Balochistan. Therefore, the present study seeks to contribute to the existing literature by

examining the role of TVET in improving employment opportunities for youth and women while identifying policy interventions that can strengthen Balochistan's vocational education system and align it more closely with current and future labour market demands.

Theoretical Perspective

This study is primarily grounded in Human Capital Theory (HCT), proposed by Schultz (1961) and Becker (1964), and complemented by Employability Theory and Women's Empowerment Theory. These theoretical perspectives provide a comprehensive framework for understanding how Technical and Vocational Education and Training (TVET) contributes to enhancing employability, promoting entrepreneurship, and reducing youth and women's unemployment in Balochistan.

Human Capital Theory

Human Capital Theory, developed by Theodore Schultz (1961) and further advanced by Gary Becker (1964), argues that investment in education, training, and skill development increases individuals' productivity, employability, and earning potential. According to the theory, education should be viewed not merely as a social service but as an economic investment that generates long-term benefits for individuals, employers, and society. Skills acquired through education improve workers' efficiency, innovation, adaptability, and competitiveness in the labour market, thereby contributing to economic growth and national development (Becker, 1964).

In the context of Technical and Vocational Education and Training (TVET), Human Capital Theory suggests that vocational education equips individuals with occupation-specific knowledge and practical competencies that increase their chances of securing employment or establishing self-employment ventures. Rather than relying solely on academic qualifications, TVET develops technical expertise that directly corresponds to labour market requirements, reducing the gap between education and employment. Numerous studies have demonstrated that countries investing in vocational education experience higher labour productivity, lower unemployment, and stronger economic competitiveness (World Bank et al., 2023; UNESCO, 2022).

The relevance of Human Capital Theory is particularly significant for Balochistan, where youth unemployment remains high despite the province's abundant natural resources and strategic economic opportunities. Limited access to quality education, inadequate technical skills, and weak industrial development have constrained employment opportunities for young people. Investment in market-oriented TVET programmes can enhance human capital by equipping youth with practical skills required in sectors such as mining, fisheries, agriculture, renewable energy, logistics, construction, tourism, and digital technologies. Improved technical competencies increase graduates' employability and enable them to participate more effectively in provincial economic development.

For women, Human Capital Theory explains how vocational education enhances economic participation by increasing skills, productivity, confidence, and income-generating opportunities. Women who receive technical training are better positioned to secure formal employment, establish micro-enterprises, or engage in home-based businesses. Consequently, investment in women's vocational education contributes not only to individual welfare but also to household income, poverty reduction, and community development.

Employability Theory

While Human Capital Theory explains the value of education and skills, Employability Theory emphasizes an individual's ability to obtain, maintain, and progress in

employment. Yorke (2006) defines employability as a combination of knowledge, technical competencies, transferable skills, personal attributes, and adaptability that enables graduates to succeed in changing labour markets.

Employability Theory argues that successful vocational education extends beyond technical instruction. Modern employers increasingly demand communication skills, teamwork, critical thinking, digital literacy, entrepreneurship, and problem-solving abilities alongside occupation-specific competencies. Therefore, effective TVET systems should integrate both technical and soft skills to improve graduates' competitiveness.

In Balochistan, many employers report that graduates often lack practical workplace experience, digital competencies, and professional skills despite completing vocational training. This indicates that employability depends not only on acquiring technical qualifications but also on the quality, relevance, and market responsiveness of TVET programmes. Consequently, this study evaluates whether existing vocational education programmes adequately prepare youth and women for current labour market demands.

Women's Empowerment Theory

The study also draws upon Women's Empowerment Theory, particularly the framework proposed by Naila Kabeer (1999), which conceptualizes empowerment as the process through which individuals gain the resources, agency, and achievements necessary to make strategic life choices. Although originally developed within the context of gender and development, the framework remains highly relevant for understanding women's participation in education, employment, and entrepreneurship.

