National College of Business Administration & Economics Lahore

ON INDUSTRY-TECHNICAL INSTITUTIONS LINKAGES

BY

MUHAMMAD ARSHAD

MASTER OF PHILOSOPHY
IN
BUSINESS ADMINISTRATION

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MUHAMMAD ARSHAD

A dissertation submitted to
School of Business Administration

In Partial Fulfillment of the
Requirements for the Degree of

MASTER OF PHILOSOPHY
IN
BUSINESS ADMINISTRATION

September, 2014

In the name of ALLAH,
The Most Beneficial,
The Most Merciful,

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Dissertation Committee:

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Chairman

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Member

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Rector
National College of Business Administration & Economics

DECLARATION

It is to declare that this research work has not been submitted for obtaining similar degree from any other university/college.

MUHAMMAD ARSHAD
September, 2014

DEDICATED TO
My Mother

This volume of dissertation
is dedicated with all reverence
to my mother (late) who had dedicated
all her carefulness in nourishing
my potential to take up this long task.
She always consciously
and quietly wished and prayed
for my success in life

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RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis entitled **"On Industry-Technical Institution Linkage"** has been carried out and completed by **Muhammad Arshad** under my supervision during his **M.Phil. Business Administration** Programme.

(Dr. Alia Ahmed)
Supervisor

SUMMARY

The collaboration between TVET System and industrial sector is vital to guide the economics van of a country in right direction. The developed nations were fast enough to understand the significant impact of TVET education on the prosperity of the lives of their people; hence they have developed it into a system of links and relationships between various stakeholders. The under developing countries too are now realizing its importance and planning to strengthen relationship between TVET stakeholders. The TVET System inherited by Pakistan at the time of independence was carrying weak liaison with the industry and could not paid attention to develop of its TVET System due to political instability and internal issues.

In this research study effort has been made to review the TVET system in the country in comparison with developed nation with the view to explore the level of quality of skilled manpower being produced by the TVET system and its liaison with the industry. Through this study the reasons of low quality of skilled workforce along with gaps both at the TVET institute and industry level have been highlighted. It has also pointed out the level of efforts being made by both the actors for maintaining the liaison between the two. The feedback was collected through questionnaires based survey from the Principals of the TVET institutions, who are responsible for imparting quality training, from the TVET graduates employed in the industry and the HR/Training Managers of the industry, involved in recruitment / training of the newly hired skilled workforce. The data / information was analyzed by statistics tools i.e. SPSS and results were drown that workforce produce by TVET institutions in Pakistan was lacking quality due number of reasons. In the light of results achieved through analysis of data, piloted study and literature review a TVET Institution-Industry linkage model has been proposed for the production of job oriented workforce by developing a strong liaison among the TVET stakeholders.

This study also defines the responsibilities of all the stakeholders indicated in the model. This model has proposed an Intermediary Agency / National Labour Market Information System that would serve as a plate form for marinating the liaison between the TVET System and industry of the country for producing quality workforce acceptable in both local and global job market. This study also has discussed the impact of the Intermediary Agency / National Labour Market Information System on TVET System and industry in terms of increment of enrollment of TVET institutions and ultimately will bring revolution in the economic condition of the country.

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ACRONYMS AND ABBREVIATIONS

ITEM	ABBREVIATIONS
NAVTTC	National Vocational and Technical Training Commission
P.TEVTA	Punjab Technical Education & Vocational Training Authority
TVET	Technical and Vocational Education Training
PBTE	Punjab Board of Technical Education
VET	Vocational Education & Training
AT	Apprenticeship Training
VE	Vocational Education
TVE	Technical-Vocational Education
OE	Occupational Education
TE	Technical Education
WE	Workforce Education
CTE	Career and Technical Education
WEF	World Economic Forum
MOHE	Ministry of Higher Education of Malaysia
ILO	International Labor Organization
NTB	National Training Bureau
PVTC	Punjab Vocational Training Council
OEC	Overseas Employment Corporation
GCT	Government College of Technology
NSS	National Skills Strategy (2009-13)
CDO	Career Development Officers
LO	Liaison Officer
IC	Institution Counselor

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND: TECHNICAL EDUCATION AND VOCATIONAL TRAINING (TVET) - ITS EVOLUTION AND IMPORTANCE

Technical Education and Vocational Training (TEVT) plays a vital role in human resource development of the country by creating skilled manpower, enhancing industrial productivity and improving the quality of life. It equips the young people to earn sustainable livelihood in today's knowledge economy by provision of practical skills, knowhow and understanding of employment in a particular occupation, trade or group of occupations (Atchoerena and Delluc, 2001; Ansah and Enrnest, 2013). In modern area human resource development gives competitive edge in the global economy. So the developing countries are advised to develop their human capital to boost their economies and enlist them with the developed countries, because these are the people who formulate policies for the country. Therefore, educated workforce is considered an effective tool for the economic development of the country (Aluko and Aluko, 2012).The importance of skilled workforce cannot be ignored, particularly in an era of globalization when, emerging technologies, advanced information systems, the importance of customer needs and the concept of 'sophisticated manufacturing' (Lall et al., 2005) has brought dramatic changes in every industry, be it service or manufacturing. The globalization process, knowledge and sophisticated manufacturing in the industries in the 21st Century have brought new challenges for the developing countries and for their labour market. It means skilled workforce plays a pivotal role in sustaining the current pace of growth and progress through enhanced productivity of human capita (Audu, 2013). To mention a few, skills and competencies of the people of a country attract foreign investors. Beside this it is an established fact that economy of any nation does not solely depend upon the educated people but also partially upon the skilled workforce that can handle the changing demands of the job market (Okoye et al., 2013)

