Critical Evaluation of Current Policies and Practices in TVET and Its Impact on Employment and Industry in Pakistan

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Abstract:

Technical and Vocational Education and Training (TVET) plays a critical role in developing the workforce, aligning skills with market needs, and promoting economic growth. In Pakistan, however, TVET faces significant challenges such as outdated curricula, insufficient funding, and a lack of industry collaboration. Despite efforts like the National Vocational Qualification Framework (NVQF) and the National Skills for All Strategy, the sector remains underfunded, with only 1.5% of the education budget allocated to TVET. These challenges hinder the development of a skilled labor force that can meet the demands of a rapidly evolving job market, particularly with the advent of the Fourth Industrial Revolution. This paper explores the long-term impact of TVET on economic growth in Pakistan, emphasizing the need for curriculum updates, increased investment, and stronger industry linkages. The study proposes policy recommendations to enhance the effectiveness of TVET, focusing on demand-driven skills, governance, and partnerships with local businesses to address emerging trends and global market requirements.

Key words:

Technical and Vocational Education and Training (TVET), economic growth, curriculum development, workforce skills, Pakistan.

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Introduction

Technical and Vocational Education and Training (TVET) is essentially the skill development of the workforce in the industry and economically relevant education for people, according to the United Nations Educational, Scientific, and Cultural Organization (UNESCO)[7], while vocational education refers to lower-level education and training for the preparation of skilled and semi-skilled workers in various trades. TVET develops human potential through market-oriented skills and expands employment opportunities in the labor market. It has both a positive externality and a spillover impact in the labor market, in that the more people with demand-driven skills there are, the more investment and job creation there will be. As a result, it is considered vital to invest in individuals' talents in order to reduce unemployment, increase access to economic-generating opportunities, and contribute to economic growth. Technology and skills have a significant relationship, just like industrialization, economic development, capital, and skills. According to the World Bank (2002)[8], rapid technological advancement has created a high demand for higher-level talents in the job market. Because new technologies require greater ability and knowledge, there is a significant demand for skilled and trained employees in the job market.

Khan (2016), in his study on "The Long-run Impact of Technical and Vocational Education and Training in Pakistan," reasoned that due to fast technological progress, globalization, and economic liberalization, human capital has emerged as one of the most important factors of economic growth in recent years. Because of these rapid developments, the government of Pakistan, like that of other emerging countries, has prioritized skill development as a crucial strategy for economic success. Using an autoregressive distributed lag (ARDL) model, this study investigated the long-term association between technical and vocational education and economic growth in Pakistan. The computed coefficient indicates that technical and vocational education has a positive and significant long-run impact on economic growth and can play a vital role in strengthening the economy by producing skilled and demand-driven workers in the labor market. It was also proposed that the government should invest more in technical and vocational education to develop a strong human foundation that can further enhance the labor market with productive workers and transform the status of the development goals.

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[7] *UNESCO, Research Study on Technical and Vocational Education in Pakistan at Secondary Level (Pakistan, 2009), 10.*

[8] *https://documents1.worldbank.org/curated/en/503261468019793470/pdf/wps3894.pdf*

In Pakistan, TVET (technical and vocational education and training) has long been considered a way to close the skills gap between the labor force and industry. However, there are a number of issues with the current TVET policies and practices in Pakistan, including a lack of funding, subpar facilities, outdated curricula, and insufficient instructor training. These difficulties have had a detrimental effect on Pakistan's economy and industry. The lack of funding is one of the main concerns affecting TVET in Pakistan. The lack of funding for TVET colleges makes it difficult for them to purchase cutting-edge tools and technology. As a result, graduates are not fully prepared with the abilities required in the sector and receive insufficient training. The outdated curricula in TVET institutes is another issue. Graduating students lack the necessary skills to compete in the job market because the curriculum is out of step with the changing needs of the industry. The curriculum needs to be evaluated and revised frequently to reflect the changing demands of the sector. Moreover, the quality of training for TVET instructors is a cause for concern. In order to effectively teach students, the practical skills needed in the workplace, instructors must have relevant industry experience. Nevertheless, many teachers lack the required knowledge and expertise, which results in subpar training outcomes. There is also a lack of collaboration between TVET institutions and industry. To guarantee that TVET programs fulfill the demands of the workforce, industry must be involved in the design of the curricula, and there must be regular industry-academia exchanges.

Many of these issues have resulted in a mismatch between graduates' abilities and the needs of the sector, leading to high rates of unemployment in Pakistan. To overcome these difficulties and improve the quality of TVET in Pakistan, current TVET policies and practices must be re-evaluated. Therefore, TVET policies and practices in Pakistan must be critically assessed in order to improve training quality, better align TVET programs with industry demands, and expand employment opportunities for graduates. To address these difficulties, significant investment in TVET is required, including finance, infrastructure, curriculum, instructor training, and tighter partnerships with industry.

Problem Statement

Despite the emphasis on Technical and Vocational Education and Training (TVET) in Pakistan, the country continues to face high levels of youth unemployment and a skills gap in the labor market. This suggests that current policies and practices in TVET may not be adequately addressing the needs of the industry or properly preparing students for employment. Therefore, there is a need for a critical evaluation of the effectiveness of current TVET policies and practices in Pakistan and their impact on employment and industry. Such an evaluation can help identify the strengths and weaknesses of current TVET systems and inform the

development of evidence-based policies and practices that can better meet the needs of both industry and students.

Scope

The present study will provide an overview of the current TVET system in Pakistan, including its structure, funding, and governance. It will also provide an analysis of the policies and practices currently in place to support TVET in Pakistan, including curriculum development, teacher training, and student assessment, along with an assessment of the effectiveness of the current TVET policies and practices in preparing students for employment in the industry. A discussion of the challenges and opportunities facing the TVET system in Pakistan, including the need for greater collaboration between industry and education, the importance of promoting entrepreneurship, and the need for more investment in TVET, will also be included. Consequently, a set of recommendations for policymakers, educators, and industry stakeholders will be presented on how to improve the TVET system in Pakistan and promote economic development.

Literature Review

In the human capital discourse, the term 'TVET' is defined in different ways. According to UNESCO, the TVET sector comprises education, training, and the acquisition of practical skills required for economic and social life. It empowers individuals and communities for lifelong learning, employment, and decent work, which results in inclusive and sustainable growth (UNESCO, 2016). Its main emphasis is that the TVET sector in a country must provide "control ability" to the individual, meaning that the participants of the TVET sector have all the requisite tools to improve their own lives. Secondly, it promotes equity and aims to provide equal opportunities for access at multiple levels of TVET so that all trainees can participate in the labor market. Thirdly, and importantly, the TVET sector results in a good quality and quantity of human capital to support a country's economic development, which yields gainful employment for its citizens (Renold & Caves, 2017). Globally, the TVET sector is a mixture of formal, informal, and non-formal learning, primarily designed to impart the required skills that allow individuals to secure and successfully retain their jobs (Paryono, 2017). Today, TVET is an emerging agenda at the global level and is considered a driving force to attain SDG-4 of the Sustainable Development Goals, 2015. Therefore, it has become a strategic and operational priority for the G20, OECD, OIC, ILO, UNESCO, ASEAN, and the Shanghai Consensus (Ahmad, 2016).

The role and importance of the TVET sector for a country's socio-economic development is undeniable, and there is enough empirical evidence to support this fact. Multiple examples across the globe, including both developed and developing countries, validate the fact that Technical and

Vocational Education and Training (TVET) offers the shortest and swiftest path to employability in an economy. It is estimated that at least 52 percent of the total workforce in the USA, 68 percent in the United Kingdom, 75 percent in Germany, 80 percent in Japan, and 96 percent in South Korea has undergone some formal skill training (Khan, 2021). However, Pakistan has only 6 percent of its labor force skilled. Pakistan has one of the highest dropout rates after the primary level of formal education, with only 48 percent of the youth completing secondary level education (World Bank data, 2019). These dropouts often do not find any other learning opportunities and end up either joining the informal economy or engaging in non-productive activities.

Pakistan is also faced with the challenge of a youth bulge, and its young workforce is projected to double by 2050, with 236 million Pakistanis in the working-age group. The Industrial Classification (ISIC) and International Standard Classification of Occupations (ISCO) are aware of these different institutional arrangements in the TVET sector and the multitude of organizational approaches, government policies, strategies, and regulations. In 2010, IAG-Tvet established a Working Group on TVET Indicators (WGI) to identify indicators that can assess the TVET sector across the globe, with a special focus on low-income countries. They successfully developed a framework to help strengthen governments in developing countries to design, monitor, and evaluate their TVET sectors. Initially, the WGI mapped indicators commonly collected and used by various international organizations. After detailed deliberations, they identified four key policy areas to assess the TVET sector: Access, Quality, Relevance, and Finance/Governance. Following this identification, a conceptual framework was developed where these four components can substantively contribute to policy dialogue by any government seeking to improve the overall performance of the TVET sector (IAWG, 2012). This is a rare demographic opportunity that can be turned into a dividend by establishing a sustainable and efficient TVET ecosystem in Pakistan, which can bring economic prosperity through enhanced human capital (Alam, 2015).

In recent years, TVET has gained greater importance internationally, and TVET sectors across the globe are undergoing transformative reforms to provide trainees with an enabling environment (such as partnerships with the private sector and linkages with industries) to learn and upgrade their skill sets, which align with changing national, regional, and global economic needs (Nomura, 2019). However, there is a difference between the approaches of developed and less developed countries. While developed countries are shifting to green TVET and sustainable TVET, focusing on quality improvement, monitoring, evaluation, and national development plans, underdeveloped countries are still only focusing on the cost of enrollment and implementation of TVET (Pavlova, 2014). Pakistan's government has been reforming its technical and vocational education and training (TVET) system since 2000. This can be divided into two phases.

