

**Labor Market Outcomes of Technical and Vocational Education and
Training:**

A Comparative Study of Public and Private TVET Institutes in AJK



Pakistan Institute of Development Economics

By

Muddasar Hussain

PIDE2021FMPHILDS04

Supervisor

Dr. Muhammad Jehangir Khan

MPhil Development Studies

PIDE School of Social Sciences

Pakistan Institute of Development and Economics,

Islamabad

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CERTIFICATE

This is to certify that this thesis entitled "Labor Market Outcomes of Technical and Vocational Education and Training: A Comparative Study of Public and Private TVET Institutes in AJK." submitted by **Muddasar Hussain** is accepted in its present form by the PIDE School of Social Sciences, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree in Master of Philosophy in Development Studies.

Supervisor:

Dr. Muhammad Jehangir Khan

Signature:



External Examiner:

Dr. Samina Malik

Signature:



Head,

PIDE School of Social Sciences: Dr. Hafsa Hina

Signature:



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ABSTRACT

Technical and Vocational Education and Training can play an important role in the enhancement of skills of the labor force which are necessary to meet the demands of the labor market. In recent years the demand for the IT sector has increased. Upgraded skills of labor are essential to meet the demand of the IT sector. Unfortunately, in Pakistan TVET courses are not fulfilling the requirements of the labor market because of the difference between the quality of these courses in public and private institutes, especially IT-based courses. This study aims to compare the quality of education between public and private institutions and its impact on labor market outcomes. The study also aims to identify the difference in outcomes of public and private TVET institutes. To achieve these objectives this study draws on a mixed-method research methodology. For the qualitative part of the study, structured interviews were conducted with currently enrolled students in IT-based courses. For the quantitative part of the research, the survey was conducted through a questionnaire from graduates of IT-based courses. It has been found that public institutes face multiple challenges such as poor attendance of students, high student-teacher ratios, and accessibility of the institutes in AJK. In both types of institutes' especially public institutions, students face a lack of exposure to practical work and apprenticeship opportunities. The focus was on basic digital skills without delving into more advanced modules. Limited access to labs and basic computer skill training were also a challenge. The quality of education in terms of the familiarity of teachers with concepts like work-integrated learning and demand-driven TVET skills is also an issue, especially in public sector institutes. There is no collaboration between institutes (public and private) and industry which is resulting in a skills gap and unemployment. Findings also reveal that 56% of the total IT graduates were unemployed. Additionally, a greater proportion of the graduates from the private institutes were currently employed as compared to the public institutes. Besides, about 34% of the IT graduates in both institutes who were employed did not get the job according to their skill sets. Notably, 28% of job holder graduates were getting wages less than the basic level of wages of 30000 PKR per month, and 38% of the graduates were getting less than 40000 PKR.

Keywords: TVET, Information Technology, Labor Market Outcomes, Quality of Education, AJK, Public vs. Private Institutes, Wages/Income.

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LIST OF ABBREVIATIONS

AJK	Azad Jammu and Kashmir
TVET	Technical and Vocational Education and Training
CBT&A	Competency-Based Training and Assessment
NSS	National Skill Strategy
NVQF	National Vocational Qualification Framework
NAVTTTC	National Vocational and Technical Training Commission
TVETA	Technical and Vocational Education and Training Authority
LFS	Labor Force Survey
BOI	Board of Investment
PBL	Problem-Based Learning
UNESCO	United Nations Educational, Scientific and Cultural Organization
ILO	International Labor Organization
FATA-DA	Federal Administrated Tribal Areas Development Authority
HLI	Higher Learning Institutes
HRD	Human Resources and Development
QA	Quality Assurance
VTC	Vocational and Technical Centers
SME	Small and Medium Enterprises
PSEB	Pakistan Software Export Board
GGEI	Global Gig Economy Index
SDP	Skill Development Plan

CHAPTER 1

Introduction:

The Technical and Vocational Education and Training (TVET) sector provides students with practical skills and knowledge that are in demand in the labor market. It can play a key role in increasing the human productivity of labor and their participation in the labor market (Lee & Coelli, 2010). The TVET sector is very helpful in increasing the employment rate and wages, it increases human productivity which increases economic development. TVET offers the shortest, swiftest, and cheapest pathway to youth engagement through gainful livelihood opportunities. In Pakistan, about 64% of the population is below the age of 30 years (AHMAD, 2018), and it is the best way to increase skill development and make more productive this human power. However, according to ILO, there is only 6 percent of the total youth population acquired technical skills through the formal TVET sector (ILO, 2019). There is a 10.3% unemployment rate in AJK which is higher than in other regions or provinces of the country (LFS, 2018).

Different factors may increase employment and earnings which reduce poverty such as general education as well vocational education, and other factors. In recent years, there has been an increased focus on the TVET sector, especially in IT programs, and after that people pay more attention to IT-related skills. Due to high unemployment and inflation the importance of skilled workforce increases. With the rapidly changing economy and technological advancements, it is important to understand the outcomes of individuals who have completed their vocational education. Public institutes, governed by govt. are usually funded by taxpayers and offer lower tuition fees and Private institutes are usually funded through tuition and other sources, and may offer more specialized programs and additional resources for students.

TVET of IT programs may specialize in particular IT fields, such as shorthand courses, software development, cyber security, or network administration and graphic designing that need advanced types of computers which may lead to better outcomes labor market. In the IT industry, the resources need to be up-to-date with the latest

technologies and trends. Industry specialization can impact graduates labor market outcomes by influencing the demand for skills and the availability of job opportunities. The demand for skills and knowledge in the labor market can influence the employability and earnings of vocational graduates in information technology programs. The IT industry is constantly evolving, and the demand for different skills may change over time. TVET needs to be responsive to industry demand.

The IT sector is a rapidly growing industry that requires skilled workers with up-to-date knowledge and technical skills. Pakistan is the 4th most popular country in the world for freelancing (GGEI, 2019) and has more than 10,000 software houses and call centers (PSEB, 2020). IT has become a critical component of many industries, and the demand for IT professionals continuously to grow. Technical and Vocational education in the IT field is designed to provide students with the IT-related skills and knowledge needed to enter the workforce in this kind of field. IT Sector is one of the fastest growing sectors of Pakistan contributing about 1% of the GDP of Pakistan at about 3.5 billion USD (BOI, 2021). According to the AJK IT board report, (2017) 54% of employees need significant reskilling. The Bureau of Statistics predicts that the demand for IT skilled labor will 13% increases from 2020 to 2030. In 2018, the NAVTTC conducted a comparative analysis of technical education in Pakistan. According to the report, with a capacity of 0.314 million students, the annual enrollment ratio stands at 0.232 million. To bridge the existing gap of 82,366, it is recommended to augment the institutional capacity of technical training spaces.

The quality of education plays an important role in shaping labor market outcomes, including employment rates, wages, job satisfaction, and career advancement opportunities. This study aims to compare the labor market outcomes of trainees who completed their vocational courses from public and private institutes and to determine the difference between both types of institutes. The study considers factors such as employment, earnings, and quality of education that affect the outcomes of the labor market. The better quality of education in TVET systems like experienced trainers, equipment, and infrastructure may increase the quality and productivity of labor (Chamadia & Mubarik, 2021). It explores the quality of

education because it directly affects the outcomes of the labor market. Better quality of vocational education may lead to improving the better human productivity of labor and low quality of education may lead to negative impacts on the labor market.

In better quality TVET institutes, they designed courses to provide practical skills and knowledge that are directly relevant to the needs of the labor market. When TVET programs align with the demands of the labor market, graduates are more likely to find employment quickly and contribute effectively to their workplaces. They are often better prepared for specific job roles, making them more attractive to employers and increasing their chances of finding suitable employment. But if the institutes lack resources and do not provide education according to the demands of employers it creates a gap between institutes and industries. As mentioned above the quality of education in private institutes is better than the public institutes and the outcomes of private institutes are also better than the public institutes.

Quality TVET programs may lead to higher income for graduates. When individuals acquire specialized skills that are in demand, they are often able to command higher wages compared to those with general education backgrounds. It also helps reduce the skills gap by producing graduates who possess the skills and competencies that employers require. When the skills of the workforce match the needs of the labor market, there is less frictional unemployment and underemployment, leading to better labor market outcomes. Several studies examined different kinds of factors including oversupply of labor, outdated curriculum, mismatch in skills, and lack of focus in training activities as key contributors. Similarly, Pakistan is also facing the same issues, adversely affecting youth employment opportunities on a global level.

TVET institutions that are well-distributed across a region or country can contribute to more balanced regional development. By providing residents with relevant skills, these institutions can stimulate economic activity in underserved areas, reducing urban-rural disparities. A country with a skilled workforce resulting from quality TVET programs is more likely to be globally competitive in industries that require technical expertise and innovation. Private institutes are more likely to be preferred by employers than public institute graduates due to the perception that

private institutes offer better training and skills development (Mustafa et al., 2005). According to the NAVTTC report, there are a total of 129 institutions, both public and private in AJK. Among these, 14 focus on providing technical skills, while 115 are dedicated to vocational skills. These institutions collectively supply 10646 students as a skilled labor force.

The targeted population for this study consists of TVET graduates who completed their courses after 2020, especially in IT programs, and are currently enrolled students. The simple random sampling method was used for quantitative research. For the quantitative approach, the survey was conducted on IT graduates through self-structured questionnaire and 100 samples were randomly selected from both types of TVET institutes. The qualitative approach the convenience sampling technique was used to select participants and 40 currently enrolled students were selected for interviews from public and private sector institutes.

Labor market outcomes of TVET refer to the employment and income levels which are experienced by individuals who have done TVET course. Well-designed TVET programs can help reduce overall unemployment rates by equipping individuals with skills that are in demand. This, in turn, can contribute to a more stable and prosperous economy. In rapidly changing industries and economies, TVET programs that emphasize adaptability and lifelong learning can help individuals remain competitive in the labor market. The quality of education is explored through different variables such as equipment, facilities, and resources. Identify the differences in resources such as availability and quality of technology and their effect on labor market outcomes. The TVET sector fails to fulfill the requirements of the labor market at the national and international levels (Khan, 2017). As a result, national human productivity remains low compared to our competitors, and economic growth is constrained. Specifically, it examined factors such as employment, earnings, and quality of education to provide insights into the effectiveness of vocational education in IT programs in preparing students for the labor market. Both types of institutes have different types of outcomes and quality of education. According to findings, the private institutes have better outcomes in the IT sector as compared to

public sector institutes, and similarly, the public institutes lack facilities, resources, and technology but the private have better quality of education.

The NAVTTC aims to develop a skilled workforce that can contribute to the economic development of Pakistan by promoting the adoption of TVET. The policy also calls for NVQF to ensure that TVET qualifications are recognized and valued both domestically and internationally. The "Kamyab Jawan" program is an initiative launched by the Govt. to support skilled workers and entrepreneurs in the country. The program aims to provide financial assistance and training to individuals who possess technical skills and are interested in starting their businesses. AJK government provides a Skill Development Plan, which aims to enhance the skills and employability of youth in AJK through vocational training and education. The program offers a wide range of courses in various fields, such as agriculture, healthcare, hospitality, IT, and construction. The program is designed to bridge the gap between the demand for skilled labor in the market and the lack of skilled workers in AJK.

1.1 Statement of Problem:

Technical and Vocational Education and Training can play an important role in the enhancement of skills of the labor force which are necessary to meet the demands of the labor market. In Pakistan, both public and private sectors are working on skill enhancement of the labor. In recent years the demand for the IT sector has increased. There is a gap between the skill sets of graduates and the demand of the job market. Upgraded skills of labor are essential to meet the demand of the IT sector. There are multiple problems in the quality of TVET education. These problems result in low levels of skill sets, high unemployment rates, and low levels of income. Unfortunately, in Pakistan TVET courses are not fulfilling the requirements of the labor market because of the difference between the quality of these courses in public and private institutes, especially IT-based courses.

The TVET students face multiple problems at the individual and institutional levels. At the individual level, they face financial problems as they generally belong to poor families and they need financial support for their studies as well as for their

family. Our public sector institutions are less advanced but cheap with the large number of students and on the other hand private sector institutions are more advanced but are expensive with a small number of IT students. The public and private sectors also have different inefficiencies such as infrastructure, technology, teaching quality, accessibility to equipment, financial support, and practical exposure. Due to these problems and inefficiencies, there is a gap between skilled graduates and the job market. The graduates of these institutions are also facing a high unemployment rate and low levels of income. TVET system is not capable of supplying skilled labor according to job market demand. None of the studies has focused on exploring the quality and quantity of technical education in youth employment. This study will analyze the outcomes of TVET graduates and the factors that may affect these outcomes.