Initially, the TVET system was more focused on producing skilled workers i.e. experts in technical field with just the basic hands-on skills. With the development of technology, there has been a drastic change in demands of the industries, which now expects the skilled workforce to understand complex problems and know how to solve them with analytical skills. Therefore, the TVET management presently is considering the relevancy of job market,

quality of delivery, standardization, soft skills and funding for the system, for fulfilling the market requirement (African Union, 2007).

The concept of Technical and Vocational Educational Training (TVET) system came about with the arrival of Industrial Revolution in England, two centuries ago (Evans, 2000). Since then, the TVET system has been playing a valuable role in the economic development of countries by producing skilled human resource. History has witnessed that TVET system and industries have been interlinked with each other, and together they share the burden of economic problems of a country. Technical and Vocational Education and Training (TVET) refers to gaining skills and knowledge for the world of work (Alam, 2007). This system imparts practical skills to the trainees and also engenders the understanding of employment in a particular trade/technology (Atchoarena and Delluc, 2001). The industry in return provides a platform to the trainees to demonstrate the skills acquired from a technical or vocational institution. Keeping in view its relation with the industry various terms have been used in practice to define TVET system including Apprenticeship Training (AT), Vocational Education (VE), Technical Education(TE), Technical-Vocational Education (TVE), Occupational Education (OE), Vocational Education and Training (VET), Career and Technical Education (CTE), Workforce Education (WE), Workplace Education (WE) etc. (Hollander and Mar, 2009).

UNESCO defines TVET as "a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life" (UNESCO, 2001). As per the TVET-pedia by UNESCO-UNEVOC, technical and vocational education and training is concerned with "deliberate interventions to bring about learning which would make people more productive (or simply adequately productive) in designated areas of economic activity (e.g., economic sectors, occupations, specific work tasks)". The European Commission's Cedefop glossary defines TVET as an 'education and training which aims to equip people with knowledge, know-how, skills and/or competences required in particular occupations or more broadly on the labour market' (Cedefop, 2008). At the basic level, the initial vocational education and training (IVET) is designed to develop skills in young learners for evolution of the labour market and pave way for higher education, whereas the objective of the continuing vocational education and training (CVET) is to provide structures for updating skills and competencies in adults (European Commission, 2010).

Early on, TVET certification was considered limited in scope and the graduates were not likely to get into white collar employment (Onyene et al., 2014). Traditionally TVET was provided by (upper) secondary education institutions but the significant change in the nature of work due to technological and demographic changes as well as internationalization and globalization of markets, has increased the demand for higher-level knowledge, skills and competences among the labour force and has pushed TVET at tertiary level too. Universities in Poland, Czech Republic, France, Denmark, Germany, Finland, Greece, the Netherlands, Romania, Norway, Portugal, and UK-England have included vocationally oriented education with training at higher level, in sectors like information technology, agriculture, teachers training, nursing, finance and innovation management etc. and there is evidence to suggest that, VET, is more labour market oriented and has the capacity to fill the gaps left by traditional higher education and can produce demand driven workforce (Cedefop, 2011).

1.2 TVET INSTITUTION AND INDUSTRY PARTNERSHIP

In the past, concept of vocational training that was based on academia only, but that is now changing with the inclusion of participation of industrialists at various level for production of industry oriented skilled workforce (Seung, 2014). In the present era of globalization, the knowledge based and market oriented skilled workforce has got special importance. Technological changes have shifted demand towards higher skills in the labor force (Hijzen et al., 2005). The rising technologies and advanced information systems have given birth to the concept of ‘sophisticated manufacturing’, that has revolutionized both manufacturing and service industry (Lall et al., 2005). The high-tech industries in advanced countries are focusing on sophisticated methods for manufacturing their products by linking it with latest technological applications to meet the global challenges as well as to achieve worldwide recognition of their products. For the purpose, the industries have realized the need to upgrade their semiskilled workforce to a fully skilled one. The development of the TVET system was the first step that guided the industry for sophisticated manufacturing and has become a ‘wise-investment’ and a means of economic survival (Onyene et al., 2014). However, this high-tech industry is emerging only in developed countries where TVET system is working in collaboration with the industry (Seng, 2007) strengthening the view that the technical institution need partners to absorb their trained pupils (Komla et al., 2011). The industry, can play the role of a partner, and provide the opportunity to the skilled workforce to demonstrate the acquired skills and to earn their livelihood. It also introduces the new technologies that are being used in the international market.