Phase 1 mainly revolves around the National Skills Strategy 2009, which ended in 2016 and achieved major milestones such as the National TVET Policy, National Vocational Qualifications Framework (NVQF), and the introduction of Competency-Based Training & Assessment (Ansari & Wu, 2013). The second phase of reforms includes the TVET Sector Support Programme, launched in January 2017 and running until 2022. It was carried out with the support of international organizations such as the European Union, the Federal Republic of Germany, and the Royal Norwegian Embassy, with a focus on improving governance and private sector participation in the TVET sector to increase quality skill development that meets labor market demands.

Internationally, TVET is a diverse sector, comprising formal, non-formal, and informal learning. It takes place in multiple settings, including schools, vocational centers (public and private), vocational institutes, higher education institutions, and various workplaces in both formal and informal economies (Tan et al., 2016). The International Labour Organization (ILO) ascertains that TVET systems and skill development are standardized and aligned with the requirements of labor markets across the globe (ILO, 2018). For this purpose, it emphasizes using international standards by the TVET sector, such as the International Standard. Over time, the TVET sector has evolved and grown in different ways, including the international recognition of TVET's involvement in developing lifelong skills and sustainable economic systems. New policies and strategies are being formulated to grow and enhance the status of TVET, build resilience, and improve its perception as a second and less popular choice compared to the formal education system (UNESCO Strategy for TVET, 2022-29).

Governments, through these policies and strategies, are working on areas such as aligning curricula with industry needs, developing articulation procedures, recognizing earlier skill learning, designing an educational framework for the country's workforce, and acknowledging the critical role of teachers in delivering high-quality TVET programs (Maina, 2019 & Tikly, 2013). A recent and emerging trend is sustainable TVET and Green TVET, which strives for the development of holistic and comprehensive plans that are critical for productive workplace and community practices (Kaliappan & Hamid, 2021). Green TVET aims to make young people active members of the green economy, which will increase individual well-being by reducing environmental risks and ecological scarcity. The United Nations has developed several guidelines and frameworks for green and sustainable TVET that are beneficial for TVET institutions as well as relevant economies (Mustapha, 2015). The Clean Development Mechanism (CDM) is a market-based mechanism under the Kyoto Protocol used by member countries to meet their commitments and reduce greenhouse gas emissions. All these measures suggest that it is critical for governments to meet the demand for green economy and green TVET and ensure a smooth transition to a green and sustainable TVET ecosystem (Maclean, 2013).

Research Methodology

A mixed research methodology was used for this individual research paper. A list of questions (Annex-A) was prepared to obtain data (numerical figures) on the performance of the four key areas of TVET: "Financing," "Access," "Quality," and "Relevance," in order to critically analyze these areas. A perception survey was also conducted (Annexure-B) to understand the issue at hand in greater depth. Secondary sources were also studied and examined for this research, such as scholarly articles written on the subject. Similarly, reports from reputable international organizations such as UNESCO, UNEVOC, ADB, ILO, World Bank, ASEAN, and SAARC were accessed to establish an understanding of the global perspective of the TVET sector, which was later used for critical and comparative analysis. Policies, strategies, and initiatives for TVET sector reforms and improvements in Pakistan were thoroughly examined, along with a comparison with China, India, and Bangladesh.

CRITICAL ANALYSIS OF TVET SECTOR IN PAKISTAN

TVET is a diverse sector in Pakistan with many key policy areas. However, in this chapter, four main areas of the TVET sector will be examined and critically analyzed with the help of data.

Financing:

One of the key challenges facing the TVET sector in Pakistan is inadequate funding. According to a report by the National Vocational and Technical Training Commission (NAVTTC), the government's budget allocation for TVET has remained consistently low, at less than 1-1.5% of the country's education budget. This low funding has resulted in inadequate infrastructure, outdated equipment, and insufficient teacher training, which ultimately affects the quality of TVET programs and limits their effectiveness in preparing students for employment. Another challenge is the lack of coordination between different stakeholders involved in financing TVET. Currently, funding for TVET is fragmented across multiple government departments and agencies, resulting in duplication of efforts and inefficiencies. This fragmentation also makes it challenging to track and monitor the effectiveness of funding in achieving its intended outcomes. Moreover, the private sector's role in financing TVET is limited, despite its critical role in providing employment opportunities for skilled workers. Private sector funding is mostly limited to corporate social responsibility initiatives, which are often small in scale and short-term. This limited private sector funding makes it difficult to sustainably finance TVET programs.

Budget for TVET

The budget allocation for technical and vocational education and training (TVET) in Pakistan has been consistently low, which has affected the quality

of TVET programs and the country's capacity to produce skilled workers. According to the National Vocational and Technical Training Commission (NAVTTC), the budget allocation for TVET in Pakistan has remained less than 1% of the country's education budget in recent years. In the year 2020-2021, the original budget for NAVTEC was PKR 394,591,000, with an expenditure up to December of PKR 167,698,166. However, this budget allocation is still considered insufficient to meet the demand for skilled workers and improve the quality of TVET programs in the country.

TVET Training Cost per Trainee

The cost of technical and vocational education and training (TVET) per trainee in Pakistan varies depending on the program's duration, level of qualification, and the institution providing the training. However, in general, the cost of TVET training per trainee in Pakistan is relatively low compared to other countries. According to a report by the National Vocational and Technical Training Commission (NAVTTC), the average cost of TVET training per trainee in Pakistan is estimated to be around PKR 25,000 to PKR 30,000 (approximately USD 160 to USD 190) for a six-month training program. This cost includes tuition fees, books, and other related expenses. The cost of training may vary depending on the field of study and the level of qualification. For example, the cost of a two-year diploma in a technical field such as electrical or mechanical engineering may be higher than a six-month certificate course in a vocational trade such as welding or carpentry.

Access:

The component of "Access" explains the extent to which a particular TVET sector promotes equity and inclusion in its TVET ecosystem. Its main indicators examine “access of the TVET sector to all genders” and “enrollment by type of TVET program,” which lead to improved labor market outcomes. In the following paragraphs, data obtained for these indicators will be examined to analyze access to TVET institutions and enrollment in preferred skills for the country.

Access of TVET Sector to All Genders:

Table 1.1 shows a gender-based classification of TVET institutions. The results show that the country has male-only, female-only, and co-educational TVET institutions throughout the country. Out of a total of 4,076 TVET institutions, half of them cater to a single gender (male), followed by female-specific TVET training centers, and then co-educational institutes. The following inferences can be drawn:

PROVINCE	INSTITUTES			
	MALE	FEMALE	CO-ED	TOTAL
Punjab	803	527	276	1606
Sindh	349	158	178	685
KPK	517	203	239	959
Baluchistan	117	54	36	207
GB	61	91	33	185
AJK	73	53	28	154
ICT	32	173	75	280
Total	1952	1259	865	4076

Table 1 1 Access of TVET sector to all genders

TVET institutes exist all across the country instead of being concentrated at the economic zones/Industrialized cities where on job training can be readily available to trainees. Need analysis is not conducted before opening a TVET institute. For a city like Islamabad that has one of the highest literacy rates (96%) and inclination towards formal and higher education (Rehman, Jingdong & Hussain ,2015) has 280 TVET institutions. Since TVET sector is mostly opted by individuals with low inclination for higher studies or for NEET therefore, they must be prioritized for areas with higher school dropout rate, facing multi- sectoral poverty so that economic growth in such areas can be accelerated and the beneficiaries be made part of active economy.

Enrolment by type of TVET programme:

Table 1.2 explains enrolment by type of TVET program. Among the top five TVET courses, two are from basic ICT whereas the remaining three are from the conventional traits. Following inferences can be drawn

- Skill mapping for each region is not done separately by taking into account demands of a particular district especially in terms of its economic profile.
- Due to non-availability of district and regional profiling, all students are offered same courses across the country that further reduces their employability and majority of them resort to entrepreneurship/self-employment.

ENROLLMENT BY TYPE OF TVET PROGRAM	RESULTS
Basic Computer	34,372
Tailoring	25,469
Computer Application and Office professional	24,858
Beautician	22,499
Dress making and fashion designing	20,274

Table 1 2 Enrolment by type of TVET programme

Quality:

This component addresses policy options for effective teaching and learning processes in a TVET sector. It measures quality of TVET sector to meet required skill set for a competent and competitive workforce. In preceding paras, Indicators for Quality in TVET sector will be analyzed to critically examine Quality in TVET sector of Pakistan.

AREA	INDICATOR	RESULTS
1	Student teacher ratio in TVET sector	25:1
2	Completion rate in TVET programs	86%
3	Proportion of qualified teacher in TVET sector	1) DAE/B.Tech: 38% 2) BE / ME: 52% 3) PhD: 1% 4) Others: 9%
4	Number of Capacity building for trainer and teachers	Seven Capacity Building Programs GIZ (Donor Agency): 03 NAVTTC: 01 Provincial TEVTAs: 03
5	ICT training modules	Over 30 Programs in ICT Sector being executed by NAVTTC and Provinces
6	Number of conventional programs that are continued for last 30 years	Over 300

Table 1 3 Quality of TEVT and Indicators

Table 1.3 shows following six indicators to assess quality in TVET sector of Pakistan.