1.2 Objectives:

1. To compare the quality of TVET education between public and private institutes.
2. To identify the difference in outcomes of public and private TVET institutes.
3. To analyze the outcomes of IT-based TVET courses and factors that can impact these outcomes.

1.3 Research Questions:

1. How does the quality of education differ between public and private TVET institutes?
2. In what ways do the outcomes of IT graduates vary between public and private TVET institutes?
3. What factors contribute to the outcomes of IT graduates from TVET institutes?

1.4 Significance of Research:

The findings of this research provide recommendations and direction related to TVET. Federal Government and technical and TVETAs may use the research

findings to make informed decisions about funding, program development, and quality assurance mechanisms. By understanding the differences in labor market outcomes for graduates of both types of institutes, institutions can identify areas for improvement and take steps to ensure their programs are better aligned with employer demands and industry trends. This may lead to improved student outcomes and better employment prospects for graduates.

TVET plays an important role in supporting the economy by providing skilled workers to fill specific roles in various industries. By understanding the labor market outcomes of TVET graduates, policymakers can identify ways to support the development of a skilled workforce that can drive economic growth. This type of research can also promote greater transparency in the vocational education and training sector. By comparing the outcomes of public and private TVET institutions the policymakers, students, and employers can gain a better understanding of the strengths and weaknesses of different types of institutions and make more informed decisions about where to study or hire graduates from. Without a better understanding of the labor market outcomes of the impact of education and training in IT-related programs, it is difficult to determine whether these programs are meeting the needs of employers and trainees and whether they are contributing to broader economic and social goals. The findings of this study provide valuable information for those who are looking to improve the quality of vocational education and better understand its impact on employment outcomes and earnings.

A better quality of vocational education may help to increase the overall outcomes of vocational education in the labor market. It provides a clear direction to improve the quality of education and increase return to education. This can help policymakers and stakeholders make informed decisions about funding, program design, and delivery. It is unclear whether trainees from one type of institution fare better in the labor market than the other. Understanding the labor market outcomes of vocational education and training of IT programs is essential for policymakers, educators, and students. The findings of this study are relevant for those who are looking to improve the quality of education and better understand its impact on employment outcomes and earnings. Understanding the outcomes of the labor market

of individuals who have completed vocational education can provide valuable information to students, educators, policymakers, and employers.

1.5 Explanation of the Key Terms/Concepts:

TVET: Technical and Vocational Education and Training refers to an education and training system that focuses on developing practical skills and knowledge needed for specific occupations or trades.

NAVTTTC: The National Vocational and Technical Training Commission is a government agency in Pakistan that is responsible for planning, coordinating, and overseeing vocational and technical education and training programs.

CBT: Competency-based training is an approach to education and training that focuses on the development of specific competencies or skills required for a particular job or profession. The CBT is an industry and demand-driven education and training program based on well-defined industry standards (Anane, 2013).

Human Productivity: Human productivity refers to how efficiently and effectively individuals contribute to the creation of goods and services within an economy.

Intergenerational Mobility: It refers to the capability of individuals to experience upward or downward movement within the socioeconomic hierarchy relative to the position of their parents or previous generations. It reflects the extent to which individuals can improve or decline in their social and economic standing compared to the status of their family background.

Human Capital: It encompasses the cumulative skills, knowledge, and abilities that an individual possesses, all of which contribute to their overall economic productivity and potential. It represents an individual's investment in education, training, and personal development, which in turn enhances their ability to contribute effectively to the workforce and the broader economy.

CHAPTER 2

2. Literature Review:

In this chapter, we cover literature related to this research. In this chapter, we focused on literature relevant to objectives such as quality of education, the difference in labor market outcomes, and factors that can impact the outcomes. At the start of this chapter literature about technical and general education which covers the differences and similarities of both educational systems in terms of quality and labor market outcome. The literature on technical education, the role of institutions, and the employment of graduates is also incorporated in this chapter. We also discuss the challenges of the TVET sector in Pakistan. The national and international literature about TVET education and labor market outcomes is also incorporated in this chapter.

2.1 Introduction:

The TVET can play a crucial role in increasing the human productivity of labor and their participation rate in the labor market. The TVET diploma holders are more skilled and they have more opportunities to enter the job market (Lee & Coelli, 2010). Vocational education and training might be a great instrument and it is more profitable than general education in terms of employment rate and earnings (Nordman & Pasquier-Doumer, 2014). By equipping people with employable skills, TVET can play an important role in poverty reduction and national stability (Pongo et al., 2014). Agrawal argued that there are two different kinds of perceptions about TVET, one is it seems to be the best way to increase employment and earnings, and the other perception is only poor and dull students are enrolled in the TVET system (Agrawal, 2012). The study showed that the TVET is essential for human resource development and socio-economic progress, aligning with global development goals such as eradicating poverty, promoting lifelong learning, and creating employment opportunities (Siddiky & Uh, 2020).

Quality of education means making sure students learn the right skills, gender equality, having better infrastructure and tools/equipment, materials, and resources that can help in learning, scholarships, and well-trained teachers (UNICEF, 2000).

The presented study focuses on enhancing the quality of TVET in Nigeria for sustainable growth and development. Emphasizing the contribution of technological development, socio-economic growth, and environmental sustainability leads to better outcomes for TVET. It showed the importance of competent TVET teachers and the need for continuous professional development to bridge the gap in pedagogical skills and industrial knowledge (Igberaharha, 2021).

According to Khirotdin et al., (2019), TVET is preparing the students with the skills and knowledge that are required for the labor market by including informal, formal, and non-formal learning. The indirect impact of education in terms of non-economic benefits is examined, concluding that investment in education and training has a positive and significant impact on national economic growth, increased investment in education leads to higher productivity and earnings for individuals (Wilson & Briscoe, 2004). The study showed that the concept of human capital, encompassing education, skills, and knowledge, has been recognized as a crucial driver of economic growth and development and the success of countries attributing their rapid economic growth to state policies that prioritized investment in human capital, including education and health (Dey & Devi, 2019).

2.2 Technical versus General Education:

The study showed that the academic graduates face more employment rejection due to the lack of skills that are demanded by employers than vocational education. The TVET diploma holders are more skilled and they have more opportunities to enter the job market (Lee & Coelli, 2010). Vocational education and training might be a great instrument and it is more profitable than general education in terms of employment rate and earnings (Nordman & Pasquier-Doumer, 2014). Singapore was renewing the vocational education system to address the machinery and capital-intensive firms. It is important to assemble the labor into productive employment to get a shift in economic growth (Bhurtel, 2015). For graduates who got jobs after their VET course, their earnings are more than those who only get academic education at the secondary level or below. TVET graduates have more job opportunities than academic graduates (Vandenberg & Laranjo, 2021).

The Malaysian govt. has set goals by 2020 in which university education and skill learning programs are taken as a mandatory part to equip individuals with the dual process of labor market engagements (Konings & Vanormelingen, 2015). TVET education is preferred over general education because the outcomes of technical skills are more than spending time at general schooling. Vocational education, once considered secondary to general academic or university education, has gained priority in resolving issues of unemployment and poverty eradication (Marope et al., 2015). A comparative analysis of the labor markets in Japan and Korea, examining differences in the returns to education and skills between the two countries. They suggested that non-formal education, training, and work experience also contribute to skill development and that policies aimed at enhancing skills should take these factors into account (Lee & Wie, 2017). Gary N. Marks (2017) found the effects of university and vocational education on various labor market outcomes for Australian youths aged 16 to 25. The study revealed that a bachelor's degree has consistently positive effects on all these outcomes, whereas vocational qualifications, particularly among men, show limited positive impact. The literature reviewed in this study underscores the generally superior outcomes associated with university degrees compared to vocational qualifications, challenging the assumption that expanding vocational education alone is a solution for non-university-bound youth.

The school-based and dual VET programs have different effects on the youth labor market. VET programs are often seen as a means to better meet the labor market's needs compared to general education programs (Bolli et al., 2021). The VET can be an equivalent pathway to academic education for individuals planning on pursuing higher education (Oswald-Egg & Renold, 2021). The study showed that analyzed that prioritizing the certificate earned at the institute level and ignoring the training necessary for skill acquisition is a major reason for becoming unemployed (Ajaegbu, 2012). The Practical work and hands-on experiences in TVET programs enhance student's self-efficacy and problem-solving abilities. The increased confidence contributes to better performance in both practical and theoretical aspects of their education (Raelin, 2019). The study showed the diversity in educational systems across countries, with some emphasizing vocational education to facilitate

early entry into the labor market, while others prioritize general education for adaptability to evolving technologies. It showed a trade-off, indicating that the initial employment advantage of vocational education decreases with age, particularly in countries with strong apprenticeship programs (Hanushek et al., 2011).

2.3 Public versus Private Provision of Technical Education:

Technical education institutes are very important for low-income countries in transforming their economic situation (Chipfakacha, 2019). In contrast to the public sector, private institutions demonstrate enhanced efficiency in contributing to the labor market supply. The Govt. of Pakistan has restructured the TVET system, outlining a collaborative approach involving both public and private institutions (Khan, 2020). Educational opportunities determine the intergenerational mobility of human capital. The schooling systems and their institutional framework are key factors for promoting opportunities in education (Ammermüller, 2005).

The FATA-DA training has made a substantial contribution to youth skill development. The research showed that the difference in institutions can affect the labor market outcomes of TVET graduates from public and private institutes (Ullah & Malik, 2020). Private institutes are more likely to be preferred by employers than public institute graduates due to the perception that private institutes offer better training and skills development (Oliver, 2010). The study examined that teachers of technical education in India prefer private institutes compared public institutes to as more productive in technical skill provisioning. They believe that private institutes perform better in terms of infrastructural support, financial efficiency, practical knowledge, and better administration (Borah, 2014). The study showed that the participants from private institutes these courses experienced a 4-6% increase in employment rates compared to the government institutes. The potential of vocational training programs to enhance short-term employment outcomes, particularly when offered by private providers (Hirshleifer et al., 2016).

2.4 Enhancing Outcomes through Quality of Education:

The intervention through quality measures of the TVET programs yields a positive effect for the individual who is interested in getting employed, and the intervention in implementing the TVET program can be very important to access positive labor market outcomes (Khan, 2020). The quality of technical education has a positive impact on an individual's earnings, with higher-quality programs associated with higher returns to education (Hrmo et al., 2016). The quality of vocational education in China had a significant impact on earnings, with higher-quality programs associated with higher returns to education. The study found that the impact of quality on returns was stronger for individuals with lower levels of education (Green & Zhu, 2010). Quality of education means making sure students learn the right skills, gender equality, having better infrastructure and tools/equipment, materials, and resources that can help in learning, scholarships, and well-trained teachers (UNICEF, 2000). The efficiency of the TVET sector in Pakistan has been examined in how graduate generates income. The study found that the TVET is positively related to the wages of the graduates. The quality of education in TVET systems like experienced trainers, equipment, and buildings should need to improve, which may increase the quality and productivity of labor (Chamadia & Mubarik, 2021). According to Okoye & Okwelle, (2014), it should be mandatory for TVET education and university graduates to undergo internship or apprenticeship skill training. Worker classification should be based on individual interest in a specific skill rather than relying solely on academic degrees.

The study suggested that TVET Higher Learning Institutions (HLIs) encounter difficulties such as intense competition with other providers, issues related to service quality, image, recognition, fragmented delivery, curriculum, and the competencies of teaching staff. These relationships underscore the interconnected nature of service quality, corporate image, and their impact on student satisfaction and loyalty within the context of TVET institutes (Hassan, 2019). The research showed that meeting the demands of the labor market requires a concerted effort to ensure standards and QA in TVET programs, aligning them with the evolving needs of the country's workforce. By doing so, TVET institutions can better prepare

students for the challenges and opportunities in the labor market, contributing to a more effective and responsive education system (Asad et al., 2023).

The importance of TVET contributes to economic competitiveness and welfare. Globally, studies have explored the number of reasons for unemployment despite the population getting trained under technical training (Bano et al., 2022). Nkechi et al., (2012) indicated that outdated curricula of institutes and dispossessing employable skills required by the employer to employ any Nigerian graduate. The deficiencies in the educational system of technical and vocational secondary schools in Slovakia introduce a project aimed at improving the quality of graduates and job applicants in the European labor market (Hrmo et al., 2016).

Access to the computer labs in TVET institutions has been shown to significantly enhance skills development among students. The computer-based training in TVET programs improved students' technical skills and proficiency in using industry-relevant software and tools (Abdelmoiz Ramadan, 2018). The research identified some critical issues that are hindering the quality of learning outcomes in TVET in Nigeria. The studies suggested that the government should ensure adequate funding for TVET in Nigeria and make available instructional facilities in all occupational areas to ensure the quality of skills and competencies (Idjawe, 2020). Skills mismatch is set back for the achievement of desired outcomes. This is attributed to a structural gap in the curriculum, which is not in line with the occupational standards set by govt. by industry requirements (Nganwa et al., 2015).