Production of sophisticated skilled manpower cannot be materialized unless industry does not participate and provide its input in the development of curricula and strategies for provision of quality trainings to the trainees. Therefore, both technical educational and industry serve the role of backbone in sustaining the economic strength of a country (Komla et al., 2011). The strong linkage between the two plays pivotal role in enhancing the economic position of the country and it could be an effective step towards poverty alleviation and national development, particularly, in developing countries.

The industry institution gap raises the cost of industry in terms of training the skilled workforce. In the current scenario, the industry spends considerable amount of time and resources to re-skill fresh engineering graduates, simply because their skill levels and awareness is not up to the mark. Consequently, fresh graduates take up valuable time to become productive members of their employing organizations. Technical institutions need to understand these training requirements and provide customized curricula which can effectively meet these needs. For instance, prospective employers visiting the institutions for placement should be encouraged to select engineering candidates in the beginning of the last year. The institute could then train the selected candidates based on the inputs on training needs required by the employer. This would require redefining the scope of the Industry-Institute collaboration, but would also help the Industry cut training costs to a large extent (Gupta, 2011).

Innovation and Business Sophistication are the most important drivers for maintaining the advanced economies which can only come through the liaison between training institutions and employers (World Economic Forum, 2014). Only those countries are able to sustain their economic strength and the standard of living of their people, where industry and academia are working together. These countries are able to focus on lifting their economies through employing innovation and business sophistication as an economic strategy (Hausmann et al., 2007; Lall et al., 2005). According to the Global Innovation Index (GII) 2013, Innovation and sophistication have become a global game and as per the report, Switzerland, Singapore and Sweden rank at the first three positions respectively, out of 142 countries. Emerging economies like china, Kenya, Malaysia, Mongolia and India have shown ‘above-par levels’ innovation as compared to other similar income level countries.

Countries with higher and better levels of knowledge and skills respond more effectively and promptly to the challenges and opportunities of globalization. Demand driven skills and knowledge are the engines of economic growth and social development of any country. Malaysia for instance, focused on the uplift of research and development, and the fostering of the relationship between industry and universities are therefore very closely

tied to government policy (Rahim and Said, 2007). Malaysia is on the way to progress and is strengthening its Vocational Education and Training (VET) in response to the challenge of the skilled manpower demands arising from an all-out effort to expand the economy. Its government has renewed its efforts to turn itself into a fully industrialized nation by the year 2020 (Ibrahim, 2010). In industrialized countries, efforts have been made by governments to generate human skills to increase labor productivity so that it can improve the economy (Abbasenejad et al., 2011). But for these efforts to succeed there have to be jobs on offer for qualified skilled employees so families are assured that the investment in their children's education will give an economic return.

The developed countries are too paying special attention to improve and update their TVET system to compete the ongoing global race of developing technically skilled workforce. For example, the European countries are giving more importance to the technical and vocational workforce wherein over half of upper secondary students are engaged in getting skills in various trades (Terra, 2014). In recent years, Australia has been moving from a strategic planning model to a student demand driven system where each state and territory has adapted different skills forecasting methods to meet local needs (Field et al., 2009). Other countries are also making efforts too, such as one of the most prominent is CEREQ (Center for Research on Education and Qualifications) in France, which undertakes a range of regional, sectorial and educational level studies. The BIBB (Bundes Institute BersfsausBildung) in Germany plays a similar role, but is more focused upon the VET sector. Across the EU, the VET research agency, CEDEFOP **(**Centre European pour le Development de la Formation Professionnelle**)**, plays a major coordination and integration role in labor market, education and training studies and the links between them (Keating, 2009). Developing countries like Nigeria, Bangladesh, Spain and Romania are on their way to reforms with regards TVET systems (Hart et al., 2007; Islam, 2008; Onyene, 2014). The weak liaison between industry and institution in Bangladesh has raised the unemployment ratio and poverty level and, to sustain and strength its economy Bangladesh has to modernize its VET system on international level (Akhtaruzzaman and Clement, 2011).

1.3 TVET IN PAKISTAN

Pakistan is in a transitional phase moving towards a knowledge based economy and its competitive edge will be determined by the abilities of its people to create, share and use knowledge more effectively. This transition will require Pakistan to develop workers into knowledge workers who will be more flexible, analytical, and adaptable and multi skilled. In the new knowledge economy the skill sets ought to include professional, managerial,

operational, and behavioral, inter personal and inter functional. Pakistan needs to take cognizance of this issue and shift from producing semi-skilled or traditionally skilled labor force to highly skilled workforce on global parameters which may become a prime factor in enhancing economic strength. It would not only improve its productivity but also help to earn foreign exchange by exporting skilled manpower to the other countries.

The ground realities are that Pakistan, a developing and a semi-industrialized economy needs to build skilled workforce for its economic growth and to compete in the present global scenario. According to Agrawal (2013) Pakistan faces three major challenges. There is (i) a limited access to education and vocational training, (ii) the quality of education and training is low, (iii) and there is a shortage of skilled labor. Less than 4% of the total population gets higher education and only less than 1% is able to receive technical education and vocational training. According to the Global Competitiveness Index, 2011 (Schwab, 2011), Pakistan ranks at number 123rd out of 139 countries and at 77th when it comes to innovation and sophistication factors. By 2014, unable to improve its competitiveness Pakistan's ranked dropped by ten points, positioning it at 133rd out of 148 countries as per the Global Competitiveness Index 2013-14 report. Over the period of 2006-2013, Pakistan has slipped down 28 positions making it the 4th biggest decline out of all economies.