Student-Teacher Ratio in TVET Sector:

Results show a student-teacher ratio of 25:1, which is considered a good ratio. However, this is an average for the whole country and does not provide a breakdown of the student-teacher ratio in different provinces. Literature suggests that the teacher-student ratio in public sector TVET institutes in Sindh and Khyber Pakhtunkhwa is 1:45 and 1:49, respectively (Shah & Khan, 2017).

Completion Rate in TVET Programs:

Results show that 86% of students complete their TVET courses. This is higher than many countries in the region, such as Sri Lanka, which has a 70% completion rate (ADB, 2015).

Proportion of Qualified Teachers in TVET Sector:

Results show that 52% of teachers in the TVET sector hold a Bachelor's or Master's degree in Engineering, followed by 38% of teachers who have a degree in TVET streams, such as DAE/B.Tech. Only 1% hold a PhD, while 9% have general education qualifications not specific to TVET streams. Ninety percent of these teachers have an engineering background, making it

challenging to prepare a skilled labor force in emerging TVET sectors such as IT, digital literacy, and e-commerce.

Capacity Building for Trainers and Teachers:

Results show that during 2021-22, seven capacity-building programs for teacher training were conducted. Of these, GIZ, Germany, sponsored three programs, provincial TEVTAs conducted three, and NAVTEC conducted one program. The TVET sector is considered an unpredictable stream of education, where frequent changes in labor skill sets make it imperative to invest more in teacher training, as they are the main knowledge transmitters. Although there are eleven Staff Training Institutes (STIs) across the country (Ansari & Wu, 2013), only four training programs were conducted by NAVTEC and provincial TEVTAs. This shows that priorities vary across TEVTAs in the country. For example, TEVTA Punjab has upgraded its five teacher training institutes into Centres of Excellence.

ICT Training Modules:

Results show that only 30 ICT programs are offered in the TVET sector of Pakistan. This indicates that NAVTEC and provincial TEVTAs' approach to curriculum design is supply-driven rather than demand-driven and does not adequately address emerging trends in the TVET sector, such as resilience for Industry 4.0 and Green TVET.

Number of Conventional Programs Continued for the Last 30 Years:

Results show that over 300 courses taught at TVET institutions are conventional. Over the last three decades, the world has seen digital transformation, but the TVET sector is still focusing on skills that were taught 30 years ago. This highlights another gap: the curriculum is not reviewed regularly, which is a common practice even in middle-income and developing countries such as Malaysia (Azmi & Salleh, 2021) and Ghana.

Relevance:

Relevance in the TVET sector examines the extent to which a particular TVET sector is responsive to labor market needs, requirements, and employability rates. In the following paragraphs, data for indicators such as "employment status" and "unemployment rate" will be critically analyzed to assess the relevance of the TVET sector in Pakistan.

Employment Status:

Results for the first indicator, "employment rate," show that the overall employment rate of graduates after completing training at TVET institutes is 63%. The provincial breakdown of the employment rate shows that the highest employment rate was observed in Baluchistan at 84%, while AJK

showed the lowest at 49%. The employment rate is expected to improve further with NAVTEC's initiatives such as PMYSDP, Saudi Takamol, and a Memorandum of Understanding (MoU) signed with Qatar to create job opportunities for graduates of Pakistan's TVET sector.

PROVINCE	EMPLOYMENT RATE (%)
Punjab	62
Sindh	82
Khyber Pakhtunkhwa	52
Baluchistan	84
AJK	49
ICT	82
AVERAGE	63

Table 1 4Employment Status

Employment Status by Gender

PROVINCE	MALE	FEMALE	TOTAL
Punjab	69	51	62
Sindh	84	70	82
Khyber Pakhtunkhwa	57	38	52
Baluchistan	92	60	84
AJK	67	42	49
ICT	82	78	82

Table 1 5 Employment Status by Gender

In order to explore gender wise employment data is compiled in Table-7. Results for "employment status by gender" show that overall employment rate for male graduates remained higher than female graduates. Provincial breakup for gender wise employment rate shows that in ICT, female employment rate remained highest at 78% and it remained lowest in KPK at 38%. For Males, it remained highest in Baluchistan at 92% and lowest in KPK at 57%. It suggests that employment rate for female graduates is lower as compared to male graduates. An enabling environment such as lack of access to safe transport, soft loans, household responsibilities and social norms are some major social barriers due to which female labour force participation (Isran & Isran , 2012) remainslow even after getting a TVET specific training.

Type of Employment Attained by Graduates

PROVINCE	GOVERNMENT	PRIVATE	ENTREPRENEURE/SELF EMPLOYMENT	OVERSEAS EMPLOYMENT	OTHERS
Punjab	5.5	39.2	49.5	1.4	4.4
Sindh	3.0	61.0	32.3	0.1	3.6
Khyber Pakhtunkhwa	7.4	40.0	49.9	1.1	1.6
Baluchistan	4.0	41.8	52.1	0.1	2.0
AJK	5.5	41.7	47.4	1.8	3.5
ICT	3.5	50.5	44.4	0.9	0.7
GB	7.5	7.9	84.2	0.4	0.0
AVERAGE	5.4	41.9	48.2	1.1	3.4

Table 1 6 Type of employment attained by graduates (in percentage)

Results for the "type of employment attained by graduates" show that the highest number of employments was attained in "entrepreneur/self-employment" at 48%, followed by the private sector at 41.9%, and the government sector at 5.4%. Among all provinces, this trend remains uniform, with a few exceptions. In Sindh, the private sector remained the highest employment provider at 61%, and in ICT, the private sector provided 50.5% of employment. The following inferences can be drawn:

• Overall, TVET-industry linkages are weak in the country, but they are weakest in the far-flung areas of Pakistan, such as Gilgit Baltistan.
• Although entrepreneurship/self-employment remained the highest employment-providing sector for TVET graduates, according to the Global Entrepreneurship and Development Institute (GEDI), Pakistan is ranked 120th out of 137 countries in the 2018 Global Entrepreneur Index (GEDI, 2018). It performed poorly on all entrepreneurship indicators, especially on pillar 2, "start-up skills," raising questions about the performance of the TVET sector in imparting relevant skills for successful entrepreneurship.
• Results show weaker linkages between TVET authorities in Pakistan and the main labor migrant destinations of the world. The "overseas employment" sector provides the lowest employment to TVET graduates at 1.1%. Many countries, such as the Philippines, earn significant remittances due to their skilled labor force, especially in the overseas hospitality sector. However, in Pakistan, there is a constant rise in unskilled migrant workers, particularly in the Gulf. The Bureau of Immigration reports a 21% increase in unskilled labor migration and employment in the Gulf in 2021 (Mian, 2022).

Unemployment

Data shared by NAVTEC indicates that the unemployment rate among TVET graduates is 37%. However, considering the growing population and overall unemployment in the country, the TVET sector's capacity to provide professional skills is insufficient. According to the latest Labor Force Survey

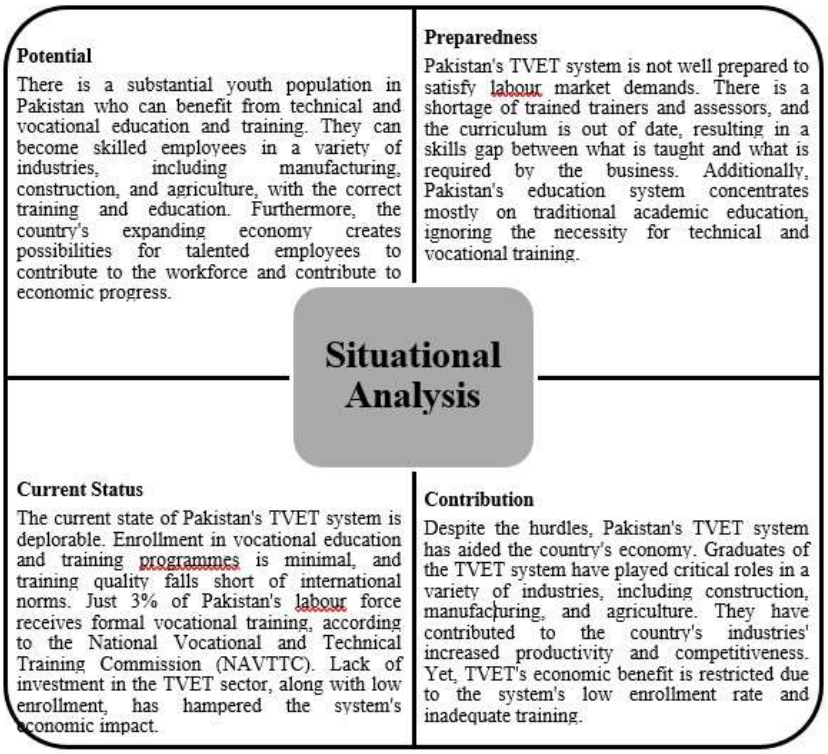
2020-21, the unemployment rate in the country is 37% (LFS 2020-21). It further suggests that the labor force in Pakistan is 71.76 million, of which 67.25 million are employed and 4.51 million are unemployed (GoP, 2022). This creates ample room for the TVET sector to bridge the gap in terms of productivity and competitiveness. However, data from the TVET sector shows that there are 4,259 TVET institutes available in the country for an estimated 2 million new entrants into the labor market, which is clearly insufficient to cater to the demand and may result in an increased rate of unemployment.