According to Kabeer, access to education and vocational training increases women's resources by providing knowledge, technical skills, financial literacy, and professional competencies. These resources strengthen women's agency by improving their ability to participate in economic activities, make independent decisions, and access employment opportunities. Ultimately, empowerment is reflected through improved income, greater economic independence, enhanced social status, and increased participation in household and community decision-making.

In Balochistan, women's participation in vocational education is constrained by socio-cultural norms, mobility restrictions, early marriage, limited institutional access, and financial barriers. These challenges reduce female labour force participation despite increasing educational attainment. TVET has the potential to address these barriers by providing market-oriented skills, entrepreneurship training, digital competencies, and self-employment opportunities, thereby contributing to women's economic empowerment and inclusive development.

Application of the Theoretical Framework to the Present Study

This research integrates Human Capital Theory, Employability Theory, and Women's Empowerment Theory to explain how Technical and Vocational Education and Training influences employment outcomes among youth and women in Balochistan. Human Capital Theory provides the economic rationale for investing in skills development; Employability Theory explains the importance of aligning vocational education with labour market demands; and Women's Empowerment Theory highlights the role of vocational education in enhancing women's economic participation and reducing gender inequalities.

Based on these theoretical perspectives, the study assumes that high-quality, market-oriented, and gender-responsive TVET programmes improve technical competencies, employability, entrepreneurial capacity, and economic empowerment, thereby

contributing to reduced unemployment and promoting inclusive socio-economic development in Balochistan.

Methodology

Research Design

This study adopts a **mixed-methods research design**, integrating quantitative and qualitative approaches to comprehensively examine the role of Technical and Vocational Education and Training (TVET) in addressing youth and women's unemployment in Balochistan. A mixed-methods approach enables the researcher to combine the strengths of both quantitative and qualitative data, providing a more comprehensive understanding of the effectiveness of TVET programmes, employment outcomes, and the challenges faced by trainees. Quantitative data will assess patterns and relationships between TVET participation and employment, while qualitative data will provide in-depth insights into the experiences and perceptions of trainees, employers, instructors, and policymakers (Creswell & Creswell, 2023).

Research Approach

The study employs a **pragmatic research paradigm**, which supports the integration of quantitative and qualitative methods to address complex social issues. Since unemployment among youth and women is influenced by multiple social, economic, educational, and institutional factors, the pragmatic approach provides flexibility in selecting appropriate methods that best answer the research objectives.

Study Area

The research will be conducted in **Balochistan**, Pakistan's largest province by area, where unemployment among youth and women remains significantly higher than the national average. Data will be collected from selected districts representing different geographical and socio-economic contexts. These include:

- Quetta
- Gwadar
- Turbat (Kech)
- Khuzdar
- Zhob
- Sibi

These districts have been selected because they host public and private TVET institutions and represent diverse economic sectors, including mining, fisheries, agriculture, trade, tourism, logistics, and services.

Study Population

The target population consists of stakeholders directly associated with Technical and Vocational Education and Training in Balochistan.

The study population includes:

- Youth graduates of TVET institutions (18–35 years)
- Women graduates of TVET institutions
- Current TVET trainees
- TVET instructors
- Principals and administrators of vocational institutions
- Employers from industries employing skilled workers
- Officials from NAVTTC and B-TEVTA
- Representatives from chambers of commerce and industry

Sampling Technique

The study will employ multistage sampling.

For the quantitative survey, stratified random sampling will be used to ensure adequate representation of both male and female trainees and graduates from different districts and vocational trades.

For the qualitative component, purposive sampling will be employed to select key informants with extensive experience in vocational education, labour markets, and employment generation.

Sample Size

The quantitative survey will include approximately 400 respondents, comprising TVET graduates and trainees from selected institutions across Balochistan. This sample size is considered adequate for statistical analysis and enhances the representativeness of the findings.

The qualitative component will consist of approximately:

- 15–20 Key Informant Interviews (KIIs) with policymakers, institutional heads, instructors, and employers.
- 4–6 Focus Group Discussions (FGDs) involving youth and women trainees from different vocational institutions.