The report has also identified the inadequately educated workforce (at 12th out of 15) as the most problematic factor for doing business in Pakistan and only 60% get employed after course completion (Latchem, 2014). Pakistan lags behind in innovation and technology and falls among one of the lowest scoring countries in GII 2013, ranking at 137 out of 142 countries. The major factors among others are lack of research and development and business sophistications. With 3.5% of tertiary education only 30.4% of workers fall in the category of knowledge workers, 19.5% of employment can be termed as knowledge intensive and only 6.7% of firms' offer formal training (Cornell University et al., 2013).

In developing countries like Pakistan, lack of skills is thought to be one of the key determinants of major social problems such as unemployment, poverty and crime. Vocational training may be the best chance to help unemployed young people who are at the bottom of the income distribution, and have no formal education. It can uplift their economic strength by providing them with demand driven skills (Attanasio et al., 2009). However, Pakistan inherited a weak Vocational Education and Training (VET) base at the time of independence in 1947 (Akram and Khan, 2007). The skilled workforce produced in Pakistan is neither demand driven for domestic or global markets, nor have the plans for technical/vocational education, been

conceived without due analysis of the employment situation or the changing patterns of the skills (Janjua, 2011).

Moreover, studies have shown that in an underdeveloped or a developing country, delivering TVET is somewhat problematic because the systems that provide TVET usually require the liaison of four sets of stakeholder's viz., the government, industry, the student and the community (Gaidzanwa, 2008). Previous studies have also identified the level of collaboration between the stakeholders as a prime factor in upgrading the skill levels of trainees. TVET system needs partners where its trainees can demonstrate the skills acquired from technical and vocational institutions (Komla et al., 2011). The industry can play the role of a partner and provide livelihood for the workforce as well as participate in further skill development by introducing new technologies in line with international trends. But the workforce produced by technical institutions in developing countries lack the skill levels required by the industry/market in general. (Amankwah et al., 2001), which supports the assumption of a weak link between the industry and the institutions. Pakistan too is weak in these liaisons. The community's attitude towards technical and vocational education is not very encouraging and it is not held at par with other qualifications. Although, the government is trying to promote technical and vocational training as a strategy to reduce unemployment and to strengthen its young labour workforce, but has not yet been able to achieve its targets. Consequently, the institutions are not aware of the industrial demands, and neither is there any system, that directs the industries to provide a breeding ground for trainees, or that requires feedback on any of the related issues, which could assist in creating required future workforce hence the workforce produced remains unutilized.

This study is an effort to highlight the need of liaison between industry and institution, and could provide a guideline for the formulation of effective strategies by TEVT management in the light of feedback provided by industry which is further categorized into three main stakeholders i.e. Employer, Principals of TEVT Institutions and graduates by the same institutions who are working in the respective industry.

1.4 STATEMENT OF THE PROBLEM

Despite a well-established Ministry of Science and Technology, technical and vocational institutions, polytechnics, technical colleges and universities, Pakistan has been unable to make a mark in the technological domain. Approach of the populace towards TVET, lack of up to date relevant human and material resources, adequate orientation and most of all absence of a strong link with the industry are some of the prominent factors responsible

for limiting the impact of TVET. Pakistan's quest for, economic development, technological transformation and indigenous productivity can only be augmented through strengthening of TVET –industry partnership via production of demand driven competent people, who are capable of applying their skills and indigenous knowledge.

1.5 OVERALL AIMS

Unemployment and poverty are on the rise in Pakistan and lack of labor participation is one of the contributing factors. Absorption of skilled, semi-skilled and unskilled manpower in the related industries can increase labor participation but absence of co-ordination among the stakeholders i.e. industry, institutions, government and technically skilled students is a major hurdle. This research aims to identify the existing gaps, such as a lack of latest industry relevant skills in the TVET graduates, or the absence of liaison between the institutions and the related industries. The study is exploratory in nature as the overall objectives of the study are to assess the present situation of technical education and vocational training in Pakistan. Broadly the objectives can be described as under:

1. To review the TVET system in Pakistan
2. To assess the exposure of TVET learners to industrial environment during their learning/course period
3. To review the employers' and students' perceptions of the standard of TVET institutions

1.6 PILOT SURVEYS

The TVET system so far has been a neglected area in Pakistan, and except for government reports, scant data is available that could assist in highlighting the gaps in this area. On the other hand, the relevant published literature highlighted the importance and gaps in TVET around the world. Presence of a strong link between the stakeholders, particularly the TVET graduates, the institutions and the industry has been seen to be one of the most prioritized need or step towards improvement, which serves a twofold purpose, i.e. the curricula gets to be improved with the help of the feedback from the industry resulting in a demand driven workforce. in, the industry gets to have an already trained employees. To assess the situation in Pakistan, two pilot studies were conducted, discussed as follows:

1.6.1 The First Pilot Study: Identification of Gaps in TVET Curricula

The first pilot survey was done in a technical institution of Punjab TEVTA. Two samples comprising of 20 students each of final years of the DAE Electrical and Mechanical trades were selected. Both the sample groups were given two assessment tools, i.e. a Personality Assessment Tool **(Annex-A)** to assess the gaps existing at the students' level in terms of their personality and other related issues, and a Skills' Gaps Assessment Tool (**Annex-B**) to evaluate the perception of the students regarding the standard of skills and training they were receiving from their institution, mainly to evaluate the existing TVET curricula. The gaps thus identified were as follows:

1. Lack of Interpersonal Skills
2. The students had not exercised their own will in choosing the trade rather they were guided by their family or friends.
3. Most of them had poor communication skills. They received no soft skills training (CV writing & Interview skills etc).
4. Lack of practical training skills
5. Majority of the students felt that their course work held outdated material, was mostly theoretical and lacked practical training
6. There was no proper system of career counseling for the students that could help them in selecting the right trade / technology according to their aptitude, at the time of admissions.
7. There were no proper arrangements for students' visits to their relevant industries to prepare them beforehand for their working environment. During their three years of Diploma, only one industry visit was arranged
8. There was no on job training system for the students. Only one industry visited the institution in three years.
9. No industrial training or visits of instructional staff to the industry were arranged
10. No job fairs / workshops / seminars were arranged at the institutional level to create awareness among the students.
11. In their opinion, there was no strategy or commitment on part of the institutions with regards the maintenance of a strong liaison with the industry.
12. many of the courses demanded by the industry and had a job market such as Masonry, Shuttering, Carpentry, Painting skills and Marble Fixing etc. were not being offered by the institutions.

1.6.2 Second Pilot Study: Overseas Employment Corporation (OEC)

In the second pilot study, the researcher sat as an observer during the interviews of skilled workforce of DAE (Electrical, Mechanical & Civil) technology that were being held at the Overseas Employment Corporation (OEC) office on 26th December, 2012, for a foreign recruitment by foreign employers. The gaps observed by the researcher during the interview session were as under:

1. They were not prepared for the interviews and failed to present themselves as professionals
2. Lack of understandings of drawings, which were supposed to be essential components of their course work.
3. Lack of analytical skills in practical problems.
4. Had no understanding of their future work environment.
5. They seemed to have outdated/ obsolete knowledge and were not up to date with reference to the market demands
6. The interviewees were found to be non-impressive by the recruiting employers
7. In light of their past experiences, the foreign employers were apprehensive of the unethical practices of Pakistan's skilled workforce
8. The interviewee graduates gave an impression of being unenthusiastic, non-committed and without any drive for learning the skills.
9. Lack of interpersonal, communication and soft skills was also prominent

1.7 BROAD HYPOTHESES

With the help of the pilot studies and the literature, the following hypotheses were framed for enhanced focus:

1. Skills acquired by TVET graduates are inadequate for their industrial work experience.
2. There is no linkage/partnership between industry and TVET institutions.

1.8 SIGNIFICANCE AND SCOPE OF STUDY

Pakistan is producing almost 0.3 million skilled workforce in more than three thousand technical and vocational training institutions (Pakistan Education Statistics, 2011-12). The skilled workforce produced by these intuitions mostly comes from the lower strata of the society. A major part of this skilled force moves to Middle East countries for jobs and remaining are engaged in self-employment activities which means these Graduates of TVET System are contribution in the economic strength of the country. Therefore, this study covers an important sector of the society and is expected to be helpful to uplift the TVET system that may contribute towards national development. It emphases to provide the demand driven workforce to the industry and let the employers help the TVET management in aligning the TVET system with the job market.

The need for this study cannot be over emphasized in the current socio-economic and political crises faced by Pakistan. The findings of the study have implications for policy-makers and curriculum planners, who need to update the TVET curricula in terms of provision of latest technology in alignment with the industry needs and demands. The employers i.e., the industry too can participate in the curriculum development by offering their industrial training grounds/fields and can get an access to its required ready-made workforce. With boost of technological innovation, TVET has become a center of focus globally, making it an academically rich area for researchers.

CHAPTER 2

LITERATURE REVIEW

2.1 TECHNICAL AND VOCATIONAL EDUCATION

Technical and vocational education is an organized educational activity that offers a sequence of courses and equips the individuals with the technical knowledge and skills (Zelloth, 2014). It imparts practical skills and engenders the understanding of employment in a particular trade (course) and technology in the trainees and enables the skilled youth to make healthy contribution to the social and economic development of a nation (Ali, 2011). It not only serves the unemployed youth but also reduces the burden on higher education, attracts foreign investment, ensures rapid growth of earnings and reduces the inequality of earnings (Alam, 2007). It particularly caters for the poorer segment of the society in terms of education, occupations, and family income (Latchem, 2014). As the TVET system produces skilled human resource for the industry and therefore, it can revolutionize the economic condition of a poor country, which has huge population but scarce resources.