2.5 The Collaboration of Technical Institution and Labor Market:

The collaboration of employment and TVET education programs tends to create a better outcome for the labor market (Caves et al, 2019). In UN Agenda 2030 on youth employment suggested that employers are motivated to engage youth in the productive role of the manufacturing process (UN, 2019). The main challenge is that there is a weak linkage between technical institutions and the job market. The lack of industry and job-market-oriented programs is also the challenge of labor market outcomes (Azeem et al., 2022). The research suggested in VTCs, where apprenticeship training is provided through a strong collaboration with the labor

market, it is observed that skill mismatch is at quite a low level, and it is suggested to increase the capacity of VTCs due to high demand (Suna, 2021). According to Farooq, (2015) approximately 31-37% of graduates experience skill mismatches, either being overqualified or under qualified. Similarly, one-fourth of graduates face mismatches in terms of being either over-skilled or under-skilled.

The study identified industrial attachment as a key linkage but highlights challenges stemming from the lack of initiative by TVET institutions and inadequate industry response. The study suggested that the linkage between TVET and industries is critical for skills development, innovation, and technology transfer, ultimately contributing to the professional career of graduates and the growth of industrial output (Singh, 2019). The study addressed the crucial issue of the misalignment between skill development and employment, particularly the gap between TVET and industries in Bangladesh. The necessity for collaboration between TVET institutions and industries, advocating for supportive public policies to ensure industries' active participation in curriculum design, continuous updates based on market needs, and the implementation of dual systems with a focus on workplace learning (Siddiky & Uh, 2020). The study explored the establishment of a crucial linkage between formal TVET institutions and local labor markets in Ethiopia. The study identified challenges related to disseminating accurate information about job markets and highlighted the government's relative lack of attention to TVET institutions in rural areas. The linkage not only enhances the employment prospects of TVET graduates but also contributes to reducing public funds allocated to TVET without compromising educational quality (Shimazu, 2014).

2.6 Technical Education and Employment:

TVET plays a key role in generation of the employment. Several studies showed that there is a positive relationship between technical education and generating employment opportunities keeping in view the idea of returns on education (Nazar & Chaudhry, 2017). According to Dimoska, (2019), the most crucial things to focus on during their training are making sure they have a good chance of finding employment and ensuring they have the skills and qualities that

employers are looking for. Shikalepo, (2019) examined that the TVET plays a vital role in boosting the economy by enhancing job opportunities. This not only supports self-employment, including SMEs, but also opens doors for paid employment opportunities. The study showed that the short and medium-term outcome of TVET graduates in Saudi Arabia. It found that sustained positive returns to TVET, with program orientation and economic conditions at graduation influencing wages. While the study highlights encouraging outcomes, it identifies challenges such as gender gaps in employment outcomes for female graduates and mismatches between study and occupations (Rivera, 2022).

Multiple studies showed a positive image in transforming the economic situation of skilled workers (Eichhorst et al., 2015). Technical education is a transformation towards employment outcomes, improving the income level of individuals and a better opportunity for youth with low skills and low ability (Khan, 2020). Enabling individuals to join the workforce and build their careers relies on educational programs that not only focus on job skills but also emphasize career development (Marques, 2018). The high unemployment rate among youth is very alarming and if they are not well trained, and wisely utilized they can face multiple challenges including financial instability, indiscipline and immoral behavior, disease, incessant strikes, apathy towards education, and frustration among them (Oyekan, 2015). Gorlitz (2016) argued that there is no impact of TVET programs on employment and wage because participants of the training engaged in non-routine tasks. The study showed that people with disabilities face multiple challenges in employment participation, retention, and re-employment compared to their counterparts without disabilities. The completion of a VET qualification, particularly at the level of certificates III and above, emerges as a crucial factor in improving employment probabilities for all individuals, with a more pronounced positive impact on those with disabilities (Polidano & Mavromaras, 2010).

Kluve et al., (2019) argued that job limitations among youth are due to a lack of skills aligned with market needs, insufficient work experience, limited information about job opportunities, a lack of knowledge about the job search process, and insufficient capital for self-employment. Khirotdin et al., (2019) determined that

86.7% of graduates that are graduated after TVET training in the Manpower department were employed. TVET graduates have a high employment ratio in Australia. The employment for VET graduates in Australia was 82.1%. TVET graduates in Australia were more likely to work in the hospitality, retail industries, and health, he explored the contribution of the TVET sector in the labor market (Karmel, 2009). The work experience gained during VET leads to higher wages (7% to 19%) and reduces the search time for first employment by two months after graduation from higher education. The research also showed that vocational programs contribute to increasing the level of attachment to the labor market and provide better employability prospects for young individuals who choose not to pursue tertiary education (Flisi & Goglio, 2015). Lopez-Fogues, (2018)suggested that to addressing the growing youth unemployment gap can be achieved by focusing on TVET, which is advocated as a specific solution by international organizations such as the OECD.

The research emphasized the critical role of TVET in national development, technological knowledge, and political will, in shaping TVET policies. The importance of TVET education and the implementation of policies may reduce the gap between policy intentions and practical outcomes (Okorafor & Nnajiifo, 2017). The global youth employment crisis has been worsening, and the overall mean effects of TVET interventions on overall paid employment, formal employment, and monthly earnings are small and positive (Tripney & Hombrados, 2013). The studies showed that there is a gap between human capital ideologies promoted in Ethiopia's education system and the reality faced by TVET graduates in their self-employment endeavors. The research also showed that some factors affected TVET graduate's engagement in self-employment, including socio-cultural factors, support services, personality traits, and government actions and policies (Hailu, 2012). The effectiveness of training is constrained by gaps between the demand and supply of job skills. It involves creating employment opportunities that align with the needed skills, while on the supply side, it relates to matching skills with market requirements. The imbalance in the job market arises from issues such as the demand for employees with specific skills not being met and the supply of workers with either underqualified or overqualified skills (Nganwa et al., 2015).

2.7 Challenges of the Technical Education Sector:

There are several challenges faced by VET graduates in the job market due to a lack of coordination affecting curriculum design and performance in jobs. Shrestha argued that the lack of industry and job-market-oriented programs, deficiencies in work discipline among graduates, outdated and inflexible training curricula, and the shortage of trained instructors with industry experience are the main challenges in the TVET sector (Shrestha, 2016). The study showed that TVET graduates have better protection against unemployment compared to individuals without vocational training qualifications (Ebner, 2015). The economic effectiveness of TVET lies in its ability to provide marketable skills that are in demand. TVET can enhance productivity and increase earnings when it aligns with labor market needs. The implementation of PBL in the TVET system has several challenges to effective PBL implementation, such as inadequate teaching and learning facilities, corruption in the education sector, recruitment of unqualified teachers, and difficulties in identifying real-life problems (Okolie et al., 2021).

The study determined the importance of addressing challenges to ensure that TVET can effectively contribute to the expansion needed to meet government targets, particularly for the benefit of the poor and disadvantaged populations. The study also highlighted the need for targeted and effective interventions, resource certainty, improvements in the image and status of vocational education, and quality enhancements to meet ambitious education and training targets (Lamb, 2011). The existing challenges in Pakistan include underemployment, unemployment, and a shortage of skilled workers. TVET programs can play a crucial role in addressing these challenges by creating a skilled workforce that enhances individuals' employability and contributes to economic growth (Azeem et al., 2022). The implementation TVET program is the recognition of concerned skills to train the students. The implementation of technical training programs is facing some operational challenges (Khan, 2020). Qadeer & Fatima, (2017) explored that skill mismatching is also the main source of generating a high unemployment rate among graduates.

2.8 Technical Education in the Case of Pakistan:

According to the World Bank (2022), the unemployment rate in Pakistan is continuously increasing. The TVET sector in Pakistan has not received adequate recognition and attention from stakeholders. However, significant efforts have been made to reform the TVET system and make it demand-driven. The establishment of NAVTEC, provincial TVETAs, and the progress towards the Skilling Pakistan reforms demonstrate a satisfactory outcome (Ansari & Wu, 2013). TVET plays a significant role in the socio-economic prosperity of developing nations like Pakistan. Despite international support and national strategies, the TVET sector in Pakistan faces challenges related to industry participation, infrastructure, curriculum, equipment, trainers, and access. Chamadia suggested that evaluation of the outcomes of reform programs and addressing the hurdles are crucial for promoting the education system and achieving the desired results in the labor market of Pakistan (Chamadia & Shahid, 2018).

Faisal et al, (2019) found that the causes prevailing in Pakistan are: a lack of skills, sectorial unbalancing, and lacking in a level of education. The TVET Sector Support Program in Pakistan has been implemented since January 2017 to enhance access, equity, relevance, and quality in skills development. The training incorporated global TVET perspectives and aimed to improve the participant's knowledge of UNESCO strategy, SDGs, social inclusion, and demand-driven TVET (GIZ, 2017). The study showed that the inclusion of global perspectives had a positive impact on vocational institute management in Pakistan (Pirzada, 2020). The FATA-DA training has made a substantial contribution to youth skill development (Ullah & Malik, 2020).

The VET may not act as a safety net in certain contexts and attributes this to the institutional design of the education system and the relationship between education and the labor market (Ahmed, 2016). TVET has gained global recognition as a crucial component of any educational system. In Pakistan, the current educational system faces numerous challenges in meeting the updated requirements of economic trends. The importance of vocational education is particularly relevant in developing countries like Pakistan, which have a large youth population and a pressing need for skilled graduates to support economic growth (Fatima & Saleem, 2016). The existing

challenges in Pakistan include underemployment, unemployment, and a shortage of skilled workers. TVET programs can play a crucial role in addressing these challenges by creating a skilled workforce that enhances individuals' employability and contributes to economic growth (Azeem et al., 2022).

The TVET sector was introduced to develop a skilled workforce for the labor market in Pakistan. Pakistan's workforce suffers from qualified personnel because of quality like outdated equipment, traditional way of training, lack of connectivity between industries and TVET institutes, lack of female participation, and unemployment (Bano et al., 2022). Sami Ullah, R. B., Samira Muzaffar, Sanam Wagma Khattak, Muhammad Khan, & Ashraf, (2021) determined the socio-economic impact of vocational training provided by the FATA-DA in Pakistan's marginalized FATA region. The findings showed that FATA-DA training significantly contributed to the socio-economic development of young people, leading to a nearly 2% increase in youth employment and a 1.63 times rise in monthly earnings after completing the program. The study identifies factors such as age, prior work experience, and family size as influencing employment outcomes. TVET can increase the productivity and efficiency of manpower to increase economic growth. The research showed that there is a positive effect of vocational education and training on economic growth. But to get better outcomes in the labor market it suggested that the existing vocational education system should be upgraded (Fatima & Saleem, 2016).

2.9 Conceptual Framework:

The conceptual framework is derived from literature about the quality of technical education, labor market outcomes, and factors that affect these outcomes. The literature demonstrates that the quality of education had a positive impact on the income of skilled labor. According to UNICEF, the quality of education depends on multiple factors such as the right skills, better infrastructure, equipment, resources, and trained teachers. The skill mismatch is the main source of the high unemployment rate among TVET graduates. This mismatch is due to the low quality of technical education. The quality of education can affect the earnings and productivity of labor.

The lack of access to practical knowledge is also a factor of low quality which may lead to high unemployment.

The main sources of provision TVET education are public and private institutes. These technical institutes are very important for low-income countries like Pakistan in transforming their economic situation. The literature demonstrates that the difference in technical institutes (public and private) affects the labor market outcomes of TVET graduates. Literature also depicts that the employment rate of TVET graduates from private institutes is higher than public institutes. There are issues of quantity and quality of technical graduates in these institutes

According to the literature TVET program played an important role in generating employment and there is a positive relationship between technical education and employment opportunities. Technical education is a transformation towards employment outcomes. Improving the income level and providing better opportunities for individuals with low skills and abilities. The high unemployment rate among youth is very alarming they face multiple challenges such as financial instability, poverty, mental health issues, and apathy toward education. The graduates are not equipped with market-oriented skills due to less market-oriented skills graduates face job limitations.