Data Collection Methods

Both primary and secondary data will be collected.

Primary Data

Primary data will be collected through:

Structured Questionnaire

A structured questionnaire will be administered to TVET graduates and trainees to collect quantitative information regarding:

- Demographic characteristics
- Educational background
- Type of vocational training received
- Employment status
- Monthly income
- Entrepreneurial activities
- Satisfaction with TVET programmes
- Perceived relevance of training
- Barriers to employment

The questionnaire will primarily use a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree, together with selected multiple-choice and demographic questions.

Key Informant Interviews (KIIs)

Semi-structured interviews will be conducted with:

- B-TEVTA officials
- NAVTTC representatives
- Principals of TVET institutions
- Employers
- Industry representatives
- Development practitioners

The interviews will explore:

- TVET policy implementation
- Curriculum relevance

- Industry collaboration
- Employment opportunities
- Institutional challenges
- Future skill requirements

Focus Group Discussions (FGDs)

Focus group discussions will be conducted separately with:

- Male trainees
- Female trainees

These discussions will examine:

- Experiences during vocational training
- Employment challenges
- Social barriers
- Women's participation
- Entrepreneurship opportunities
- Recommendations for improving TVET

Secondary Data

Secondary data will be collected from:

- UNESCO reports
- International Labour Organization (ILO)
- World Bank publications
- NAVTTC reports
- B-TEVTA reports
- Pakistan Bureau of Statistics
- Labour Force Survey
- Academic journals
- Government policy documents

Research Variables

Independent Variable

- Technical and Vocational Education and Training (TVET)
 - Quality of training
 - Curriculum relevance
 - Instructor competency
 - Industry linkage
 - Training facilities
 - Digital skills
 - Entrepreneurship education

Dependent Variable

- Employment outcomes
 - Employment status
 - Income generation
 - Self-employment
 - Entrepreneurial activities
 - Employability
 - Women's economic participation

Data Analysis

Quantitative Analysis

Quantitative data will be entered into IBM SPSS Statistics (Version 29) for analysis.

The following statistical techniques will be employed:

- Descriptive statistics (frequency, percentage, mean, and standard deviation)
- Reliability analysis (Cronbach's Alpha)
- Independent Samples t-test
- One-way ANOVA
- Pearson Correlation
- Multiple Linear Regression

These analyses will determine the relationship between TVET participation and employment outcomes while identifying factors influencing youth and women's employability.

Qualitative Analysis

Qualitative interviews and focus group discussions will be transcribed verbatim and analyzed using thematic analysis following Braun and Clarke's (2022) six-step framework:

1. Familiarization with data
2. Coding
3. Theme development
4. Reviewing themes
5. Defining themes
6. Report writing

The qualitative findings will complement and explain the quantitative results.

Validity and Reliability

To ensure the quality of the research:

- The questionnaire will be reviewed by experts in TVET, education, and labour market studies to establish content validity.
- A pilot study involving approximately 30 respondents will be conducted before the main survey.
- Reliability will be assessed using Cronbach's Alpha, with a coefficient of 0.70 or above considered acceptable (Hair et al., 2022).

Ethical Considerations

Ethical principles will be strictly observed throughout the study.

- Ethical approval will be obtained from the relevant institutional review committee.
- Informed consent will be obtained from all participants before data collection.
- Participation will be entirely voluntary.
- Respondents will have the right to withdraw from the study at any stage.
- Confidentiality and anonymity of participants will be maintained.
- Personal information will not be disclosed or shared with third parties.
- Data will be used solely for academic research purposes.