Special consideration is being paid to the vocational workforce worldwide, especially Europe where almost in many countries, over half of upper secondary students are in vocational educational and training (Symonds, 2011). In developing countries, lack of skills is thought to be one of the key determinants of major social problems such as unemployment, poverty and crime. Technical and vocational training may be the best chance to help unemployed youth who are at the bottom of the income distribution. It can uplift their economic strength by providing them with demand driven skills (Attanasio et al., 2009) and hence can help in reduction of unemployment.

Unfortunately, in spite of the crucial role of TEVT system, it does not find support and due respect either from the public or the policymakers (UNESCO, 2009) in developing countries, whereas it could be a great source for provision of the manpower requirements of any growing economy (Agrawal, 2014). Therefore the poor and developing countries can utilize and focus on technical and vocational education because the skilled workforce supports the activities, processes and intensive manufacturing of day to day production, technology maintenance and repair.

The successful transaction of young graduates from education to workplace is shaped by various structural and institutional relations with its

external environment particularly with labour market (Murray and Polesel, 2013). Therefore, in various countries, the community is also playing equal contribution in provision of quality skills to the TVET graduates. For example, in Nigeria, the training of students and institutions are not left alone, rather the whole community ensures the successful execution of all training programs at the institute. The ultimate goal for inclusion of the community and maintaining relations with market is that TVET graduates should hold the degrees that reflect the expectation of the employers. This linkage helps to inject the skills required by employers and the markets (Pap and Risko, 2014). The identification of required sill is only possible with linkage of TVET with other stakeholders.

2.2 LINKAGE OF TVET SYSTEM WITH INDUSTRY

Technical education and the industry are closely interlinked, and together they provide stability to a nation's economy through higher labor force participation (Komla et al., 2011) and the link between the TVET institutions and the industry cannot be overemphasized. There are a number of benefits associated with the development of links such as the technical institutions need partners to absorb their graduates and become valuable citizens for the country, and it is the industry that can play the role of a partner and provide the opportunity to the skilled workforce to demonstrate the acquired skills and to earn their livelihood. Furthermore, the institutions need to be in touch with the industry to get its feedback on the new technologies that are being used in the international market. Similarly, the industries too need the technical institutions as they are the main source of skilled workforce. Butthe dream of producing sophisticated skilled manpower cannot be materialized unless there is a link between the two. The goal of competing in the global market through sophisticated manufacturing cannot be achieved unless the industry does not participate and provide its input in the development of curricula and strategies for provision of quality trainings to the trainees. Therefore, both technical educational and industry jointly are the backbone of and help in sustaining the economic strength of a country (Komla et al., 2011). The strong linkage between the two plays a pivotal role in enhancing the economic position of the country and it could be an effective step towards poverty alleviation and national development, particularly, in developing countries like Pakistan, where the unemployed can participate in the labor market through TVET education and gain economic strength with demand driven skills (Attanasio et al., 2009).

It has been observed that many young TVET graduates struggle to find job and even settle down to stable positions in the market. The best possible

way to deal with this transition problem is to link trainees more closely to jobs during the vocational education programs and through apprenticeships with industry (Hanushek et al., 2011). Countries, world-wide are focusing to bring close both industries and the institutions especially the technical institutions, to meet industrial demands. Their cooperation is vital for both educational institutions and performance of the industries in their relevant markets. This strong coordination between vocational and occupation will lessen the burden on universities by reducing the enrollment. Thus it will help to bring more quality in higher education (Andersen and Van de Werfhorst, 2010). The industry-institution linkage has become more prominent because the advanced knowledge provided by industry has become integral component for new products or services (D'Este and Patel. (2007).It has been suggested that to promote socio-economic development through industrial development, competency based training should be included in curricula with the consultation of employers (Ansah and Ernest, 2013).

The developed countries have focused on strengthening the relationship between industry and technical education (Bartlett, 2000). But the collaboration between TVET institutions and industries in developing countries is still far below than the expectations as compared to the developed countries. In developing countries the major issue is that the form of education has not been adequately addressed. There is no policy to define how much education should be general and how much should be vocational (Hanushek, 2013). Vocational education is based on specific jobs and is more attractive for the countries like Pakistan, which have large population and high unemployment rates. Due to the lack of cooperation many organizations have to retrain their new skilled employees immediately after recruitment (Obwoge et al., 2013). In recent years the field of workforce development in relation with workplace has been emerged as most important area for research for scholar. They see its role in economic deployment through industrial development by provision of market oriented workforce (Schrock, 2014).

The quality and demand driven skilled workforce cannot be produced by TVET institutions in isolation. Interlink between both the parties is considered necessary, as the era of globalization, knowledge based and market oriented skilled workforce has gained particular importance. The development and induction of new technologies have given birth to the concept of 'sophisticated manufacturing'. This has revolutionized both manufacturing and service industry (Lall et al., 2005). To meet global challenges, the high-tech industries in European countries are focusing on sophisticated methods comprising latest technological applications for manufacturing products. This high-tech industry is emerging rapidly only in the developed countries and one factor could be that the TVET system in those countries is working in collaboration with the

industry. The development of closely knit TVET system is the first step towards the sophisticated manufacturing. To achieve recognition of their products at global level these industries have also updated the knowledge and skill levels of their workforces that was a prerequisite for the production of more sophisticated goods or services. Therefore, developed nations are focusing on upgrading their semiskilled workforce to fully skilled people to achieve the global recognition of their goods (Seng, 2007).