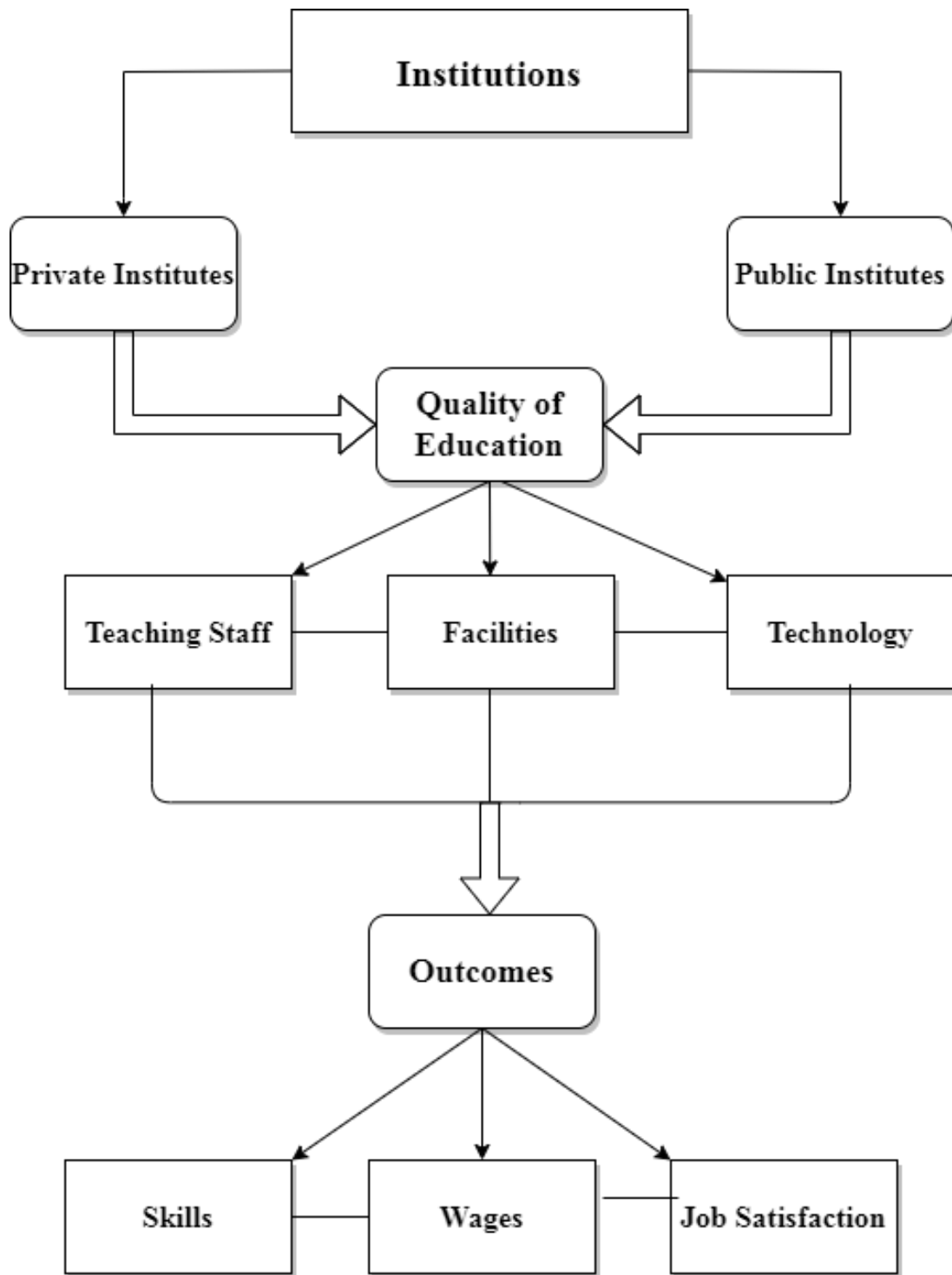


Figure 2.1 Conceptual Framework

2.10 Summary of Literature Review:

The TVET sector is crucial for increasing human productivity and participation in the labor market. Graduates of TVET programs have better employment opportunities and earnings compared to those with only general education. Despite its potential, some perceive TVET as a choice for poor or underperforming students. However, improving the quality of TVET can positively impact employment prospects and economic growth. Increased investment in education, including TVET, leads to higher individual productivity and earnings, which contributes to overall economic growth. Non-economic benefits of education also play a significant role. The quality of TVET programs influences graduates' earnings. Higher-quality programs lead to better returns on education. This relationship is more pronounced for individuals with lower education levels and in rural areas. TVET contributes to skill development and income generation, although graduates may end up employed outside their field due to skill mismatch. Collaboration with the labor market can reduce this mismatch. TVET aims to develop a skilled workforce for economic growth. However, challenges such as outdated equipment, traditional training methods, and lack of industry connections hinder its effectiveness.

Initiatives like the China-Pakistan Economic Corridor (CPEC) can impact workforce development and economic growth. TVET can enhance manpower productivity and contribute to economic expansion. TVET contributes to economic competitiveness and welfare in a knowledge-based economy. Ensuring quality assurance in TVET systems is vital for their modernization and performance. Gaining work experience through TVET can lead to higher wages and faster employment after higher education. TVET can be a valuable pathway for individuals planning further academic pursuits. Upgrading the existing TVET system is suggested to enhance its outcomes in the labor market. Collaboration between TVET institutions and industries is essential. The literature emphasizes the importance of TVET in enhancing employment prospects, skill development, and economic growth. It highlights the need for collaboration between TVET institutions and industries, as well as efforts to improve the quality of education and training.

CHAPTER 3

Institution Rules about TVET

3.1 Global Technical Education Reforms:

3.1.1 Organization for Economic Cooperation and Development

Review:

It certainly plays a crucial role in shaping educational systems and workforce development strategies. The OECD possesses a wealth of expertise in education and workforce development. Its ability to conduct in-depth, cross-country analyses allows for valuable comparisons and identification of best practices. The OECD's international focus ensures that policy recommendations are based on a global perspective, considering diverse economic, cultural, and educational contexts. Policies implementations are developed for one context in another could lead to different outcomes. Shortcuts to employability could overshadow the importance of holistic education and long-term skills development. The quality of policy recommendations heavily depends on the availability and accuracy of data. Inaccurate or incomplete data could lead to misguided recommendations. Some policy recommendations might offer short-term solutions without considering long-term sustainability. The global focus of the OECD could sometimes overshadow the importance of local knowledge and context-specific solutions.

3.1.2 UNESCO Strategy for TVET Transforming:

The UNESCO Strategy for TVET transformation for successful transitions is a noteworthy initiative aimed at enhancing TVET systems globally. The strategy promotes the idea that TVET is not limited to initial education but should be a lifelong learning process. TVET systems should provide equitable access to skills development for all, encompassing lifelong learning opportunities, flexible pathways, and recognition of prior learning. It aligns skills development with changing

economic needs, engages with the private sector, and anticipates skill shifts due to technological and economic transitions. TVET can contribute to more transparent governance, reduced inequality, and empowerment of individuals. The strategy highlights the importance of inclusivity and gender equality in TVET. The strategy should provide clear pathways for sustainability beyond the initial implementation phase. Without sustained support and commitment, the desired transformation might not be fully realized. The strategy acknowledges the importance of new and emerging skills it should also ensure a balance with traditional skills that might remain relevant in certain industries and regions. It's important to establish mechanisms to measure the impact of the strategy on learner outcomes, employability, and overall TVET system improvement. Without effective measurement, the success of the strategy might be difficult to evaluate.

3.2 Federal Government Technical Educational Reforms:

3.2.1 The National Skills Strategy 2009-2013:

The NSS (2009-2013) focused on the different factors of TVET like governance, funding, capacity enhancement, quality assurance, industry ownership, and TVET communication plan. The coordination mechanisms acknowledge the need for efficient resource allocation and a clear delineation of responsibilities among stakeholders. Recognize the need for increased investment, and industry engagement, and redirect funds from welfare programs to prioritize TVET. The strategies for capacity expansion, including double-shift operations, private-sector collaboration, and online learning, show a practical approach to addressing the needs of a growing youth population. The focus on improving training quality through the center of excellence designations, standardized curricula, and international linkages reflects a commitment to producing skilled workers of high caliber. Encouraging industry engagement and ownership through apprenticeship laws, sector skills councils, and industry representation on TVET boards aligns training with actual industry needs, enhancing employability.

Establishing mechanisms for ongoing monitoring and evaluation is critical to assess the impact of the proposed measures on the TVET sector's development and

improvement. The policy addresses women's participation further considerations could include provisions for inclusivity of other marginalized groups, ensuring equitable access to opportunities. As technology rapidly evolves, the policy could further highlight the integration of digital skills and technological advancements. The policy should also address potential challenges in aligning industry requirements with TVET curricula and the establishment of effective sector skills councils. While diversifying funding sources is crucial, ensuring the sustainability of these sources over the long term requires careful planning and collaboration with stakeholders.

3.2.2 1st Phase of Technical Education Sector Support Program:

The program-specific focus on the TVET sector allows for targeted interventions to address the sector's unique challenges. By improving the quality of the TVET system, the program can contribute to producing graduates with skills directly aligned with industry demands, enhancing their employability. The program's collaboration with private sector entities can lead to more relevant curricula, better industry engagement, and improved job placement opportunities for TVET graduates. By investing in teachers, trainers, and institutions, the program can enhance the capacity of the TVET sector to provide high-quality education and training. Aligning TVET programs with industry needs can enhance the relevance of the skills learned, ensuring that graduates are well-prepared for real-world work environments.

The program's impact could be limited if it doesn't establish mechanisms to ensure the sustainability of the changes made beyond the program's duration. If resources are not allocated efficiently, the program might not achieve optimal results, leading to a waste of resources and missed opportunities. If industries are not fully engaged, the program's alignment with market needs could be compromised. Without a robust monitoring and evaluation mechanism, it might be challenging to assess the program's effectiveness and make informed decisions for improvement. Balancing standardized curricula with the flexibility needed to adapt to evolving industry needs and technological changes can be challenging. Over-reliance on private sector

involvement might result in a lack of ownership by public institutions, potentially leading to an unstable foundation.

3.2.3 National Vocational Qualification Framework 2015:

NVQF's objective is to improve skill outcomes, enhance the quality of skills, and meet industry requirements. The NVQF focuses on qualifications rather than specific learning pathways, thereby increasing access to skill recognition. It integrates formal, informal, and non-formal achievements, making it more accessible for skills recognition. The NVQF establishes a strong link between the industry and training programs, delivery, and assessment of learners. It also serves as the framework for implementing CBT&A in numerous TVET institutes across Pakistan. It aligns with national industry standards, enhancing the employability prospects of program graduates. This program aims to reform Pakistan's TVET system, focusing on governance, HRD, and fostering linkages between the public and private sectors.

3.2.4 National Technical Education Policy (2015):

The national TVET policy aims to bring about a paradigm shift in skills training delivery, equipping millions of young men and women with employable skills. The policy aligns with macroeconomic and development policies, including Vision 2025, and recognizes the need for skilled workers to enhance industry competitiveness in regional and international markets. The policy emphasizes the establishment of a national quality-based system for classifying qualifications within the TVET sector. The recently launched NVQF plays a crucial role in ensuring the quality of training delivery and gaining support from employers both domestically and internationally. These initiatives collectively contribute to enhancing the quality, relevance, and effectiveness of TVET in Pakistan, with the ultimate goal of equipping individuals with the skills needed for employment and promoting economic growth and competitiveness.

3.2.5 2nd phase of the Sector Support Program (2017-2022):

The second phase of the TVET Sector Support Program aims to improve governance and private sector participation in the TVET sector. The overarching objective is to enhance the quality of skill development to meet the demands of the labor market. It reflects a comprehensive approach to improving the TVET sector by aligning training with industry demands, enhancing governance, and promoting private-sector engagement. These initiatives aim to address the skill gap, increase employability, and contribute to the economic growth of Pakistan. During this phase, specific activities and expected results were outlined for different regions, such as KP and AJK. These include training, assessment, and certification of CBT Assessors, as well as men and women in various trades using new CBT&A qualifications. It also focuses on training TVET teachers, and principals, establishing Centers of Excellence, accrediting TVET institutes, and facilitating agreements between public and private stakeholders to support the National TVET Policy.

3.3 Provincial-level Technical Educational Reforms:

3.3.1 Punjab TVETA Act 2010:

The Punjab TVETA Act Offers diverse technical education and promotes research, application, and dissemination of technical knowledge across sectors. Manage existing technical institutions, establish new ones, and oversee their functioning. Develop and support additional technical education facilities, including teacher training and research. Design courses and curricula for technical education, collaborating with national and international entities. Create innovation-focused institutes, offer training in new technologies, and facilitate job-oriented education. Determine effective teaching methods, and employment terms for staff, and facilitate career guidance and job placement. Cultivate connections with alumni, and national, and international organizations to enhance technical education and international employability.