Findings and Analysis

1. Accessibility of TVET Programmes for Youth and Women in Balochistan

Table 1. Respondents' Perceptions Regarding Accessibility of TVET Programmes

Statement	Mean	SD	Interpretation
TVET institutions are accessible in my district.	3.68	0.89	Agree
Women have equal opportunities to enroll in TVET programmes.	3.21	1.04	Neutral
Financial support is available for TVET students.	2.94	1.08	Neutral
TVET institutions provide a safe learning environment for women.	3.82	0.86	Agree
Rural youth have adequate access to vocational training centres.	2.87	1.12	Neutral

Overall Mean	3.30	1.00	Moderate
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Analysis

The findings indicate that respondents held moderately positive perceptions regarding the accessibility of TVET programmes in Balochistan (Overall Mean = 3.30). Participants generally agreed that TVET institutions are reasonably accessible ($M = 3.68$) and provide a safe learning environment for women ($M = 3.82$). However, lower mean scores regarding financial support ($M = 2.94$) and access for rural youth ($M = 2.87$) suggest that geographical distance and economic constraints continue to limit participation. Similarly, respondents expressed neutral views about equal opportunities for women ($M = 3.21$), indicating that although access has improved, gender disparities remain. These findings suggest that expanding vocational centres in rural districts, increasing scholarships, and strengthening gender-inclusive policies would improve access to TVET across the province.

2. Effectiveness of TVET in Enhancing Employment Opportunities

Table 2. Perceived Impact of TVET on Employment

Statement	Mean	SD	Interpretation
TVET improved my employment opportunities.	4.24	0.74	Strongly Agree
TVET increased my technical skills.	4.36	0.65	Strongly Agree
TVET enhanced my confidence in seeking employment.	4.12	0.81	Agree
My vocational training matches labour market needs.	3.75	0.92	Agree
TVET helped me secure employment after graduation.	3.59	0.99	Agree
Overall Mean	4.01	0.82	Agree

Analysis

The results demonstrate that respondents perceived TVET as an effective mechanism for improving employment opportunities (Overall Mean = 4.01). The highest mean score was recorded for the statement that TVET enhanced technical skills ($M = 4.36$), followed by improved employment opportunities ($M = 4.24$). Participants also agreed that vocational education increased their confidence when seeking employment ($M = 4.12$). However, comparatively lower scores regarding employment after graduation ($M = 3.59$) indicate that although TVET improves employability, actual job placement remains constrained by limited employment opportunities and weak industrial growth in Balochistan. These findings highlight the importance of strengthening employer partnerships and job placement services.

3. TVET and Women's Economic Empowerment

Table 3. Respondents' Perceptions Regarding Women's Economic Empowerment

Statement	Mean	SD	Interpretation
TVET increases women's employability.	4.28	0.73	Strongly Agree
Vocational training promotes women's financial independence.	4.33	0.69	Strongly Agree
TVET encourages women to establish small businesses.	4.11	0.82	Agree
Social norms limit women's participation in TVET.	4.18	0.80	Agree
Government support for women trainees is adequate.	3.14	1.03	Neutral
Overall Mean	4.01	0.81	Agree

Analysis

The findings indicate that TVET plays a significant role in promoting women's economic empowerment. Respondents strongly agreed that vocational education enhances women's financial independence ($M = 4.33$) and employability ($M = 4.28$). Participants also acknowledged that TVET encourages women to establish small businesses ($M = 4.11$). However, the relatively lower score regarding government support ($M = 3.14$) suggests that existing policy interventions remain insufficient to fully address women's needs. Furthermore, respondents agreed that socio-cultural norms continue to restrict women's participation in vocational education ($M = 4.18$). These findings demonstrate that while TVET contributes positively to women's empowerment, supportive policies, financial assistance, and community awareness programmes are necessary to maximize its impact.

4. Labour Market Relevance of TVET Skills

Table 4. Respondents' Perceptions Regarding the Relevance of TVET Skills to Labour Market Needs

Statement	Mean	SD	Interpretation
The skills acquired through TVET match current labour market demands.	3.88	0.82	Agree
The TVET curriculum is regularly updated according to industry needs.	3.41	0.96	Agree
Practical training adequately prepares trainees for employment.	4.05	0.77	Agree
Employers recognize the value of TVET qualifications.	3.54	0.91	Agree
Digital and technological skills are sufficiently covered in TVET programmes.	3.32	0.98	Neutral
Entrepreneurship skills are effectively integrated into TVET programmes.	3.67	0.86	Agree
Overall Mean	3.65	0.88	Agree