Many agencies in developed countries are playing a bridging role between TVET institutions and the industries. One of the most prominent one is the Center for Research on Education and Qualifications in France, which undertakes a range of regional, sectarian and educational level studies. The Bundes Institute Bersfsaus Building in Germany is another which plays a similar role but is more focused upon the vocational education and training sector. Europe Union and its neighboring countries have made significant efforts to improve their vocational education and training system by formulating policies and strategies. They formulated these polices according to their specific priorities for human resource development, for sharing their role in the globalized economy. They are also improving their existing curricula, learning arrangements and textbooks for producing quality workforce and job oriented skilled workforce (Wallenborn, 2010). Across the Europe Union, the Vocational Education and Training research agency, Centre European Development de la Formation Professionals, plays a major coordination and integration role in labor market, education and training studies and the links between them (Keating, 2009).

According to the ILO (2008), efforts to strengthen workforce quality should be based on a country's economic objectives. It also depends upon the relationship between industry and TVET system (Martinez-Fernandez and Powell, 2009). ILO (2008) identifies the following elements in the improvement of training systems:

1. Continued expansion of the TVET system in the least-developed member countries and in some middle-income economies and its upgrading of quality and relevance to the labor market.

2. Encouraging co-operation between the business community and education and training providers is an effective and feasible way to reduce the mismatch between TVET outcomes and employment opportunities.

The weak liaison between industry and institution in developing countries has raised the unemployment ratio and poverty level. Modernizing

the VET system according to the international levels is required to sustain and strength economy of a country (Akhtaruzzaman and Clement, 2011). It is necessary for decent employment of skilled workforce in the market to upgrade the skills keeping in view the global competitiveness. In this regard industry has to support process by pursuing their institutional human resources development programs for their workers (Syjuco, 2009).

2.3 LABOR MARKET DEMANDS

Fast paced industrial developments have changed the employment market demands and technical institutions are expected to produce demand driven skilled workforce. The management of TVET system has to formulate the policies in light of the global market requisites. The curricula of vocational and technical education ought to be formulated keeping in view the physical, psychological and social needs. The infrastructure needs to be modernized as well and be the one that facilitates long distance and e-learning (Umunadi, 2014).

To address the global demand countries are revising their TVET policies as per international job market. For example, Chinese education has been dominated by Confucianism but with the rapid industrialization, changing of demand of markets, China has adopted various Western policies for the public interest (Schmidtke and Chen, 2012). A research in US has been carried out that the demand of the employers is not only limited to only handling of tools and equipment but also on applied skills (Stuen et al., 2012). In some cases it has been observed that products being produced by the organization are more than the expectation of their customer and customer receive more than demanded which is problematic (Arpaia and Mourre, 2012; Lukas et al., 2013). This is also happening with the TVET institution, they are providing the some skills that are not required by the employers and employers have to work on to unlearn those skills by the students. Therefore, a large percentage of employers have to train their new skilled workforce in the areas of critical thinking, problem solving, ethics, social responsibility, professionalism, work ethic, creativity / innovation and lifelong learning / self-direction.

To produce demand driven skilled workforce, the teaching materials of theoretical and practical training are being reviewed and upgraded from time to time keeping in view the demand of employers. Beside that number of practical trainings to the trainees and instructional staff has also been increased (Papp and Risko, 2014).

The young graduates are lacking in applying the knowledge and skills at workplace that they learned from institutions (Casner-Lotto and Barrington, 2006) because their institutions are not in linkage with the industry in developing countries. There are various skills that have to be learned and found lacking among the trainees even after completing their studies. The majority of TVET graduates lack in communication skills because they belong to low background. In the world of globalization, employers are focusing the communication skills the important skills that help the trainees to understand the new trends through discussion with other and as team workers as well (Murgor, 2014). It has been observed that the counseling and guidance helps the students to develop career competencies and ultimately they are more motivated because it helps them to develop career identity (Meijers et al., 2013). Keeping in view the role and importance of vocational training for the economic development of the country, research is being made how to cop the career adapt-abilities of the students with the employability skills to produce quality workforce. For this purpose career counseling and guidance services have been introduce to guide the students to adopt the technology that suits to their interest (Brown et al., 2012; de Guzman and Choi, 2013). Enterprise based trainings including entrepreneurial, communication, financial and leadership skills, led the TVET graduates to start their own small business which is another bright aspect of TVET system that can be a valuable source for the economic growth of a country (Asunsung et al., 2013).

The job market now expects that the trainees should have know-how about the skills before taking proper admission in the institute. This would help the trainees to learn the skills in details and develop his interest in the early age. Workforce should be complete in every aspect; therefore, the developed countries are introducing the Technical Education in the secondary level before entering into the formal Technical & Vocational Institution. Hyslop (2011) have highlighted that only those trainees who have personal interest can exploit their potential in better way. Therefore, developed countries have appointed psychologist at primary level in their institute so that the potential can be recognized at the lower level.