3.3.2 The Punjab Skills Development Authority Act 2019:

The Punjab TVETA Act focuses on enforcing national policies and standards for TVET, as well as registering and overseeing institutes, highlighting a commitment to maintaining consistent quality across the sector. It covers various aspects, including technical education bodies, assessment agencies, and apprenticeship policies, and demonstrates a holistic approach to TVET regulation. Ensuring training quality for teachers and evaluators suggests a focus on improving the skills of those directly involved in delivering and assessing TVET programs. The Act provisions for performance audits and monitoring institutes' compliance with standards indicate a commitment to continuous improvement and accountability. Establishing a labor market information cell for skill demand and supply assessment suggests a forward-looking approach to aligning TVET programs with the needs of the job market.

3.3.3 AJK Skills Development Plan 2012:

The SDP for AJK aims to improve skills and employability in the region, contributing to economic development and job creation. To develop the plan, advisory and technical working groups were formed, consultations were held with stakeholders, and the plan was constructed and updated through workshops and meetings. Successful implementation of the SDP aligned with the NSS can lead to economic growth and employment. Integrating TVET into the general education system and establishing partnerships between public and private sector agencies, and NGOs are important policy considerations. High dropout rates, competency gaps, and a mismatch between education and job market requirements contribute to unemployment. Bridging these gaps requires the involvement of the private sector in TVET planning. The SDP recognizes the need to address education, as well as the importance of economic integration, infrastructure development, and investment in key resources. Private sector participation, involvement of NGOs, and expanding the capacity of skills delivery institutions are crucial. The plan emphasizes the importance of public-private partnerships and expanding TVET institutions in AJK.

3.3.4 Youth Employment Strategy:

The Govt. of AJK to develop Youth Employment Strategy in 2017. The workshop revolved around seven different key thematic areas concerning Youth Employment, 1) Vocational Education and Training, 2) Provincial base Employment Opportunities, 3) Youth Employment in Rural Value Chains, 4) Youth Employment in Mega Development Projects, 5) Overseas Employment of Youth, 6) Self-employment and Enterprise Development and 7) Social Protection for Unemployed Youth.

CHAPTER 4

Research Methodology:

This chapter presents the research methodology adopted for this thesis, which utilizes a mixed research method. The mixed research approach combines both quantitative and qualitative methods to provide a comprehensive and balanced understanding of the quality of vocational education and the outcomes of the labor market. The purpose of this chapter is to describe the research design, data collection procedures, and data analysis techniques employed in this study. This research was focused on the outcomes of the labor market which are determined through the quantitative research method and the quality of education measured through the qualitative research method.

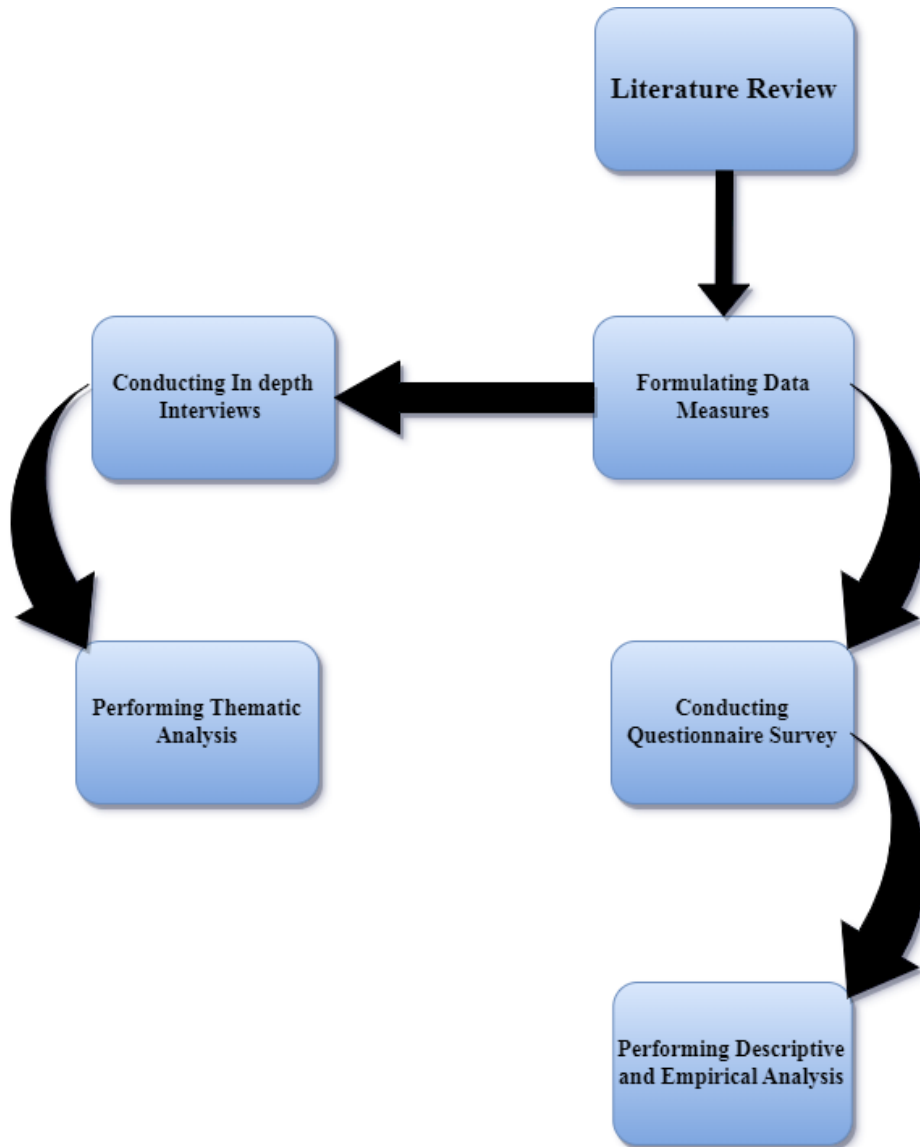
4.1 Research Strategy:

The research strategy adopted for this study was the mixed-method approach. It was focused on the employment, earnings, and quality of education. A survey for quantitative research was conducted through a self-structured questionnaire from graduates which includes information about employment, earnings, and job satisfaction. And for qualitative research interviews were conducted with currently enrolled students to analyze the quality of education. The mixed method approach was employed in this research which provides valuable information about the quality of education and labor market outcomes of both types of institutes.

4.2 Research Design:

The purpose of this study is to describe the differences in the quality of education and outcomes between both types of institutes. In this research, structured interviews and surveys were used for data collection from two different UDCs respectively. Firstly, in this research, a literature review of relevant studies and documents was conducted. Based on the literature review, instruments for data collection were designed, and then questionnaire and interview guide were developed.

Figure 4.1 Research Design



4.3 Units of Data Collection:

This research had two UDCs as this study determined the outcomes of the labor market of vocational education. In this regard, 1st UDC data were collected from TVET graduates of both types of institutes through a well-defined structured questionnaire to determine return to education such as employment, earnings, and job satisfaction. The 2nd UDC was the currently enrolled students of TVET institutes to analyze and compare the quality of TVET education such as resources, facilities, and teaching staff.

4.4 Methods of Data Collection:

Data for the quantitative phase were collected through structured surveys/questionnaires. The survey instrument was developed based on a comprehensive review of relevant literature and previous studies. The data were collected from units of data collection as mentioned above. The data were collected from those TVET graduates who completed their courses after 2020 in IT programs through a well-defined questionnaire to collect information about return to education such as employment, earnings, and job satisfaction. Data for the qualitative phase were collected through semi-structured interviews. This method allows for open-ended discussions, enabling participants to provide detailed and context-rich responses. The interviews were audio-recorded and transcribed verbatim for subsequent analysis. Interviews were conducted with currently enrolled students to analyze the quality of education.

4.5 Sampling:

For the 1st part of the research targeted population (1st UDC) was currently enrolled students. The qualitative research method was used for this part. The convenience sampling technique was used for the qualitative part of the research. For the determination of the quality of education in public and private institutes, structured interviews were conducted with 40 (20 public and 20 private) currently enrolled students. For 2nd part of this research, 100 (50 public and 50 private) sample was randomly selected from TVET graduates. The targeted population for this quantitative part of this research is IT graduates. The sample was randomly selected from both types of institute graduates who completed their course and entered into the job market or seeking a job. The survey (questionnaires) was filled out by graduates who completed their courses after 2020. This survey was based on questions about outcomes (employment, income, and job satisfaction). The graduated students were not easily accessible because they were returned to their homes or job stations that's why we chose a sample of 100. The 400 graduates completed their course after 2020 from the selected institutes, to access them got list of the graduated students from institutes and randomly selected for survey.

Table 4.1 Currently Enrolled Students

Types of Respondent	Sample Size
Public Institutes	20
Private Institutes	20
Total	40

Table 4.2 Number of IT Graduates

Types of Respondent	Number of Institutes	Sample Size
Public Institutes	6	50
Private Institutes	6	50
Total	12	100

4.6 Locale:

The area of study was the Mirpur Division of AJK which consists of three districts and 40% population of AJK lives in three districts (Mirpur, Bhimber, and Kotli). There is high youth unemployment in AJK which is almost 10.3%. The unemployment rate is higher than in other regions of the country and half of the population is near or below the poverty line. There are a total of 33 TVET institutes in the Mirpur division of AJK, public institutes are 16, and private institutes are around 17. In Bhimber there are 5 government institutes and 4 private sector institutes, in Mirpur there are 8 government institutes and 5 private institutes and in Kotli there are 4 government institutes and 6 private institutes.

4.7 Analysis:

Descriptive and thematic analysis was used to compare the quality of education between public and private sector institutes and empirical analysis was

used to determine the outcomes such as employment rate, earnings, and job satisfaction of IT graduates of both. As per the literature the mixed method analysis was used for this research, and the qualitative approach was used to measure the quality of vocational education. The quantitative research approach was based on the survey to analyze the employment rate of trainees and their earnings.

Interviews were conducted with currently enrolled students from both types of institutes to determine and compare the quality of education. The convenience sampling technique was used for the qualitative research method, selecting participants who possess relevant knowledge and experiences related to vocational education and training such as students of TVET institutes. For outcomes, the data were collected from graduates who completed their study after 2020 through a well-defined questionnaire and compared the outcomes of both public and private institutes IT graduates. The simple random sampling technique was a valid choice for the quantitative research method. This can help to determine the differences in outcomes of the labor market between public and private vocational institutes. These analyses can help to identify any significant differences between both types of vocational institutes and provide insights into the factors that may be contributing to these differences.

4.8 Ethical Consideration:

This study made sure to follow ethical considerations throughout the research, starting from conducting interviews and filling out questionnaires to analyzing data. Prioritized the privacy of the participants, and assured them that the data collected would be used solely for research purposes.

CHAPTER 5

Results:

This chapter describes the findings and discussion of this research. The data were collected in two parts. In the first part, semi-structured interviews were conducted with currently enrolled students to compare the quality of education between public and private institutes in IT programs. In the second part, data were collected from IT graduates who graduated after 2020 from public and private institutes through a well-defined questionnaire. The analysis of this study gives brief information on the quality of education and outcomes of TVET education.

5.1 Quality of Technical Education:

5.1.1 Infrastructure and Facilities:

Respondents from public sector institutes faced multiple problems such as poor attendance, inadequate teacher-to-student ratios, and accessibility of institutes. However, issues such as small classrooms, lack of proper ventilation, and no backup power supply were raised.

5.1.2 Practical Training:

Public sector institute participants indicated a lack of exposure to real work situations, no opportunities for internships, and a focus on basic digital skills without delving into more advanced components. In contrast, respondents from private sector institutes highlighted activity-based training with the latest equipment, hands-on learning, and satisfaction with practical skills gained.

5.1.3 Availability of Technology:

Students from public institutes had outdated technology such as equipment, particularly computers. Limited access to labs and basic computer skill training were also the challenge. On the other hand, students from private institutes had access to

the latest equipment in computer labs, including advanced skills training in MS Office and graphic designing.

5.1.4 Teacher Quality:

Students from public institutes face another issue which is less familiarity with teachers with concepts like work-integrated learning and demand-driven TVET skills. Respondents from private institutes did not face issues regarding their teachers, knowledge, supportiveness, and the hands-on approach to teaching.

5.1.5 Industry Collaboration:

Public sector institute respondents emphasized a lack of partnership between vocational training institutes and the labor market, resulting in a skills gap and unemployment. While private institute participants did not explicitly mention industry collaboration, the emphasis on practical skills training suggests a potential alignment with industry needs.