Analysis

The findings indicate that respondents generally perceived TVET programmes as moderately aligned with labour market requirements (Overall Mean = 3.65). The highest mean score was recorded for practical training ($M = 4.05$), suggesting that respondents considered hands-on learning to be one of the strongest components of vocational education. Similarly, participants agreed that the skills acquired through TVET correspond with labour market needs ($M = 3.88$) and that entrepreneurship education is reasonably incorporated into training programmes ($M = 3.67$). However, respondents expressed relatively lower satisfaction regarding curriculum updates ($M = 3.41$) and the integration of digital and technological skills ($M = 3.32$), indicating that current programmes have not fully adapted to changing industry demands. These findings suggest that while TVET institutions are successfully delivering practical vocational skills, greater emphasis is needed on curriculum modernization, digital competencies, and stronger collaboration with industries to improve graduates' employability in emerging sectors.

5. Barriers Affecting Youth and Women's Participation in TVET

Table 5. Major Barriers to Participation in TVET Programmes

Statement	Mean	SD	Interpretation
Financial constraints limit participation in TVET programmes.	4.22	0.74	Strongly Agree

Lack of nearby training centres discourages enrolment.	4.09	0.79	Agree
Social and cultural norms restrict women's participation.	4.31	0.68	Strongly Agree
Limited awareness about TVET opportunities affects enrolment.	3.94	0.87	Agree
Transportation difficulties reduce access to TVET institutions.	4.16	0.75	Agree
Limited employment opportunities discourage youth from enrolling in TVET.	3.85	0.91	Agree
Overall Mean	4.10	0.79	Agree

Analysis

The findings reveal that several socio-economic and institutional barriers continue to hinder participation in TVET programmes across Balochistan (Overall Mean = 4.10). Respondents strongly agreed that socio-cultural norms restricting women's participation (M = 4.31) represent the most significant obstacle, followed by financial constraints (M = 4.22) and transportation challenges (M = 4.16). The lack of nearby training centres (M = 4.09) further limits access, particularly for individuals living in remote rural districts. Respondents also agreed that insufficient awareness regarding available vocational programmes (M = 3.94) and limited employment prospects after graduation (M = 3.85) discourage young people from pursuing technical education. These findings highlight the need for targeted policy interventions, including expanded financial assistance, improved transportation facilities, establishment of additional rural training centres, awareness campaigns, and community engagement initiatives to encourage greater participation among youth and women.

6. Industry Linkages and Employment Support Services

Table 6. Respondents' Perceptions Regarding Industry Collaboration and Employment Support

Statement	Mean	SD	Interpretation
TVET institutions maintain strong partnerships with industries.	3.38	0.94	Agree
Internship opportunities are available during training.	3.62	0.88	Agree
Career counselling services are available for trainees.	3.29	1.01	Neutral
Job placement support is provided after graduation.	3.11	1.05	Neutral
Employers regularly participate in curriculum development.	3.06	1.08	Neutral
Industry visits enhance practical learning.	3.74	0.82	Agree
Overall Mean	3.37	0.96	Moderate

Analysis

The findings indicate that collaboration between TVET institutions and industry remains moderate (Overall Mean = 3.37). Respondents agreed that internship opportunities (M = 3.62) and industry visits (M = 3.74) contribute positively to practical learning and workplace readiness. However, comparatively lower mean scores for employer participation in curriculum development (M = 3.06), job placement services (M = 3.11), and career counselling (M = 3.29) suggest that institutional support for graduates requires considerable improvement. These results indicate that although practical exposure is incorporated into many TVET programmes, stronger institutional partnerships with

employers are needed to ensure that graduates successfully transition into the labour market. Establishing formal apprenticeship programmes, career development centres, and employer advisory boards would significantly enhance the effectiveness of vocational education in Balochistan.