PROVINCE	TVET SECTOR UN EMPLOYMENT RATE (%)
Punjab	38
Sindh	18
Khyber Pakhtunkhwa	48
Baluchistan	16
AJK	51
ICT	18
GB	19
AVERAGE	37

Table 1.7 Unemployment in TVET Sector

SITUATIONAL ANALYSIS OF TVET IN PAKISTAN

The technical and vocational education and training (TVET) system in Pakistan has the potential to significantly contribute to the country's economic development. Unfortunately, its current preparedness and position are inadequate, and its contribution to the economy has been limited. To understand the existing dynamics of the technical and vocational training and education system in Pakistan, it is important to assess its potential, preparedness, current status, and contribution.



POLICY, LEGAL AND INSTITUTIONAL FRAME-WORK

Policy Framework	Legal Framework	Institutional Framework
Pakistan's National TVET Policy aims to create a demand-driven and quality-assured TVET System that meets the country's labor market needs. The policy outlines The importance of providing access to quality vocational education and training programs for all individuals, including marginalized communities, and emphasizes the need for Collaboration between Industry andtraining providers to ensure that Training programs are relevant to industry needs. NAVTTC has also introduced National Skills Strategy 2009-2013, National "Skills for All" Strategy 2019, and (TVET)Policy for Pakistan, 2018.	The TVET system in Pakistan operates under the National Vocational and Technical Training Commission (NAVTTC) Act, 2011, which provides for the establishment of NAVTTC and its role in regulating and coordinating The TVET sector. Additionally, each province in Pakistan has its own TVET Law and regulatory body Responsible for overseeing TVET programs within its jurisdiction. KP TEVTA, Act was Promulgated in 2015 and amended in 2018. TEVTA regulations 2015 and 2018 are also being implemented in KP and revised in 2021.	At the national level, the National Vocational and Technical Training Commission (NAVTTC) is the apex body responsible for the overall coordination and regulation of the TVET sector in Pakistan. NAVTTC is also Responsible for developing national occupational skills standards and assessing and certifying skilled workers. The Technical Education and Vocational Training Authority (TEVTA) in Khyber Pakhtunkhwa (KP), Azad Jammu and Kashmir Technical Education and Vocational Training Authority TEVTA, Muzaffarabad, TEVTA Punjab, Sindh Technical Education & Vocational Training Authority, BTEVTA: Baluchistan Technical Education & Vocational Training Authority and TVET Sector

TEVT in KP

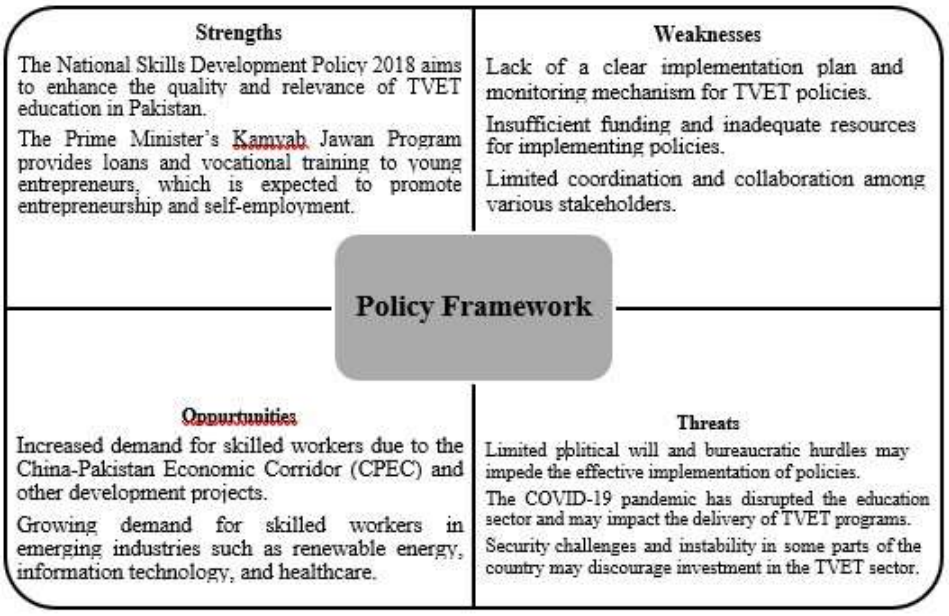
Previously, the Technical Education and Vocational Training (TEVT) sector had remained neglected, fragmented, and unevenly developed. Under the reform agenda, the PTI Government, recognizing the importance of the TEVT sector as a means to address a number of socio-economic challenges,

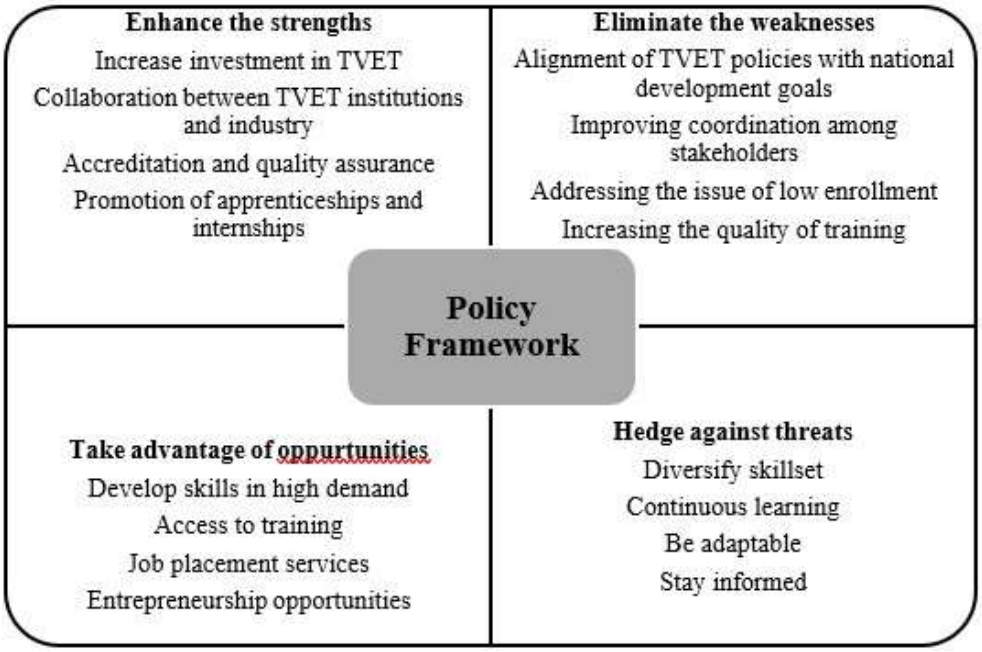
passed the Technical Education & Vocational Training Authority Ordinance 2014. This ordinance replaced the Technical Education and Vocational Training Agency Ordinance 2002 and elevated DTE&MT to an agency. Immediately after this ordinance, the Provincial Assembly passed the Khyber Pakhtunkhwa Technical Education & Vocational Authority Bill in February 2015, which was then notified in the official gazette in March 2015. Consequently, the agency was transformed into an authority, resulting in the formation of KP-TEVTA.

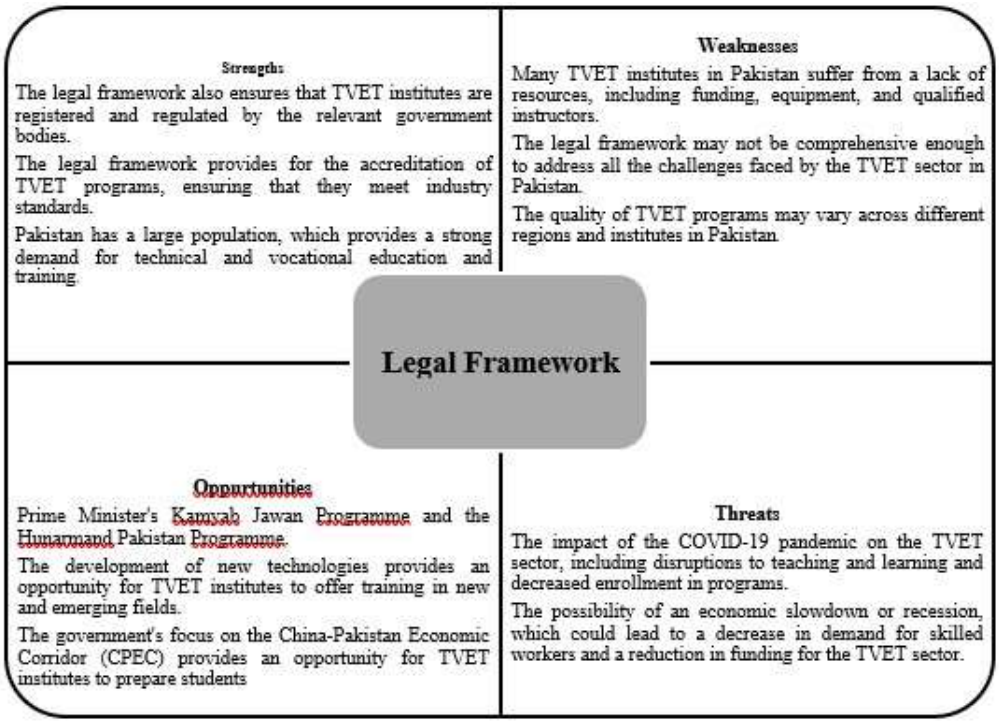
KP-TEVTA is an autonomous organization governed by its own laws and by-laws, in addition to certain other general or special laws. The first enactment introduced was the Khyber Pakhtunkhwa Technical Education and Vocational Training Authority Act, 2015 (KP Act No. XII of 2015). Similarly, KP-TEVTA Rules were framed by the Provincial Government in 2016. In exercise of the powers conferred by section 21 of the Act, KP-TEVTA framed its Regulations, eight in total, in December 2015. These regulations are currently undergoing various amendments. Additionally, the KP Delegation of Powers under the Financial Rules and the Power of Re-appropriation Rules 2015 has been approved by the Government. Furthermore, KP-TEVTA has its own Board of Directors, which holds full authority over strategic decisions, budget approval, financial matters, and other related issues concerning KP-TEVTA.