5.1.6 Financial support to TVET students:

Generally, TVET students who come for training are less educated and belong to poor families, they are not able to pay their fees and they seek some scholarships and stipends. These scholarships and stipends may enhance the skill level of students. Table 5.1 shows that 100% of respondents in private sector institutes were not getting any kind of scholarship stipend or financial support. In the public sector, only 10% of the respondents were getting scholarships/stipends or financial support. Most of the population faces financial problems at individual levels and household levels which make them vulnerable.

Table 5.1 Provision of scholarship/stipends to students

Institutes	No	Yes	Total
Public	18 (90%)	2 (10%)	20 (100%)
Private	20 (100%)	0 (0%)	20 (100%)

5.1.7 Availability of facilities:

The quality of TVET systems like up-to-date equipment or tools may increase the quality and productivity of labor (Chamadia & Mubarik, 2021). Table 5.2 shows that 30% of the population in private institutes had no access to training tools and equipment, and 50% of the population in public sector institutes had no access to training tools and equipment. Libraries contribute to the development of information literacy skills, which are crucial for students' success and future career prospects. Table 5.2 shows that 40% of the population in public institutes and 55% of the population in private institutes didn't have access to the library.

Table 5.2 Facilities

	Institutes	No	Yes	Total
Availability of necessary tools and equipment		10	10	20
	Public	50%	50%	100%
	Private	6 30%	14 70%	20 100%
Availability of library in institute	Public	8 40%	12 60%	20 100%
	Private	11 55%	9 45%	20 100%

5.1.8 Accessibility to Computer Labs and Internet:

Access to the computer labs in TVET institutions has been shown to significantly enhance skills development among students. The computer-based training in TVET programs improves students' technical skills and proficiency in using industry-relevant software and tools (Abdelmoiz Ramadan, 2018). All public and private institutes had their computer labs. 40% of the students from public institutes responded that they had no access to the labs in computer labs and 20% of the respondents from private had no access to computer labs.

Internet access expands the resources accessible to TVET institutions. UNESCO (2017) indicates that internet access enables students to access digital textbooks, educational websites, and online courses, providing a broader range of

learning materials. Internet access can enhance the quality of education. Table 5.3 shows that 100% of students from public sector institutes had no access to the Internet, and 80% of the students from private institutes had access to the Internet.

Table 5.3 Computer Labs and Internet

	Institutes	No	Yes	Total
Accessibility to computer		8	12	20
	Public	40%	60%	100%
	Private	20%	80%	100%
Access to internet		20	0	20
	Public	100%	0%	100%
	Private	80%	20%	100%

5.1.9 Practical work:

Practical work builds student's confidence and competence. The hands-on experiences in TVET programs enhance student's self-efficacy and problem-solving abilities (Raelin, 2019). It also serves as a bridge between TVET education and the labor market. Table 5.4 shows 40% of students responded that they were not availing of practical training in the institutes. 20% of students from private sector institutes were not availing practical training in the institutes.

Table 5.4 Practical workshops

Institutes	No	Yes	Total
	8	12	20
Public	40%	60%	100%
Private	20%	80%	100%

5.1.10 Teaching staff:

Qualified teachers with specialized training are more effective in the classroom. Such qualifications are associated with better subject knowledge, and the

ability to adapt teaching methods to diverse student needs. Table 5.5 shows that 60% of instructors from public institutes were not well qualified and 30% instructors of from private sector institutes were not well qualified. The experience of instructors develops more skills in students in the right way. Experienced teachers are more effective in terms of student engagement, and knowledge delivery.

The well-trained instructors with industry experience increase skill development as per industry demand (Shrestha, 2016). Following table 5.5 shows that 35% of instructors from public institutes had less experienced teaching staff and 55% of instructors from private institutes had less experience. Table 5.5 shows that 60% of instructors from public sector institutes had no awareness about the labor market. 40% of instructors from the private sector had no awareness of the labor market. Table 5.5 also shows that 10% of students from private institutes were not availing career counseling and this number increased in public sector students up to 40%.

Table 5.5 Teaching Quality

	Institutes	No	Yes
Qualified Instructor	Public	12 (60%)	8 (40%)
	Private	6 (30%)	14 (70%)
Experience of Instructor	Public	7 (35%)	13 (65%)
	Private	11 (55%)	9 (45%)
Labor market awareness of Instructor	Public	12 (60%)	8 (40%)
	Private	8 (40%)	12 (60%)
Career counseling of trainees	Public	8 (40%)	12 (60%)
	Private	2 (10%)	18 (90%)

5.2 Labor Market Outcomes of Technical Education:

5.2.1 Employment Status of Graduates:

Table 5.6 shows that currently 44% of graduates are employed and 56% of graduates are unemployed. Based on institute type, 25% of the IT graduates from private and 31% from public institutes were unemployed.

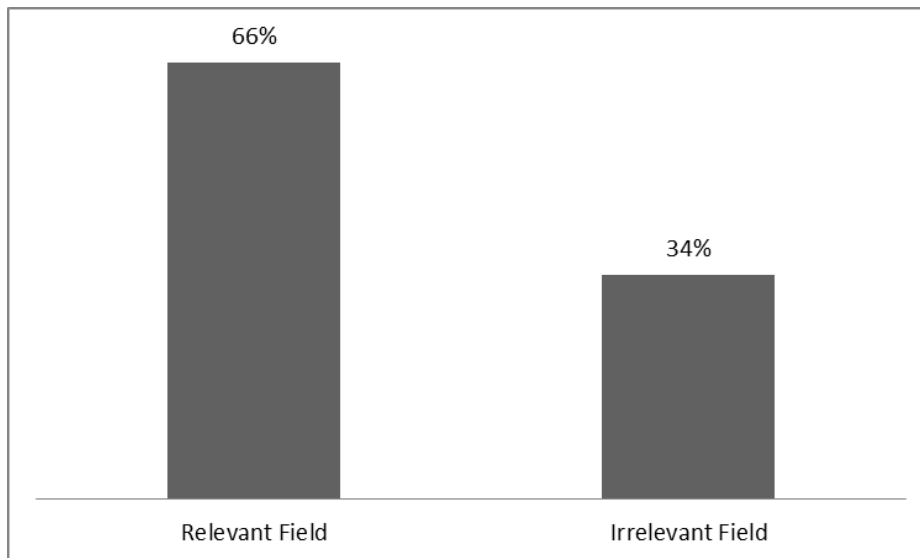
Table 5.6 Employment Status

Institutes	Employed	Unemployed
Private Institutes	25%	25%
Public Institutes	19%	31%
Total	44%	56%

5.2.2 Skill related Employment:

The following graph shows that 34% of IT graduates who were employed did not get a job according to their skill sets.

Graph 5.1 Skill-related Employment

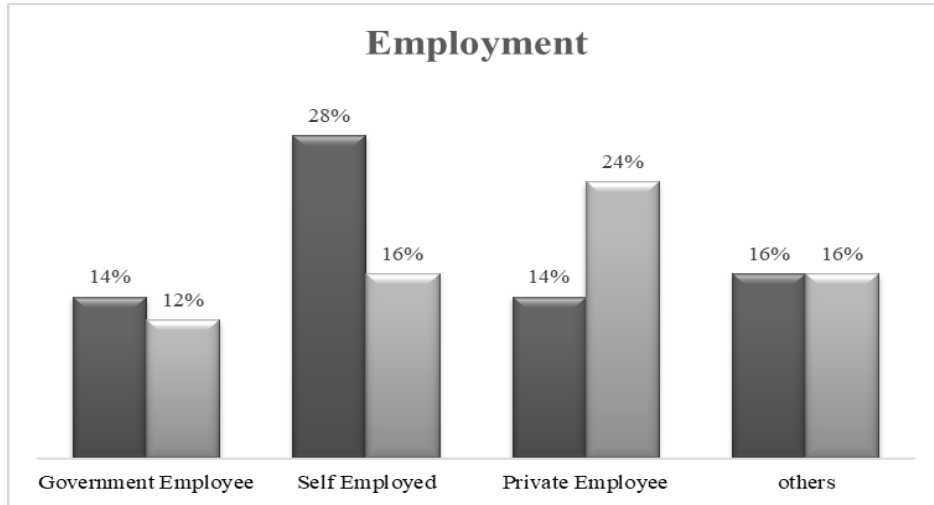


5.2.3 Employment Sector:

The following graph presents the information about the employment sector of the participants. It indicates that around 10% to 15% of the participants from both types of institutes are currently employed in government sector jobs. This graph indicates that 28% of the graduates from private sector institutes are self-employed such as freelancing and daily wages jobs etc. and 16% from public sector institutes are self-employed. 14% of the respondents from private sector institutes are currently employed in the private sector like IT companies or software houses and 24% of the respondents from public institutes are employed in private sector employment.

Around 16% of the participants from both types of institutes are employed in other sectors such as NGOs.

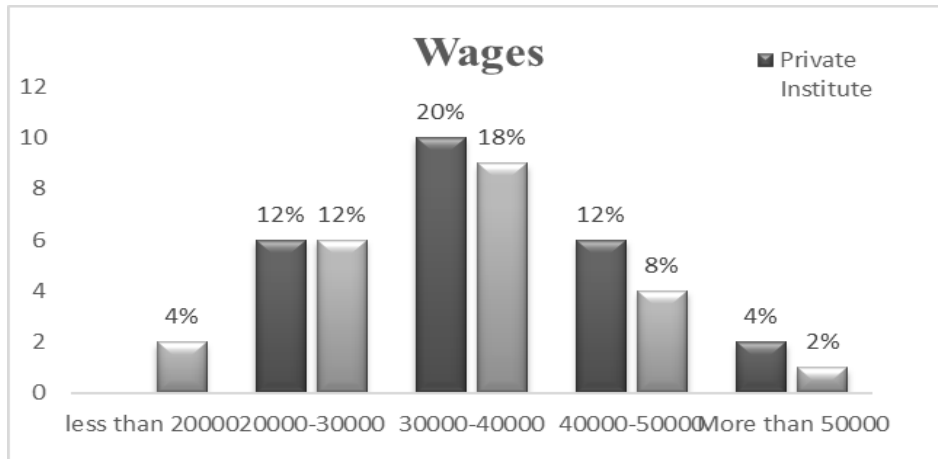
Graph 5.2 Employment Sector



5.2.4 Wages:

Graph 5.1 shows that there are only 4% of graduates from public sector institutes whose income was less than 20000 and no one has less than twenty thousand income that are graduated from private sector institutes. This indicates that 12% of the respondents of both types of institutes had the same monthly wage is 20000 to 30000. Most of the respondent's income is thirty thousand to forty thousand, 20% of the graduates from private institutes wages is 30000 to 40000 and 18% of the respondents from public institutes wage is in this range. Around 12% of the respondents from private institutes' income is 40000 to 50000 and 8% of the respondents from public institutes income is 40000 to 50000. 4% of the respondents from private institutes' wages are more than 50,000 and only 2% of the respondents from public sector institute's wages are more than 50000.

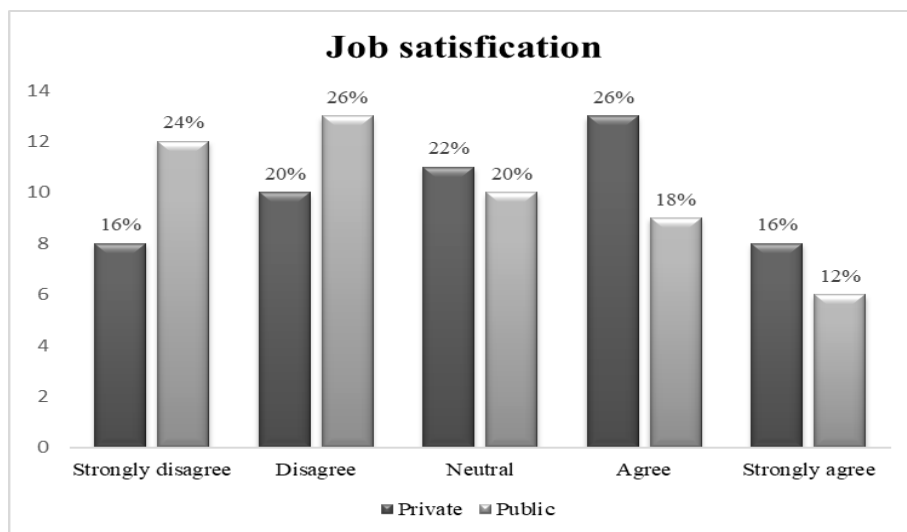
Graph 5.3 Monthly Income



5.2.5 Job satisfaction:

The graph shows that 16% of respondents who graduated from private institutes strongly disagree with their current job satisfaction and 24% of participants from public sector institutes. It shows that 20% of the respondents disagreed regarding their job satisfaction and 26% from public institutes. Around 20% of both types of institute’s graduates remain neutral. This graph indicates that 26% of the graduates from private sector institutes agree that they are satisfied with their current job and 18% from public institutes are agreed with regarding their job satisfaction. 16% of participants from private institutes strongly agreed with their current employment, and 12% from public institutes expressed strongly agreed.