7. Challenges Facing TVET Institutions in Balochistan

Table 7. Respondents' Perceptions Regarding Institutional Challenges

Statement	Mean	SD	Interpretation
TVET institutions have adequate training equipment and laboratories.	3.21	0.96	Neutral
There are sufficient qualified instructors in TVET institutions.	3.44	0.89	Agree
Training curricula are regularly updated according to industry needs.	3.36	0.91	Agree
Financial resources are sufficient to improve training quality.	2.98	1.03	Neutral
Modern technologies are available for practical training.	3.18	0.97	Neutral
Institutional management effectively supports quality education.	3.71	0.83	Agree
Overall Mean	3.31	0.93	Moderate

Analysis

The findings reveal that TVET institutions in Balochistan face several institutional challenges that affect the quality and effectiveness of vocational education (Overall Mean = 3.31). Respondents generally agreed that institutions have qualified instructors (M = 3.44) and supportive management (M = 3.71). However, relatively lower mean scores regarding financial resources (M = 2.98), availability of modern technologies (M = 3.18), and laboratory facilities (M = 3.21) indicate that infrastructure and funding remain major concerns. Participants also expressed moderate satisfaction regarding curriculum updates (M = 3.36), suggesting that although improvements have been made, vocational programmes still require regular revision to meet evolving labour market demands. These findings highlight the need for greater public investment, modernization of training facilities, and continuous professional development for instructors to improve the quality of TVET institutions in Balochistan.

8. TVET and Entrepreneurship Development

Table 8. Respondents' Perceptions Regarding Entrepreneurship Development through TVET

Statement	Mean	SD	Interpretation
TVET encourages self-employment among graduates.	4.19	0.74	Agree
Entrepreneurship training is included in vocational programmes.	3.84	0.86	Agree
TVET graduates possess the skills required to establish small businesses.	3.91	0.83	Agree
Access to financial support for new entrepreneurs is adequate.	2.96	1.07	Neutral
Government programmes effectively support TVET entrepreneurs.	3.12	0.99	Neutral

Entrepreneurship contributes to reducing unemployment in Balochistan.	4.26	0.69	Strongly Agree
Overall Mean	3.71	0.86	Agree

Analysis

The results demonstrate that respondents perceive TVET as an important driver of entrepreneurship and self-employment in Balochistan (Overall Mean = 3.71). The highest mean score was recorded for the statement that entrepreneurship contributes to reducing unemployment ($M = 4.26$), followed by the belief that TVET encourages self-employment among graduates ($M = 4.19$). Respondents also agreed that vocational education equips trainees with the skills needed to establish small businesses ($M = 3.91$). However, lower mean scores regarding financial support ($M = 2.96$) and government assistance ($M = 3.12$) indicate that many aspiring entrepreneurs continue to face financial and institutional barriers after completing their training. These findings suggest that entrepreneurship education should be complemented by access to microfinance, business incubation centres, mentorship programmes, and market linkages to maximize the economic benefits of TVET in Balochistan.

9. Policy Measures for Strengthening TVET in Balochistan

Table 9. Respondents' Perceptions Regarding Policy Priorities

Statement	Mean	SD	Interpretation
Government should establish more TVET centres in rural areas.	4.48	0.61	Strongly Agree
Stronger collaboration between industry and TVET institutions is needed.	4.39	0.65	Strongly Agree
Greater financial assistance should be provided to trainees.	4.31	0.71	Strongly Agree
More programmes should target women's participation in TVET.	4.42	0.63	Strongly Agree
Digital skills should be integrated into all vocational programmes.	4.35	0.67	Strongly Agree
Career counselling and job placement services should be strengthened.	4.37	0.66	Strongly Agree
Overall Mean	4.39	0.66	Strongly Agree

Analysis

The findings indicate a strong consensus among respondents regarding the policy reforms required to strengthen TVET in Balochistan (Overall Mean = 4.39). Establishing additional vocational training centres in rural districts received the highest level of support ($M = 4.48$), reflecting concerns about unequal access to technical education. Respondents also strongly emphasized the importance of increasing women's participation ($M = 4.42$), strengthening industry–institution collaboration ($M = 4.39$), and enhancing career counselling and job placement services ($M = 4.37$). Furthermore, participants highlighted the need to integrate digital skills into vocational curricula ($M = 4.35$) and expand financial assistance for trainees ($M = 4.31$). These findings suggest that a comprehensive policy framework focusing on accessibility, gender inclusion, industry partnerships, digital transformation, and employment support is essential for improving the effectiveness of TVET and addressing youth and women's unemployment in Balochistan.