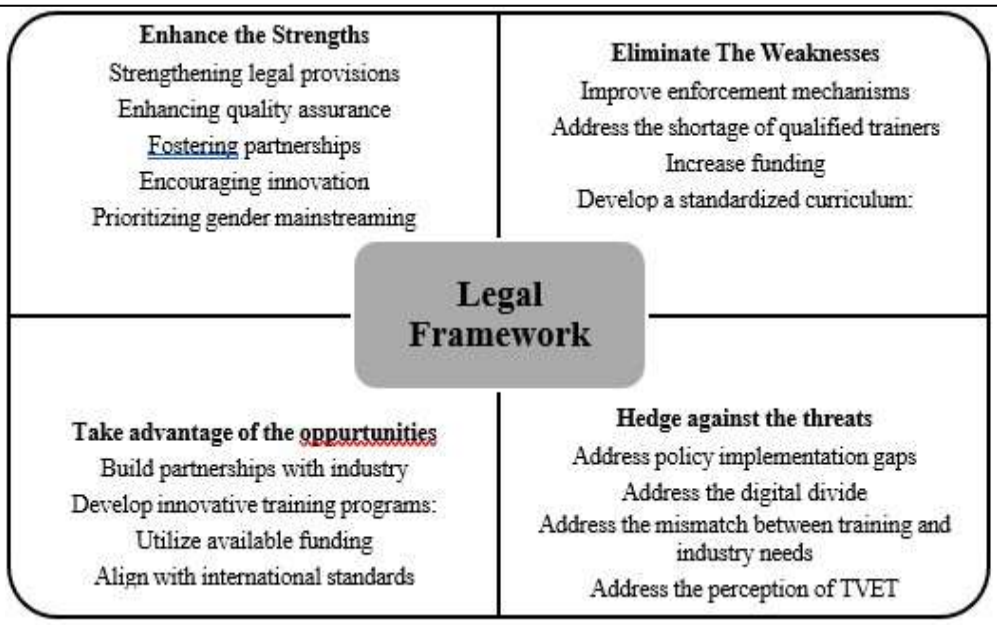
SWOT-EETH ANALYSIS

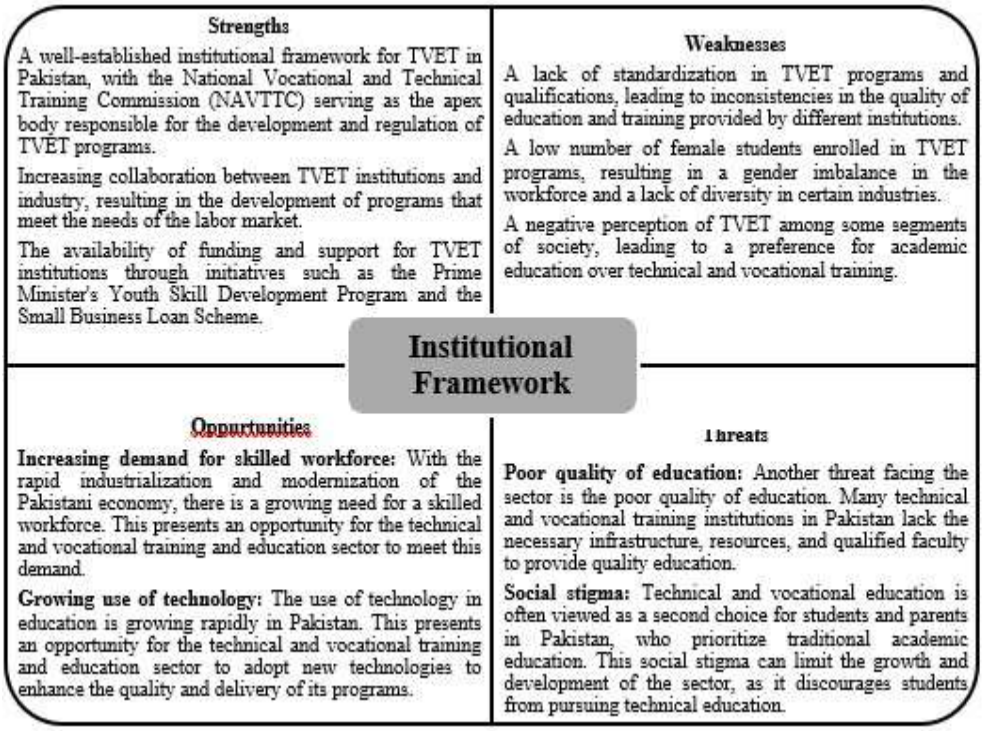
Based on results of perception survey SWOT-EETH analysis is drawn as below;

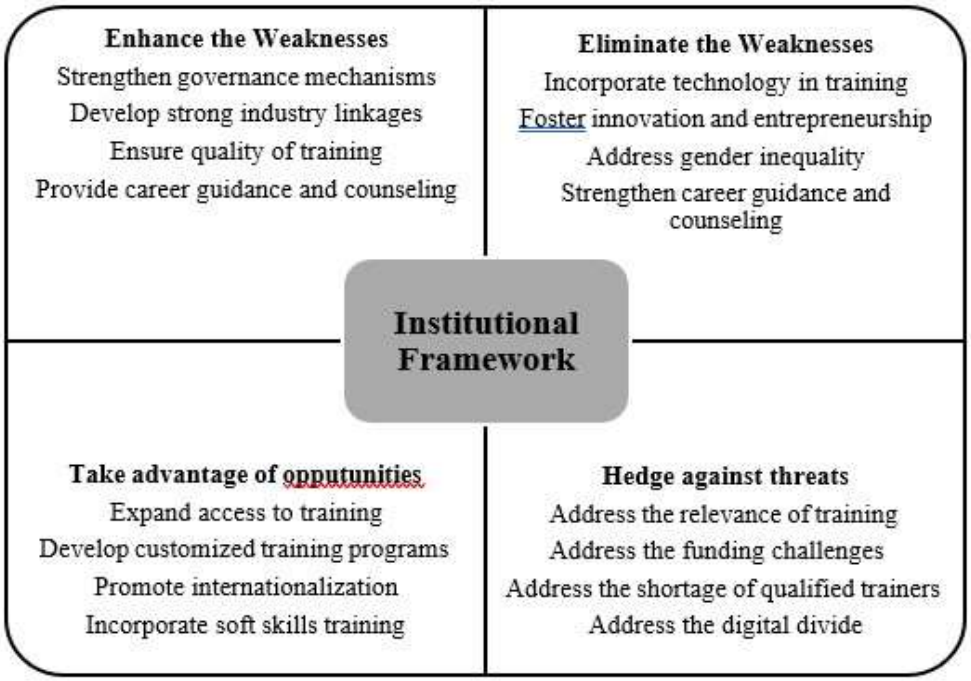



Enhance the strengths
Increase investment in TVET
Collaboration between TVET institutions and industry
Accreditation and quality assurance
Promotion of apprenticeships and internships
Eliminate the weaknesses
Alignment of TVET policies with national development goals
Improving coordination among stakeholders
Addressing the issue of low enrollment
Increasing the quality of training
Policy Framework
Take advantage of oppurtunities
Develop skills in high demand
Access to training
Job placement services
Entrepreneurship opportunities
Hedge against threats
Diversify skillset
Continuous learning
Be adaptable
Stay informed


Strengths
The legal framework also ensures that TVET institutes are registered and regulated by the relevant government bodies.
The legal framework provides for the accreditation of TVET programs, ensuring that they meet industry standards.
Pakistan has a large population, which provides a strong demand for technical and vocational education and training.
Weaknesses
Many TVET institutes in Pakistan suffer from a lack of resources, including funding, equipment, and qualified instructors.
The legal framework may not be comprehensive enough to address all the challenges faced by the TVET sector in Pakistan.
The quality of TVET programs may vary across different regions and institutes in Pakistan.
Legal Framework
Oppurtunities
Prime Minister's Kamyab Jawan Programme and the Hunarmand Pakistan Programme.
The development of new technologies provides an opportunity for TVET institutes to offer training in new and emerging fields.
The government's focus on the China-Pakistan Economic Corridor (CPEC) provides an opportunity for TVET institutes to prepare students
Threats
The impact of the COVID-19 pandemic on the TVET sector, including disruptions to teaching and learning and decreased enrollment in programs.
The possibility of an economic slowdown or recession, which could lead to a decrease in demand for skilled workers and a reduction in funding for the TVET sector.