Graph 5.4 Job satisfaction



5.2.6 Regression Analysis Income after TVET Course:

Equation Model:

$$y = \beta_0 + \beta_1 Edu + \beta_2 Exp + \beta_3 S + \beta_4 JS + \beta_5 VET_i + \varepsilon$$

Y represents the outcomes such as wage.

Edu is an independent variable that measures the level of education

Exp is an independent variable that represents the number of years of work experience.

S is an independent variable that quantifies the level of skills or qualifications.

JS is an independent variable that measures an individual's job satisfaction, often measured on a scale.

VET_i is a dummy variable (0/1) indicating whether an individual graduated from a public institute or a private TVET institute.

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4,$ and β_5 are the regression coefficients, representing the impact of each independent variable on monthly wages.

ε is the random error term.

In the regression model wage (Income) is the dependent variable and five independent variables (Education, Experience, Job Satisfaction, Skills, and Private Institutes) are independent variables. The constant term represents the estimated value of the dependent variable when all independent variables are 0, which is 1.156. However, the p-value of the overall model is .033 which indicates that the regression model is statistically significant.

The result shows that there is a positive relation between education and the monthly income of IT graduates. The standardized coefficient (Beta) suggests that Education has a standardized effect of 0.113. An increase in 1 level of Education (possibly years of education) leads to an increase of 19.9% monthly income of IT graduates. The result also shows that with increase of one unit (year) in experience is associated with an increase of 90.4% in the income of IT graduates. The experience contributes compared to other variables in the income level of IT graduates. The standardized coefficient (Beta) suggests that Experience has a standardized effect of 0.241.

With the increase of 1 unit of Job Satisfaction leads to an increase of 17.4% in the monthly income of IT graduates. The standardized coefficient (Beta) indicates that Job Satisfaction has a standardized effect of 0.127. The p-value of Job Satisfaction (0.023) indicates that this coefficient is statistically significant. With increase of 1 unit in the level of Skills leads to an increase of 49.3% in the monthly income (earnings) of IT graduates. These skills are the major contributor to the increasing monthly income of Its graduates. The standardized coefficient (Beta) indicates that Skills had a standardized effect of 0.581.

The coefficient for Private Institutes is .121. This means that holding all other independent variables constant, graduates who attended private institutes had an estimated wage that was 12.1% higher than those IT graduates who graduated from public institutes. However, the p-value is (.431) which indicates that this coefficient is statistically not significant. Findings show that the level of Education, Experience, Skills, and Job satisfaction has a positive impact on monthly income. The results suggested that IT graduates with higher educational levels tend to have higher incomes. Graduates having experience before the TVET course received a high level of income compared to those without experience. As per vocational institutes, private institute graduates got higher wages compared to their counterparts (public institutes).

Table 5.6 Regression Analysis for Predicting Income after TVET Course

Variable	Coefficient	SE	T	Sig
Constant	1.156*	.535	2.160	.033
Education	.199*	.097	2.043	.044
Experience	.904*	.214	4.230	.000
Skills	.174*	.076	2.303	.023
Job Satisfaction	.493*	.056	8.783	.000
Private Institute	.121	.153	.792	.431

Note. $P^* < .05$, $N = 100$

CHAPTER 6

Findings and Discussion:

Public sector institutes faced challenges such as poor attendance, inadequate teacher-to-student ratios, and accessibility issues. Both sectors reported issues like small classrooms, lack of ventilation, and no backup power supply. Public sector institutes lacked exposure to real work situations and internships, focusing on basic digital skills. Private sector institutes emphasized activity-based training, hands-on learning, and satisfaction with practical skills. Public institutes had outdated technology, limited access to labs, and basic computer skill training challenges. Private institutes had access to the latest equipment and advanced skills training. Public institutes lacked partnerships with the labor market, leading to a skills gap and unemployment. Private institutes, while not explicitly mentioning collaboration, emphasized practical skills training aligning with potential industry needs.

Both public and private institutes faced challenges in access to necessary tools and equipment, with variations in library access. All institutes had computer labs, but 40% of public sector students had no internet access, compared to 20% in private sector institutes. 40% of students reported not availing practical training, with private sector students having a lower percentage. Public sector institutes had issues with less qualified and experienced teaching staff. Private sector institutes had a lower percentage of less qualified instructors but higher percentages with less experience and awareness of the labor market.

Overall, 44% of graduates were employed, from both private and public institutes. Out of total employed graduates 34% of employed IT graduates did not secure jobs aligned with their skill sets. Graduates from both sectors were employed in various sectors, with private sector graduates having higher self-employment rates. Monthly income varied, with private sector graduates generally earning more than public sector graduates. Graduates from both sectors reported different levels of job satisfaction, with private sector graduates generally expressing higher satisfaction. The regression analysis indicated positive relationships between education,

experience, job satisfaction, skills, and monthly income. Private institute attendance was associated with a 12.1% higher estimated wage, although it was not statistically significant.

Technical institutions can play a key role development of the economy and can help to reduce unemployment. The well-equipped institutions are very important for the production of market demand for skilled human resources. The public and private training institutes can play a key role in the enhancement of skills of labor. Both types of training institutes are facing issues such as the issue of small classrooms, lack of ventilation, and no backup power supply these issues can be hurdles for the skill development of students which may lead to efficient or less skilled labor in the job market. The public sector institutes faced challenges at their level such as poor attendance, inadequate teacher-to-student ratios, and accessibility issues. Public institutes also use outdated technology and give limited access to labs and basic computer skill training challenges. Public sector training institutes lacked exposure to real work situations and internships, focusing on basic digital skills. Public institutes lacked partnerships with the labor market, leading to a skills gap and unemployment. Because of these issues of public sector training institutes these institutes are unable to cater to the labor market demand. On the other hand, Private sector institutes emphasized activity-based training, hands-on learning, and satisfaction with practical skills. Private institutes had access to the latest equipment and advanced skills training Private institutes, while not explicitly mentioning collaboration, emphasized practical skills training to align with potential industry needs.

The disparity in infrastructure, practical training, and technology access between public and private institutes highlights the need for targeted improvements in both sectors especially in public sector institutions. The lack of industry collaboration in public institutes contributes to a skills gap and unemployment. Financial challenges faced by TVET students, especially in the private sector, emphasize the need for scholarship programs and financial support to make technical education accessible. The employment status and sectoral distribution of graduates indicate the need for targeted interventions to improve job placement, particularly in aligning skills with

employment opportunities. The positive correlation between education, experience, job satisfaction, skills, and income underscore the multifaceted factors influencing graduates' economic outcomes. The non-significant difference in wages between graduates from private and public institutes suggests that other factors, such as individual skills and experience, may play a more substantial role in determining income. Strategies for enhancing skill-related employment, addressing wage disparities, and improving job satisfaction should be considered to optimize the impact of technical education on graduate's labor market outcomes.

6.1 Conclusion and Recommendation

Technical and vocational education played a key role in youth empowerment and skill development. This research aimed to determine the outcomes of TVET education and analyze the difference between public and private institutes through the outcome of education and the quality of education. Several factors played a crucial role in the outcomes of TVET, such as educational background, experience, and skills. According to the literature, private sector institutes were better compared to public sector institutes, and the results of this study confirmed that. The details of the findings about the quality of both types of TVET institutes were explained previously.

This research focused on analyzing the quality of the TVET education system. In public TVET institutes, there were factors behind the low quality of TVET systems such as outdated tools and equipment, lack of accessibility to technology and the internet, lack of career guidance, and less teacher's attention. Most of the students who were enrolled in these institutes belonged to poor families and dropped out of general education. They needed much attention for skill development and financial assistance, and in this regard, no one got any kind of assistance from institutes. The public institutes had computer labs but lacked accessibility to commuters. Private institutes had a better quality of education as compared to public institutes.

The quality of education had a high impact on the return to education of TVET institutes. The lower labor market outcomes were due to the low quality of TVET like traditional teaching methods, outdated equipment, and lack of practical work education as mentioned above. Private institutes had a better quality of education, and their outcomes were also better compared to public sector institutes. It

has been found that institutes faced multiple problems such as poor attendance, inadequate teacher-to-student ratios, and accessibility of institutes. Both types of institutes' especially public institutions students face a lack of exposure to real work situations, opportunities for internships, and a focus on basic digital skills without delving into more advanced components. Limited access to labs and basic computer skill training were also the challenge. The quality of education in terms of the familiarity of teachers with concepts like work-integrated learning and demand-driven TVET skills is also an issue, especially in public sector institutes. There is no collaboration between institutes (public and private) and industry which is resulting in a skills gap and unemployment.

This study also revealed that the outcomes of the private sector institutes were better than public institutes but overall not insignificant. The private institute's graduates were more satisfied with their courses and jobs compared to the public institutes. In public sector institutes, there were different kinds of factors regarding less return to education, such as skill gaps, out-of-date equipment, traditional teaching methods, and a lack of concept-building and soft skills. In private institutes, outcomes were better because these institutes offered skill development according to the demand of the labor market. They had up-to-date equipment and technology, and they focused on practical work rather than theoretical work. Practical training gave trainees confidence to enter the labor market.

By recognizing and determining the outcomes of TVET and the quality of TVET education. It also identified policy measures such as employment opportunities and skill development programs that could be the main elements in promoting employment and wages. Through these interventions, the TVET sector could improve the outcomes of the labor market and the quality of education.

6.1.1 Linkage of Institution and Industries:

The public and private institutions should make a strong connection with industries and govt. should bind industries for interaction with institutions. In this way, the outcomes of the labor market can be better. TVET institutes need to be in touch with industries for awareness about the labor market requirements and to

improve the return to education accordingly. There should be a relationship between both types of institutions and industries. Collaboration between governments, industries, and educational institutions may help align TVET programs with industry needs.

6.1.2 Employment opportunities

The government may enhance the employability of TVET Graduates through effective policies and practices. When TVET programs regulate the demands of the labor market students are more likely to acquire skills that are in demand by the job market. A well-designed TVET system may help reduce youth unemployment by providing young people with practical skills and qualifications that make them more attractive to potential employers.

6.1.3 Practical implementation of skill development programs:

In the past Govt. launched different kinds of programs for skill development such as the kamyab jawan program and skill development program but due to a lack of practical implementation, these programs are unable to increase the productivity of labor. Govt. should focus on the practical implementation of these programs which will help improve the outcomes.

6.1.4 Quality Assurance:

Strong quality assurance mechanisms should be in place to maintain the standard of TVET programs. This includes accreditation, monitoring, and evaluation of institutions and programs. Policies should ensure that TVET programs are up-to-date and relevant to the needs of industries. Regular consultation with employers and industry experts may help keep curriculum and training methods current.

6.1.5 Financial Support:

Most students in TVET institutes belong to poor family backgrounds and they are not able to continue their education in universities. Govt. should make policies for these students and provide financial assistance like stipends as different NGOs give

some assistance to students. It will help to attract students for technical education and reduce poor student's burden.

6.1.6 Teaching Staff Training:

With modernization in technology through day-by-day innovations, teachers need to change their traditional way of teaching. Govt. should provide opportunities to teachers or instructors to use new technology that they can deliver to their students in this way students can compete at the international level. Govt. should make policies for teachers and instructors to provide ongoing professional development opportunities. Provide training on the latest teaching methods, technology integration, and industry-specific skills. Create a supportive and collaborative environment for teachers to share best practices.

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Appendix 1

Name:

Age ——— (in years)

Profession:

1	Student
2	Government Employee
3	Private Employee
4	Self Employed
5	Unemployed

Education:

What is your educational background?	
<input type="radio"/> Matric	<input type="radio"/> Intermediate
<input type="radio"/> Bachelor	<input type="radio"/> Other
Which type of TVET institute did you graduate from?	
<input type="radio"/> Public institute	<input type="radio"/> Private institute
Please specify the name of your institutes _____	
Have you pursued any further education or training since completing your TVET program?	
<input type="radio"/> Yes	<input type="radio"/> No
If yes, please specify the type of education you pursued after completing your VET course.	

○ General Education	○ Technical and Vocational Education
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Experience:

Had your experience before the TVET Course?	Yes	No
If yes, how much experience? _____ (Months).		