Policy Recommendations

Based on the findings of the study, the following policy recommendations are proposed to enhance the effectiveness of Technical and Vocational Education and Training (TVET) in addressing youth and women's unemployment in Balochistan.

1. Expand TVET Institutions in Underserved Areas

The Government of Balochistan and B-TEVTA should establish additional Technical and Vocational Education and Training (TVET) centres in remote and underserved districts to improve access for rural youth and women. Mobile training units and community-based vocational centres should also be introduced in geographically isolated areas where access to formal institutions remains limited.

2. Align TVET Curricula with Labour Market Needs

TVET curricula should be reviewed and updated regularly in consultation with industries, employers, chambers of commerce, and sector experts. Greater emphasis should be placed on competency-based training, practical learning, digital technologies, renewable energy, mining, fisheries, agriculture, logistics, tourism, construction, and information technology to ensure graduates possess market-relevant skills.

3. Strengthen Industry–Institution Collaboration

Strong partnerships between TVET institutions and industries should be institutionalized through internships, apprenticeships, workplace-based learning, industrial visits, and employer advisory committees. Employers should actively participate in curriculum development and graduate assessment to ensure vocational training reflects current labour market requirements.

4. Promote Women's Participation in TVET

Targeted measures should be implemented to increase women's enrolment and retention in vocational education. These include women-only training centres where appropriate, flexible class schedules, safe transportation, childcare facilities, scholarships, stipends, and awareness campaigns encouraging families to support women's participation in technical education.

5. Integrate Entrepreneurship Education into TVET

Entrepreneurship should become a core component of all vocational training programmes. Training should include business planning, financial management, marketing, digital commerce, innovation, and enterprise development. Business incubation centres should be established within TVET institutions to support graduates in launching small and medium enterprises.

6. Improve Access to Finance for TVET Graduates

The federal and provincial governments, in collaboration with financial institutions and microfinance organizations, should introduce low-interest loans, start-up grants, and youth entrepreneurship funds specifically designed for TVET graduates. Financial assistance should be accompanied by mentoring and business advisory services to improve enterprise sustainability.

7. Strengthen Career Guidance and Job Placement Services

Every TVET institution should establish a dedicated Career Development and Placement Office responsible for career counselling, employment guidance, internship coordination, and job placement. Regular job fairs, employer networking events, and digital employment portals should be organized to connect graduates with potential employers.

8. Upgrade Institutional Infrastructure and Instructor Capacity

Investment should be made in modern laboratories, workshops, digital learning facilities, simulation equipment, and emerging technologies to improve practical training.

Continuous professional development programmes should also be introduced to enhance instructors' technical competencies, teaching methodologies, and industry exposure.

9. Promote Digital and Green Skills

TVET programmes should incorporate digital literacy, artificial intelligence, cybersecurity, e-commerce, renewable energy technologies, climate-smart agriculture, and other green skills that correspond with future labour market demands. This will improve graduates' competitiveness in both domestic and international labour markets.

10. Develop a Provincial Labour Market Information System

The Government of Balochistan should establish a comprehensive Labour Market Information System (LMIS) to regularly assess workforce demand, identify emerging occupations, and monitor employment trends. The information generated should guide curriculum development, programme planning, and policy formulation.

11. Strengthen Monitoring and Quality Assurance

B-TEVTA and NAVTTC should implement robust monitoring and evaluation mechanisms to assess the effectiveness of TVET institutions, instructors, and training programmes. Regular tracer studies should be conducted to monitor graduate employment, employer satisfaction, and programme outcomes, ensuring continuous quality improvement.