Enhance the Strengths
Strengthening legal provisions
Enhancing quality assurance
Fostering partnerships
Encouraging innovation
Prioritizing gender mainstreaming
Eliminate The Weaknesses
Improve enforcement mechanisms
Address the shortage of qualified trainers
Increase funding
Develop a standardized curriculum:
Legal Framework
Take advantage of the oppurtunities
Build partnerships with industry
Develop innovative training programs:
Utilize available funding
Align with international standards
Hedge against the threats
Address policy implementation gaps
Address the digital divide
Address the mismatch between training and industry needs
Address the perception of TVET


Strengths
A well-established institutional framework for TVET in Pakistan, with the National Vocational and Technical Training Commission (NAVTTC) serving as the apex body responsible for the development and regulation of TVET programs.
Increasing collaboration between TVET institutions and industry, resulting in the development of programs that meet the needs of the labor market.
The availability of funding and support for TVET institutions through initiatives such as the Prime Minister's Youth Skill Development Program and the Small Business Loan Scheme.
Weaknesses
A lack of standardization in TVET programs and qualifications, leading to inconsistencies in the quality of education and training provided by different institutions.
A low number of female students enrolled in TVET programs, resulting in a gender imbalance in the workforce and a lack of diversity in certain industries.
A negative perception of TVET among some segments of society, leading to a preference for academic education over technical and vocational training.
Institutional Framework
Oppurtunities
Increasing demand for skilled workforce: With the rapid industrialization and modernization of the Pakistani economy, there is a growing need for a skilled workforce. This presents an opportunity for the technical and vocational training and education sector to meet this demand.
Growing use of technology: The use of technology in education is growing rapidly in Pakistan. This presents an opportunity for the technical and vocational training and education sector to adopt new technologies to enhance the quality and delivery of its programs.
Threats
Poor quality of education: Another threat facing the sector is the poor quality of education. Many technical and vocational training institutions in Pakistan lack the necessary infrastructure, resources, and qualified faculty to provide quality education.
Social stigma: Technical and vocational education is often viewed as a second choice for students and parents in Pakistan, who prioritize traditional academic education. This social stigma can limit the growth and development of the sector, as it discourages students from pursuing technical education.


Enhance the Weaknesses
Strengthen governance mechanisms
Develop strong industry linkages
Ensure quality of training
Provide career guidance and counseling
Eliminate the Weaknesses
Incorporate technology in training
Foster innovation and entrepreneurship
Address gender inequality
Strengthen career guidance and counseling
Institutional Framework
Take advantage of opputunities
Expand access to training
Develop customized training programs
Promote internationalization
Incorporate soft skills training
Hedge against threats
Address the relevance of training
Address the funding challenges
Address the shortage of qualified trainers
Address the digital divide

GAP ANALYIS OF TVET SECTOR IN PAKISTAN

Current State	Desired State	Gaps	Remedy
Infrastructure: Many of Pakistan's existin TVET facilities are out of date and lack access to modern equipment and technology. This may limit the quality of training delivered and affect graduates' employability. Curriculum and Teaching Materials The curriculaused at TVET institutes in Pakistan are out of date and do not represent current labour market needs. In addition, there is a lack of industry input in the formulation of TVET curricula in Pakistan. This	Infrastructure: Pakistan's TVET infrastructure should be modern, well-equipped, and open to all. This entails providing cutting-edge training equipment, tools, and technology, as well as enough space and facilities for practical training. Furthermore, developing TVET institutes in remote and rural areas of the country should be prioritized. Curriculum and Teaching Materials: TVET curricula should be tailored to fulfil the demands of industry and learners. It must be adaptable,	Infrastructure: Pakistan's current TVET infrastructure Curriculum: The TVET curriculum in Pakistan is frequently out of date and out of step with industry needs. The T curriculum places little focus	Infrastructure: The government should invest technology. This will necessit ate additional Curriculum: The TVET curriculum should be evaluated and modified on a regular basis to ensure that it meets the needs of
Reduces the	competency-based,	And innovation,	business. This can
relevance of	And sensitive to	Limiting TVET	Be accomplished by
curricula to labor-	changing industry	graduates' capacity	Forming industry-
market needs and	requirements.	to start new firms	led curriculum
the effectiveness of	Furthermore, to	and jobs.	development
TVET training.	encourage the	Partnerships with	committees,
Industry	formation of new	industry: There is a	including
Partnerships:	firms and job	low level of	entrepreneurshi p
In Pakistan,	possibilities, the	collaboration	and innovation into
coordination	curriculum should	Between TVET	the curriculum,

			and
between TVET	include	Institutes and	Emphasizing the
institutions and	entrepreneurship	industry in Pakistan,	development of
industry is limited.	and innovation.	Resulting in a	practical skills.
This can limit	Industry	Mismatch between	Partnerships with
students'	Partnerships:	the skills of TVET	industry: There has
opportunity to get	Cooperation	graduates and the	To be more
practical experience	between TVET	Labour market	collaboration
And lessen the	institutes and	needs. Employers	Between TVET
relevance of TVET	industry is critical	Frequently express	institutes and
Training to labor-	For ensuring that	dissatisfaction with	industry in Pakistan.
market needs.	training is aligned	TVET graduates'	This can be
Training and	with labour market	Lack of practical	accomplished by
Capacity Building:	needs. TVET	Training and soft	establishing
NAVTTC has	institutes should	skills.	industry advisory
implemented a	collaborate closely	Training and	boards to provide
variety of training	with companies to	capacity building:	recommendatio ns
programmes for	identify skill gaps,	TVET training in	on skill
TVET teachers and	provide training	Pakistan is	requirements,
trainers, including	programmes that fit	frequently of poor	Designing work-
Competency-Based	industry demands,	quality, with an	based learning
Training and	and offer chances	emphasis on theory	programmes, and
Assessment	for work-based	rather than actual	allowing industry to
(CBT&A) and the	learning.	Skill development.	Engage in TVET
Teachers' Training Program. The development of	Training and Capacity Building: TVET training	Many TVET instructors also lack the qualifications	Programme design and delivery.

the National Skills	should be of high	And training	Training and
Information System	quality and relevant	Required to give	capacity building:
(NSIS) to improve	to learners' and the	high-quality	TVET instructors
TVET programme	labour market's	instruction.	And employees
planning and	needs. Hands-on	Additionally,	Should have
coordination.	training, industry-	Opportunities for	opportunities for
Partnership with	relevant skill	professional	professional
international	development, and	Development and	development and
partners such as the	soft skills training	Capacity building	Capacity building to
German	are all part of this.	For TVET	improve their skills
International	Initiatives to	Instructors and	And knowledge.
Cooperation	develop the	Personnel are	This can be
Agency (GIZ) and	capacity of TVET	scarce.	accomplished by
the British Council	instructors and		establishing training
To give technical	personnel are also		programmes and
assistance and	necessary to ensure		workshops, offering
Capacity building	The quality of		access to worldwide
Support to the	training delivery.		training
TVET sector.			possibilities, and
			Building TVET
			instructor
			certification
			programmes.

COMPARATIVE ANALYSIS

Pakistan	**Institutional Framework:** The TVET sector in Pakistan is mainly administered by the National Vocational and Technical Training Commission (NAVTTC), with various other public and private institutions playing a significant role. **Accreditation and Quality Assurance:** The NAVTTC is responsible for the accreditation and quality assurance activities to ensure that the courses offered meet the required standards. **Funding:** The budget allocation for the TVET sector in Pakistan has increased significantly in recent years. In the 2021-22 federal budget, the government allocated PKR 8.7 billion for vocational education and training, which was an increase of 42% over the previous year's allocation. The government also encourages private investment in the sector through various schemes such as the Prime Minister's Kamyab Jawan Youth Entrepreneurship Scheme.[9]
China	**Institutional Framework:** The TVET sector in China is mainly administered by the Ministry of Education, with various other public and private institutions playing a significant role. the curriculum to ensure that students acquire hands-on experience. **Accreditation and Quality Assurance:** The Ministry of Education is responsible for the accreditation of TVET institutions in China. The ministry also carries out quality assurance activities to ensure that the courses offered meet the required standards. **Funding:** The budget allocation for the TVET sector in China has increased significantly in recent years. In 2021, the government allocated CNY 128.7 billion (approximately USD 20 billion) for vocational education and training, which was an increase of 18.5% over the previous year's allocation.[10] The government also encourages private investment in the sector through various schemes such as the "Internet Plus" Vocational Education program.
India	**Institutional Framework:** The TVET sector in India is mainly administered by the Ministry of Skill Development and Entrepreneurship (MSDE), with various other public and private institutions playing a significant role. **Accreditation and Quality Assurance:** The National Skill Development Corporation (NSDC) is responsible for the accreditation of TVET institutions in the country. The NSDC also carries out quality assurance activities to ensure that the courses offered meet the required standards. **Funding:** The budget allocation for the TVET sector in India has increased significantly in recent years. In the 2021-22 Union Budget, the allocation for the MSDE was Rs 3,000 crore, which was an increase of 24% over the previous year's allocation. The government also encourages private

[9] *Source:* https://navttc.gov.pk/wp-content/uploads/2022/06/National-Skills-for-All-Strategy-2018.pdf

[10] *Source:* https://unevoc.unesco.org/wtdb/worldtvetdatabase_chn_en.pdf

	investment in the sector through various schemes such as the Pradhan Mantri Kaushal Vikas Yojana (PMKVY).[11]
Bangladesh	**Institutional Framework:** The TVET sector in Bangladesh is mainly administered by the Directorate of Technical Education (DTE) under the Ministry of Education, with various other public and private institutions playing a significant role. **Accreditation and Quality Assurance:** The Bangladesh Technical Education Board (BTEB) is responsible for the accreditation of TVET institutions in the country. The board also carries out quality assurance activities to ensure that the courses offered meet the required standards. **Funding:** TVET in Bangladesh is mainly funded by the government, with additional support from international organizations such as the World Bank and the Asian Development Bank. Private institutions also contribute to the sector through their own funding.[12]

FAULT LINES IN TVET SECTOR IN PAKISTAN AND LESSONS TO BE LEARNT FROM TVET SECTOR IN PHILLIPINES

TEVT in KP

Previously, the Technical Education and Vocational Training (TEVT) sector remained neglected, fragmented, and unevenly developed. Under the reform agenda, the PTI Government, recognizing the importance of the TEVT sector as a means to address a number of socio-economic challenges, passed the Technical Education & Vocational Training Authority Ordinance 2014, which replaced the Technical Education and Vocational Training Agency Ordinance 2002 and elevated DTE&MT to an agency. Immediately after this ordinance, the Provincial Assembly passed the Khyber Pakhtunkhwa Technical Education & Vocational Authority Bill in February 2015, which was then notified in the official gazette in March 2015. Consequently, the agency was transformed into an authority, resulting in the formation of KP-TEVTA.