Skills:

Scale	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have the necessary skills to succeed in my job.	1	2	3	4	5
The training program has equipped me with the necessary skills required for my profession.	1	2	3	4	5
The TVET program was effective in developing the skills necessary for employment.	1	2	3	4	5
TVET program provides me with practical hands-on training.	1	2	3	4	5
Does your Institute offer any work placements related to the course?	1	2	3	4	5
How well did your TVET course prepare you for the demands of the job market?	1	2	3	4	5

Employment Status and Wages:

Are you currently employed?	Yes		No	
If yes, then in which sector you are employed?	Public sector	Private sector	Self-employed	NGO
What is your income after the TVET course? _____ (Thousands).				
How long did it take you to find employment after completing your course? _____				

Job Satisfaction:

Scale	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am satisfied with my current job.	1	2	3	4	5
My current job is related to my course.	1	2	3	4	5
The TVET program adequately prepared me for the labor market in the specific field.	1	2	3	4	5
This job closely aligns with the skills and knowledge I gained during the TVET course.	1	2	3	4	5
The TVET education met my expectations in terms of acquiring practical skills and knowledge.	1	2	3	4	5
I would recommend my TVET program to others looking to enter this field.	1	2	3	4	5

APPENDIX 2

Facilities and Resources

Is there a library?
Are there computer labs? If yes, then how do you think the availability and utilization of computer labs contribute to enhancing educational experiences and fostering technological skills in today's learning environments?
Do you receive any kind of scholarship or stipend from the institute? If yes, then how does it impact your education?
What are the values of practical training in enhancing skills and knowledge in a specific field or industry?
Are there sports facilities? If yes, then what kind of sports facilities does your institute offer, and how do these contribute to the overall student experience and well-being?

Technology:

Are there computer labs available? If yes, then what types of resources do you think would be most beneficial to have in these labs?
Do you have access to computers?
Is there internet access for students? If yes, then do students have access to online platforms for resource access?

Teaching Staff:

Do you believe the TVET teaching staff is adequately qualified and experienced?
Are you receiving sufficient support from the instructors during the training program?
Did the training program effectively teach you the necessary soft skills, such as communication, teamwork, and problem-solving?
Do you feel that the teaching staff effectively communicates the subject matter and provides practical guidance?

APPENDIX 3

<p>Global TVET Reforms</p>		
<p>OECD reviews of TVET for policy development</p>	<p>Key Policy Challenges for VET:</p> <ul style="list-style-type: none"> • Offer a balanced mix of VET training that aligns with student preferences and employer demands, integrating workplace training. • Address numeracy and literacy weaknesses in vocational students to support lifelong learning. • Establish a dedicated career guidance profession, well-informed by labor market information. • Provide comprehensive career information and partnering with employers. • Develop an evaluation system for assessing the effectiveness of career guidance initiatives. • Recruit an adequate number of VET teachers and trainers with industry experience. • Encourage VET trainers to work in the industry part-time and develop flexible recruitment pathways. • Emphasize workplace training in initial VET programs. • Establish a supportive framework for workplace training that engages both employers and students. 	<p>2011</p>

	<p>Meeting Labor Market Needs:</p> <ul style="list-style-type: none"> • Strong VET programs are crucial for economic competitiveness. • Vocational education bridges skill gaps and prepares youth for diverse job opportunities. • Effective VET systems consider youth unemployment and economic challenges. <p>Effective Teachers and Trainers:</p> <ul style="list-style-type: none"> • Ensure VET teachers and trainers support effective learning across various roles. • Encourage industry experience for trainers and promote flexible pathways into the profession. • Enhance the pedagogical skills of workplace trainers and supervisors. <p>Tools for Supporting the VET System:</p> <ul style="list-style-type: none"> • Engage employers, unions, and stakeholders in curriculum development and qualifications. • Develop effective qualification frameworks to unify and enhance vocational education. 	
<p>UNESCO Strategy for TVET Transforming for Successful Transitions</p>	<p>Key Challenges</p> <ul style="list-style-type: none"> • A significant percentage of young people worldwide are not in employment, education, or training. Many are caught in vulnerable employment, facing low-skilled jobs or qualifications, leading to high poverty rates among young workers. • The fourth industrial revolution, driven by digitization, automation, 5G, and AI, is 	<p>2022-2029</p>

	<p>altering job landscapes, creating both job destruction and creation in unpredictable ways.</p> <ul style="list-style-type: none"> • Informal employment remains pervasive globally, challenging traditional notions of formal and modern sectors. Innovations are needed to extend social protection to informal workers. • Different continents and countries are undergoing demographic transitions, with youth bulges in some regions and aging populations in others. TVET systems must adapt to varying needs. • Societies are grappling with political shifts, inequality, conflict, climate change, and migration. <p>Strategic priorities to address these challenges are:</p> <ul style="list-style-type: none"> • TVET systems should provide equitable access to skills development for all, encompassing lifelong learning opportunities, flexible pathways, and recognition of prior learning. • TVET should align skills development with changing economic needs, engage with the private sector, and anticipate skill shifts due to technological and economic transitions. • TVET can contribute to more transparent governance, reduced inequality, and empowerment of individuals. <p>Plans to leverage three main levers to achieve</p>	
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	<p>these goals:</p> <ul style="list-style-type: none"> • UNESCO will conduct research, gather data, and create a repository of TVET plans and strategies to inform decision-making and accountability. • It will consider revising and aligning existing normative instruments to support TVET and skills development. 	
Federal Government TVET Reforms		
The National Skills Strategy 2009-2013	<ul style="list-style-type: none"> • Governance: The TVET sector lacks clearly defined functional domains for stakeholders and a coordination mechanism to allocate resources effectively. The federal domain should focus on policy formulation, quality assurance, and capacity building. • Funding: The TVET sector suffers from low investment. Multiple sources of funding are needed, including government funding, donors, industry engagement through apprenticeship programs, and the diversion of funds from other welfare programs. • Capacity Enhancement: The TVET sector needs to expand its capacity to meet the training needs of the growing youth population. Optimizing existing facilities, running double shifts, engaging private schools and universities, implementing apprenticeship laws, and online learning are recommended. 	2009-2013

	<ul style="list-style-type: none"> • Quality Assurance: The quality of TVET training needs improvement. Measures like designating centers of excellence, upgrading training facilities, implementing standardized curricula, and establishing international linkages are proposed. • Access and Equity: Efforts should be made to increase the participation of women in the TVET sector through legislative measures, and developing tailor-made courses for women engaged in rural economies. • Industry Ownership: The TVET sector should increase industry engagement and ownership. Measures include implementing apprenticeship laws, increasing industry representation on TVET boards, establishing industry-led sector skills councils, and involving business industry associations in TVET awareness. 	
<p>1st Phase of TVET Sector Support Program</p>	<ul style="list-style-type: none"> • Pakistan possesses untapped potential in human capital, energy, and agriculture, which have not been fully utilized due to a lack of skilled workforce. With a population of approximately 200 million, including 48.76 percent women, a significant percentage of the youth completes secondary education but lacks employable skills. Many young people enter the informal sector and acquire vocational skills through traditional methods. • The formal TVET system has limited 	<p>2011-2016</p>

	<p>capacity, with only 476,850 available places in 3,581 institutes across the country, leading to a mismatch between demand and supply. The quality and relevance of the training provided often do not align with job market requirements.</p>	
<p>National Vocational Qualification Framework 2015</p>	<ul style="list-style-type: none"> • Pakistan has launched its first-ever NVQF to enhance the quality, relevance, and employability of skills training. • Its primary objective is to improve skill outcomes, enhance the quality of skills, and meet industry requirements. The NVQF aims to enable learners to progress both horizontally and vertically within the TVET system, gain recognition for their qualifications at the national and international levels, and facilitate the recognition of prior learning, which is crucial since a significant portion of Pakistan’s labor force receives training in the informal sector. • The NVQF focuses on qualifications rather than specific learning pathways, thereby increasing access to skill recognition. It integrates formal, informal, and non-formal achievements, making it more accessible for skills recognition. The NVQF establishes a strong link between the industry and training programs, delivery, and assessment of learners. It also serves as the framework for implementing CBT&A in numerous TVET 	<p>2015</p>

	institutes across Pakistan.	
National TVET policy March 2015	<ul style="list-style-type: none"> • The Government of Pakistan launched the country's first-ever national TVET policy in March 2015 as part of its ongoing reform efforts in the TVET sector. The policy aims to bring about a paradigm shift in skills training delivery, equipping millions of young men and women with employable skills. • The policy aligns with macroeconomic and development policies, including Vision 2025, and recognizes the need for skilled workers to enhance industry competitiveness in regional and international markets. It sets a target of creating one million quality training places annually, to provide apprenticeships or training programs to one in four school leavers by 2050. • The policy emphasizes the establishment of a national quality-based system for classifying qualifications within the TVET sector. The recently launched NVQF plays a crucial role in ensuring the quality of training delivery and gaining support from employers both domestically and internationally. 	2015
The second phase of the TVET Sector Support Program 2017-2022	<ul style="list-style-type: none"> • The second phase of the TVET Sector Support Program was launched in January 2017 and spans five years. Supported by the EU, Germany, and the Royal Norwegian Embassy, the program aims to improve governance and private sector participation 	2017-2022

	<p>in the TVET sector.</p> <ul style="list-style-type: none"> • The overarching objective is to enhance the quality of skill development to meet the demands of the labor market. • During this phase, specific activities and expected results were outlined for different regions, such as KP and AJK. These include training, assessment, and certification of CBT Assessors, as well as men and women in various trades using new CBT&A qualifications. • The program also focuses on training Chief Master Trainers, TVET teachers, and principals, establishing Centers of Excellence, accrediting TVET institutes, and facilitating agreements between public and private stakeholders to support the National TVET Policy. 	
Provincial-level TVET Reforms		
THE PUNJAB TVETA ACT 2010	<ul style="list-style-type: none"> • The Authority’s key roles include: • Offer diverse technical education and promote research, application, and dissemination of technical knowledge across sectors. • Manage existing technical institutions, establish new ones, and oversee their functioning. • Develop and support additional technical 	2010

	<p>education facilities, including teacher training and research.</p> <ul style="list-style-type: none"> • Design courses and curricula for technical education, collaborating with national and international entities. • Create innovation-focused institutes, offer training in new technologies, and facilitate job-oriented education. • Determine effective teaching methods, and employment terms for staff, and facilitate career guidance and job placement. • Cultivate connections with alumni, and national, and international organizations to enhance technical education and international employability. 	
<p>The Punjab Skills Development Authority Act 2019</p>	<ul style="list-style-type: none"> • The Authority’s key roles include: • Enforcing national policies and standards for TVET • Registering and overseeing both public and private institutes. • Regulating technical education bodies, assessment agencies, and apprenticeship policies • Ensuring training quality for teachers and evaluators • Conducting performance audits and monitoring institutes' compliance with standards. • Encouraging alignment of syllabi with international and national standards 	<p>2019</p>

	<ul style="list-style-type: none"> • Validating curriculum relevance and conformity to national standards • Establishing a labor market information cell for skill demand and supply assessment • Implementing marketing, communication, and career guidance strategies • Coordinating with international and national bodies for sector development 	
<p>AJK Skills Development Plan (SDP) 2012</p>	<ul style="list-style-type: none"> • The Skills Development Plan (SDP) for AJK aims to improve skills and employability in the region, contributing to economic development and job creation. It involves various stakeholders, including AJK TEVTA, NGOs, and private companies, to implement TVET programs. • To develop the plan, advisory and technical working groups were formed, consultations were held with stakeholders, and the plan was constructed and updated through workshops and meetings. The plan includes an assessment of activities, a skills development profile, and an activity matrix. • Successful implementation of the SDP aligned with the NSS can lead to economic growth and employment. Integrating TVET into the general education system and establishing partnerships between public and private sector agencies, and NGOs are important policy considerations. • The economic situation in AJK faces 	<p>2012</p>

	<p>challenges due to poverty, limited investment, and the disputed status of the region. High dropout rates, competency gaps, and a mismatch between education and job market requirements contribute to unemployment. Bridging these gaps requires the involvement of the private sector in TVET planning.</p> <ul style="list-style-type: none"> • Rural areas in AJK have limited job opportunities, and the economy relies on agriculture, livestock, and remittances. The SDP recognizes the need to address education, as well as the importance of economic integration, infrastructure development, and investment in key resources. 	
<p>The Govt. of AJK to develop Youth Employment Strategy</p>	<p>The workshop revolved around seven key thematic areas concerning Youth Employment:</p> <ul style="list-style-type: none"> • Education and Training • Provincial-Level Employment Opportunities • Youth Employment in Rural Value Chains • Youth Employment in Mega Development Projects • Overseas Employment of Youth • Self-employment and Enterprise Development • Social Protection for Unemployed Youth 	<p>2017</p>