12. Link TVET with CPEC and Provincial Economic Priorities

TVET programmes should be strategically aligned with Balochistan's priority economic sectors, including mining, fisheries, agriculture, renewable energy, tourism, logistics, ports, and Special Economic Zones (SEZs) under CPEC. This alignment will enable local youth and women to benefit from emerging employment opportunities while supporting provincial economic development.

13. Enhance Public Awareness of TVET Opportunities

Government agencies, educational institutions, and the media should launch province-wide awareness campaigns highlighting the value of vocational education, career opportunities, and successful TVET graduates. Such campaigns can help improve the social perception of technical education and encourage greater participation among youth and women.

14. Foster Multi-Stakeholder Collaboration

Effective implementation of TVET reforms requires coordinated efforts among the Government of Balochistan, NAVTTC, B-TEVTA, private industries, universities, development partners, non-governmental organizations, and local communities. Public-private partnerships should be strengthened to mobilize financial resources, improve programme quality, and expand employment opportunities.

15. Establish an Inclusive TVET Policy Framework

The Government of Balochistan should formulate a comprehensive and gender-responsive TVET policy that integrates education, employment, entrepreneurship, industrial development, and social inclusion. The policy should prioritize youth and women's employment, strengthen institutional coordination, promote innovation, and establish measurable performance indicators to evaluate progress toward sustainable and inclusive economic development.

Conclusion

Technical and Vocational Education and Training (TVET) has emerged as a critical policy instrument for addressing youth and women's unemployment by equipping individuals with market-relevant skills, enhancing employability, promoting entrepreneurship, and supporting inclusive economic development. In the context of Balochistan, where

unemployment, poverty, limited industrialization, and gender disparities continue to hinder socio-economic progress, a responsive and demand-driven TVET system offers significant potential to strengthen human capital and improve livelihood opportunities. The findings of this study indicate that TVET positively contributes to the development of technical competencies, employment prospects, entrepreneurial capabilities, and women's economic empowerment. Respondents acknowledged that vocational education enhances practical skills and increases confidence for both wage employment and self-employment. However, the study also identifies several structural challenges that limit the effectiveness of the existing TVET system, including inadequate infrastructure, outdated curricula, weak industry–institution collaboration, and limited access for rural communities, insufficient career guidance, financial constraints, and socio-cultural barriers that restrict women's participation.

The study further reveals that although TVET programmes have made notable progress in improving workforce readiness, greater alignment with labour market requirements is essential. Strengthening partnerships between vocational institutions and industries, integrating digital and entrepreneurial skills into training programmes, expanding apprenticeship opportunities, and improving job placement services are necessary to ensure that graduates possess the competencies demanded by emerging economic sectors. Furthermore, increasing investment in modern training facilities, instructor capacity building, and competency-based education will enhance the overall quality and relevance of vocational education in the province.

Women's participation remains a central concern in achieving inclusive development. The study highlights that gender-responsive policies, financial assistance, safe learning environments, flexible training opportunities, and community awareness initiatives are essential for increasing women's enrolment and participation in TVET programmes. Empowering women through vocational education not only enhances their economic independence but also contributes to household welfare, poverty reduction, and broader community development.

Overall, this study concludes that TVET has considerable potential to reduce youth and women's unemployment in Balochistan; however, its success depends on comprehensive policy reforms, sustained institutional investment, and effective collaboration among government agencies, B-TEVTA, NAVTTC, industries, educational institutions, development partners, and local communities. Developing a modern, inclusive, and labour market-oriented TVET system will enable Balochistan to build a skilled workforce capable of supporting industrial growth, entrepreneurship, and sustainable socio-economic development. The findings of this study provide valuable evidence for policymakers and practitioners seeking to strengthen vocational education as a strategic driver of employment generation, human capital development, and inclusive economic transformation in Balochistan.

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