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[11] *Source: https://www.skillreporter.com/2023/02/announcements/union-budget-2023-highlights-education-skill- development/*

[12] *Situation Analysis of Bangladesh TVET Sector, 2019*

Furthermore, KP-TEVTA has its own Board of Directors, which holds full authority over strategic decisions, budget approval, financial matters, and other related issues concerning KP-TEVTA.

Republic of the Philippines is located in Southeast Asia, covers an area of 299.7 thousand kilometers, and has a population of 104.9 million. The Philippines is an emerging international market with a GDP of USD 394.086 billion (World Bank, 2021). According to a survey on the labor market in the Philippines, its service industry constitutes 57.5%, followed by agriculture at 23.1%, and industry at 19.4%. Since 2010, the Philippines has experienced robust economic growth of 6.6% per annum, coupled with the growth of the TVET sector, which has focused on reskilling, upskilling, and developing strong technical and soft skills to produce work-ready and globally competitive workers. In this chapter, a comparative analysis of the TVET sectors of Pakistan and the Philippines will be made to identify similarities and differences.

Governing Authority:

Both the Philippines and Pakistan have national-level governing authorities with regional offices in all regions of the country, primarily working to develop skills for employability.

The central authority for TVET in the Philippines is the Technical Education and Skills Development Authority (TESDA). It came into being in 1994 through the enactment of Republic Act No. 7796, with a mandate to formulate manpower and skill plans, set standards for skills and tests, monitor and coordinate policies related to human capital, and issue guidelines and directions to TVET institutes within the Philippines (www.Tesda.com). It is also responsible for encouraging active participation from different sectors, especially private enterprises, which are direct beneficiaries of a globally competitive skilled workforce. TESDA is governed by a board, which is the highest TVET policy-making body in the Philippines. The board consists of 13 members from the public and private sectors and is co-chaired by the Secretary of Labor and Employment and the Secretary of Trade and Industry. The Secretariat is headed by the Director-General, who acts as the implementation arm of TESDA.

In Pakistan, the National Vocational and Technical Education Commission (NAVTEC) was established in 2005 to regulate and manage the TVET sector. This apex body is mandated to promote, facilitate, regulate, approve curricula, build the capacity of trainers, and provide policy guidelines and directions to the TVET sector. It also has a 13-member board of governors as the main policy/decision-making body, with a Chairman appointed by the federal government, six members from the private sector, and six members from the public sector. The Secretariat is headed by the Executive Director, who also acts as the implementation arm.

Financing in TVET:

Pakistan's literacy rate is 63%, and it spends 1.77% of its GDP on education (GoP, 2022). The majority of the spending goes to the higher education sector, amounting to 109 billion out of the total allocated amount of 135 billion. The share of TVET varies around 1.5% of the total allocated education budget. NAVTEC receives its budget from the federal government. Other sources of funding include international donor agencies that provide support to the TVET sector in the country.

In the Philippines, the literacy rate is 99.27%, and it spent 3.9% of its GDP on education in 2020 (World Bank, 2022), of which around 1.5% is allocated to the TVET sector. Since 2019, a decline of almost 3% has been observed in the budget allocation for TESDA, but it manages its resources efficiently by offering scholarships for trainees, while the majority of training expenses are borne by the trainees themselves. In addition to government funding, major sources of finance for TESDA include international donor agencies and "company finance" from companies and industries that provide on-the-job training, accounting for 15.5% of total TVET spending (AFD, 2019).

Vocational Qualification Framework:

The National Vocational Qualification Framework (NVQF) provides a national system for classifying qualifications and outlining various progression pathways within the TVET system. It also offers guidelines for recognizing prior learning. In Pakistan, there is one pre-vocational level for people with little or no schooling but who possess skills that need to be credited for a qualification. The NVQF in Pakistan has eight levels, where levels 1 to 4 offer certificates, level 5 provides diplomas, and level 6 offers a B-Tech qualification. Levels 7 and 8 provide qualifications in the higher TVET system, such as Master's and PhD degrees.

In the Philippines, the "Ladderized Education Program Act of 2014" provides a ladderized interface between TVET and higher education. Universities in the Philippines offer TVET programs along with formal programs. All such programs are in a ladderized training mode, where TVET is integrated into a course with a bifurcation of course timelines between coursework and vocational and technical training. A test is also conducted by TESDA for national certification, and upon graduation, students receive a Bachelor's or Master's degree. The Philippine Qualifications Framework empowers students and workers to choose when to enter or exit the ladder, with job opportunities available at each level. Both systems in Pakistan and the Philippines are flexible and have clear guidelines on qualification progression and accreditation, enabling trainees/students to earn qualifications.

Increased Public Awareness:

Globally, the major challenge posed to the TVET sector is the lack of awareness and understanding of its real worth compared to formal and higher education. The perception that TVET is inferior to formal education is deeply rooted in both Pakistan and the Philippines. To address this, TESDA launched several initiatives to improve the public image and acceptance of TVET. Since this perception prevailed equally among all segments of society, including parents and close family members, TESDA carried out an intensive nationwide advocacy program called SMAP in 2009. This program aimed to present TVET as a viable education stream for socio-economic development (Moses, 2019). After that, similar programs became a constant part of TVET plans and strategies, playing a crucial role in improving the image of TVET as an educational pathway. Pro-TVET slogans were created, and awards were given to notable TVET players and partners to improve its image and ownership (Paryono, 2017).

In contrast, no such drive has been carried out by NAVTEC and the respective TEVTAs in Pakistan. Their major initiatives are announced in newspapers or on social media, primarily providing information about the concerned initiative and its expected outcome.

Role of Government in Establishing Linkages:

The government of the Philippines plays a central role in connecting its skill development policies to its National Economic Development plan, which helps reduce the supply and demand gap and promotes economic transformation, as evidenced by its robust growth rate since 2010. When the government of the Philippines designed and implemented its economic development plan, it aligned its technical and vocational strategies accordingly, with a special focus on ensuring a smooth supply of skilled workers to support the execution of the development plan. HRD and skill development are important vertical measures reflected in its industrial policy, emphasizing effective coordination with TESDA (Llanto, Ortiz & Kristina, 2015). Similarly, the National Technical Education and Skill Development Plan 2018-2022 is the latest strategy in the area, taking into account directives from the Philipzpines Development Plan 2017-2022, as well as industry and regional roadmaps to produce an expansive, public-oriented, and sector-based plan (TESDA, 2018).

In Pakistan, there is an obvious gap between the National Skills Strategy for All and industrial and development policies/plans in the country. No correlations have been drawn, leading to the inference that TVET policy-making is done in isolation. The latest strategy primarily focuses on international assessment areas such as governance/financing, access, quality, and relevance, suggesting action plans for these specific areas without linking them to any national development or industrial plans, which creates a gap and raises questions about NAVTEC's role as the central

TVET authority in the country for nation-building and economic development.

Resilience in TVET:

A comparison between the TVET sectors of the Philippines and Pakistan reveals that the Philippines has progressive and forward-looking TVET policies and strategies. The NTESDP 2018-2022 is indeed a timely document that not only responds to the challenges of preparing a work-ready and globally competitive Filipino workforce but also anticipates the impact of the Fourth Industrial Revolution and globalization on industries and jobs. Emerging industrial technologies, referred to as Industry 4.0, are changing the nature of work and the required skills in the industrial sector. Therefore, it is a significant challenge for developing countries that rely on industries for their economic growth and prosperity. Recently, in 2021, with the help of the Asian Development Bank (ADB), TESDA prepared policy recommendations as a comprehensive response to Industry 4.0. This includes improved coordination among the three education agencies in the Philippines, strengthening governance, enhancing enrollment in TVET priority sectors, intensifying linkages with industries, improving R&D, and collaborating with international partners and national stakeholders (Zhongming et al., 2021).

Agility, however, is not incorporated in policy formulation for the TVET sector in Pakistan. As discussed in earlier chapters, outdated and traditional skills are still prevalent in the courses offered in Pakistan's TVET sector. The National Skills Strategy for All 2018 does not address this issue. Although the National Skills Strategy represents a paradigm shift from conventional learning to practical learning, it does not incorporate guidelines for tackling the challenges arising from Industry 4.0.

Sustainable and Green TVET:

Another distinguished feature of the Philippines' TVET sector is its preparedness for future challenges such as climate change, with strategies in place to cater to the upcoming demand for green jobs in the green TVET sector. As part of its strategy, the Philippines is conducting capacity-building programs for its technical directors and assistant technical directors to help them understand the importance of green TVET for sustainable development.

Although Pakistan is a signatory to the Sustainable Development Goals (SDGs), ecology, climate change, and green technology for a sustainable TVET sector are major missing links in the policy arena. Pakistan is one of the top seven countries most affected by climate change, which necessitates diversification and improvement in green manpower within the country. The use of green technology in Pakistan is currently limited, and many TVET professionals lack a clear understanding of green technology (Rajput,

Akhtar & Akram, 2021). This creates a gap and highlights the need for incorporating these concepts into TVET policies and strategies.

ISSUES & CHALLENGES

1. The world of work is changing on a daily basis, and as a result, the world is witnessing the Fourth Industrial Revolution (IR 4.0), which has given new impetus to the education and training sectors. Unfortunately, Pakistan is lagging behind in synchronizing its TVET sector with the emerging needs of the Fourth Industrial Revolution (IR 4.0).
2. There has been a failure to implement Green TVET in Pakistan, resulting in a lack of opportunities for individuals to acquire the skills and knowledge needed for green jobs, such as renewable energy, energy efficiency, and sustainable agriculture.
3. Despite being part of the TVET policy, there have been issues of access and inclusivity in Pakistan, especially in terms of gender disparities. Women in Pakistan face severe challenges in obtaining technical education and training, limiting their job and economic empowerment options.
4. One of the most significant difficulties confronting Pakistan's TVET sector is a lack of finance. Because the government only devotes a small percentage of its budget to TVET, there is a scarcity of resources, equipment, and qualified instructors.
5. In Pakistan, the TVET curriculum is frequently obsolete and does not reflect current industrial needs. This makes it difficult for graduates to find work and adjust to a changing labor market.
6. TVET education in Pakistan is often of poor quality, with insufficient hands-on training and low levels of student participation. As a result, there is a misalignment between the skills gained by graduates and those required by industry.
7. There is a significant gap in policies and their alignment with economic, development, and industrial plans, an area which has been emphasized heavily by other countries with successful TVET models, such as the Philippines.
8. In Pakistan, there is a lack of market intelligence. TVET colleges frequently lack access to current information on industry demands and employment trends. This makes designing and delivering training programs that suit the needs of the job market difficult.

Conclusion

Being cognizant of the importance of TVET, most countries across the world seem keen and passionate about establishing a TVET ecosystem to ensure "lifelong skills" and "decent work opportunities" as envisioned in Sustainable Development Goals 4 and 8. In Pakistan, the TVET sector has primarily been a neglected area of the country, despite all the potential it holds to turn around the country's economic fate. The established National Vocational and Technical Commission formulated the first National Skills Strategy (2009-13), which marked a major shift from curriculum-based TVET to skills-based TVET. Although it did not fully achieve the benefits projected in this strategy, it remained successful in achieving significant milestones such as NVQF and CBT&A.

In 2019, Pakistan formulated its "National Skills for All Strategy," which provides an action plan in four major areas of governance: TVET Governance (financing), Access to TVET, Quality in TVET, and Relevance of TVET. A critical analysis of these areas shows that the TVET sector in the country is not a priority of the government, as only 1.5% of the education sector's budget is spent on TVET. The per-trainee spending on TVET in Pakistan is low when compared with other countries in the region. Planning is not done before opening a TVET institute, leading to saturation in areas with low demand for TVET, especially in regions with higher literacy rates and a greater inclination toward higher education. In terms of quality, teacher training is the weakest area, and despite having dedicated training institutes, training sessions are not conducted frequently. Teachers' qualifications are mostly engineering-related, with little to no knowledge of new skill sets such as digital literacy and e-commerce. The curriculum is outdated and has remained consistent for the last three decades. Although the rate of trainees is almost 70%, it is mostly concentrated in self-employment or entrepreneurship, which indicates that the TVET sector in Pakistan lacks established linkages with industries in the country and overseas markets for its skilled labor force.

Pakistan's TVET sector is clearly lagging behind in areas such as effective TVET awareness drives, the role of government in developing linkages between the TVET sector and central development plans and industries, reskilling and upskilling its workforce to mitigate the impacts of the Fourth Industrial Revolution, and incorporating green and sustainable TVET policies. This creates a gap in research and suggests the need for future studies to explore its possible causes and recommend policy actions to address these issues and incorporate them into Pakistan's TVET ecosystem.

Recommendations

From the research conducted above, the following recommendations are suggested in the policy domain for an efficient and sustainable TVET system.

Policy Recommendations

- Curriculum development in TVET should not be done in isolation. Closer collaboration among the business/industrial sector, academia, and TVET authorities can help better understand and incorporate the latest global trends and demands into the curriculum, and enhance ownership of the TVET sector by all stakeholders.
- NAVTEC should conduct regular demand and supply gap analyses, as well as an analysis of the latest trends in the job market, to support informed decision-making by the government and its Board of Governors.
- NAVTEC, in collaboration with relevant TEVTAs, must establish job centers in all industrial zones to link industry, job seekers, and NAVTEC/TEVTA.
- A policy shift from a "skills system approach" to "lifelong learning," as per the requirements of the Sustainable Development Goals, is recommended in the policy arena of TVET in Pakistan for a sustainable TVET sector.
- Local businesses/industries can help the government mitigate the impacts of the Fourth Industrial Revolution by designing response programs and upskilling their employees as part of their Corporate Social Responsibility (CSR).
- The government needs to commit to labor market outcomes instead of just the supply of training. This can be achieved by conducting skill mapping of individuals and regions to offer the right courses to the individuals and regions, and by devising soft loan plans in collaboration with the banking sector to ensure employability across all sectors.
- NAVTEC should initiate dedicated awareness programs to improve the image of TVET in the country.
- A National Skills Development Fund should be established to collect human resource development levies from certain sectors of the economy to enhance the pool of skills development.

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ANNEXURE I

Questions from NAVTEC, TEVTA (Provincial Government Personnel)

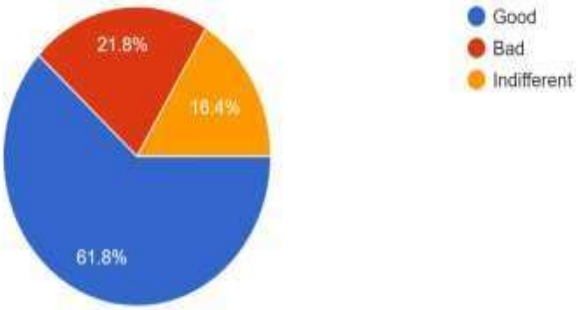
i. What are the main challenges facing the TVET sector in Pakistan?
ii. What are the strengths of TVET in Pakistan, and how can these be leveraged to improve the sector?
iii. How does the TVET curriculum in Pakistan compare to industry needs, and what improvements could be made?
iv. How does the TVET sector in Pakistan support gender equality and provide opportunities for women?
v. What role does technology play in the delivery of TVET in Pakistan, and how can it be improved?
vi. What measures are in place to ensure the quality of TVET in Pakistan, and how are they monitored?
vii. What are the employment opportunities for TVET graduates in Pakistan, and how can these be improved?
viii. How can the TVET sector in Pakistan better engage with industry, and what benefits can this bring to both parties?
ix. What policies and initiatives are in place to support the TVET sector in Pakistan, and how effective have they been?
x. What are the future opportunities and challenges for the TVET sector in Pakistan, and how can they be addressed?

ANNEXURE II

Perception Survey
results

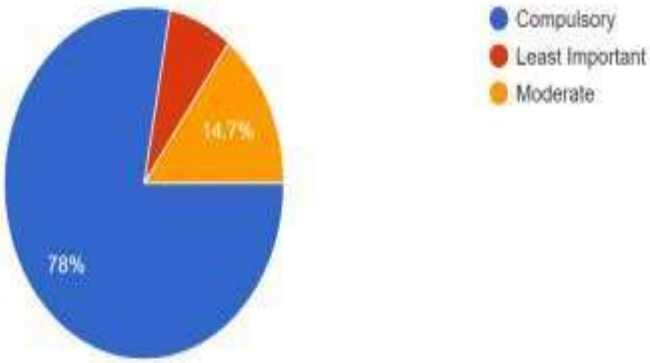
What is your current level of awareness about technical and vocational education and training (TVET) in Pakistan

110 responses



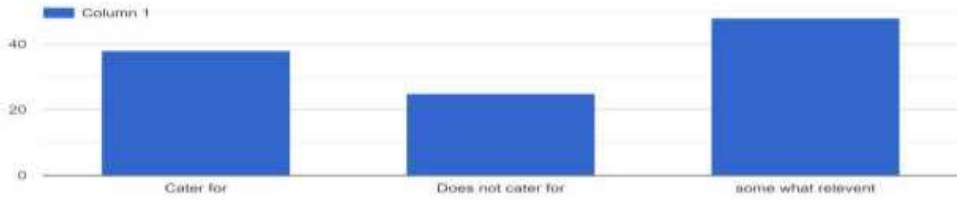
How important do you believe TVET is for the economic development of Pakistan?

109 responses

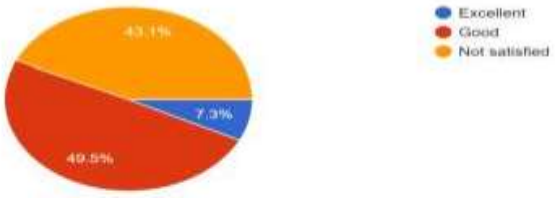


How effective do you believe the current TVET policies and practices are in preparing students for employment in the industry?
109 responses

How well do you believe the TVET system in Pakistan is aligned with the needs of the industry?



How satisfied are you with the quality of TVET programs currently available in Pakistan?
109 responses



How important do you think it is for TVET programs to incorporate entrepreneurship education and training?
109 responses