The transfer of technology from industries to TVET institution is inevitable for producing demand driven graduates. This will help institute to train its students exactly to what is in the market and will reduce the training cost of new employee. It also provides opportunities for institutions to work on problems arise time to time on products reported by industry as research work. It might reduce course duration and also offers the courses on relevant matter or skills (Augustine et al., 2013).

2.4 COORDINATION AMONG TVET STAKEHOLDERS

In developed countries, all the stakeholders are working in coordination with each other to produce competent and demand-driven skilled workforce (Bartlett, 2000). The developed countries are recognizing the role of TVET sector by linking it with human resource development (HRD). The collaboration between vocational education and HRD improve the labor market supply and demand which is beneficial for students, employers and society. Keeping in view of its importance newly liberated countries in North America and the Middle East are restructuring their TVET sector by introducing apprenticeship model that links the students with the labour market (Hill et al., 2013). They are focusing on upgrading the skills level of their teachers and trainees. Research and development activities are the source of innovation and ensure long term success. Therefore, industries in developed countries have established research and development centers to identify the latest technologies to be communicated and transform to the technical institution (Gentry and Shen, 2013). There is a continuous feedback loop between the technical institutions, industry, alumni and the families of the students/trainees. This helps to underline the importance of the TVET system for all stakeholders. Governments are taking deep interest in promoting TVET culture around the globe. Now a day's governments in many developing countries are accelerating their investments in technical and vocational educations (TVET) to advance the skills of its young population many of whom have had no opportunity to enroll in or graduate from the traditional education system and to meet the needs of future industrial growth. With this investment comes a great opportunity to rethink what TVET needs to be.

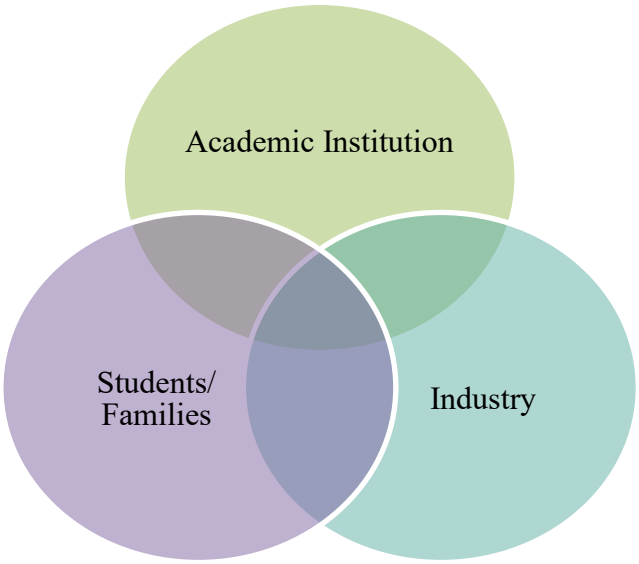

Figure 1.1: Liaisons among TVET Stakeholders
Resource: Amankwah et al., (2001)

The feedback of the employer matters in making up the deficiencies of employability skills of TVET graduates. Lack of coordination between the industry and institution raises the cost of industry in terms of training the skilled workforce (Gaidzanwa, 2008). In the current era, the industry is spending considerable amount of time and resources to re-skill fresh engineering graduates because their skills is not demand driven. Consequently, fresh graduates take up valuable time to become productive members of their employing organizations (Gupta, 2011). Technical institutions need to understand the training requirements and provide customized curricula which can effectively meet these needs. It should be encouraged that prospective employers visit the institutions for placement, to select engineering candidates in the beginning of the last year. The institute could then train the selected candidates based on the inputs of training needs required by the employer (Figure 1.1). This would require redefining the scope of the Industry-Institute collaboration, but would also help the Industry cut training costs to a large extent (Gupta, 2011).

The development of skills is not in response to the market demand it would a step towards to the unemployment and wise effort would be in vain. Therefore, TVET system course should be based market based, and there should be a market information system that should be efficient and effective in provision of constant changes in the market (Agrawal, 2014). In developing countries lack of skills is thought to be one of the key determinants of major social problems such as unemployment, poverty and crime. Vocational training may help unemployed young people who are at the bottom of the income distribution, and have no formal education. It can uplift their economic strength by providing them with demand driven skills (Attanasio et al., 2009). In an underdeveloped country, delivering VET is problematic because the systems that provide VET in the developed and industrialized regions rely on the liaison of four sets of stakeholders, i.e. Government, Industry / Employers, Trainee / students and community (Gaidzanwa, 2008).

The Government is the fourth important stakeholder that provides linkage, formulates policies and procedures to run the national industry and educational institutions in the country. It is responsible for success and failure of TVET system in the country because it ensures that TVET system is aligned with current and future demand of the country. It also involves the business community and design laws and regulations which support TVET program (MacDonald et al., 2010). It can play vital role in building the relation between industry and technical institutions. In third world countries it is the prime responsibilities of government to bind the industry to provide the internship / On Job Training to the trainees so that they may have better awareness of industrial environment. On Job Training should be made compulsory along

with strong linkages to increase relevance and absorption of TVET graduates in industry (Maringa, 2014).

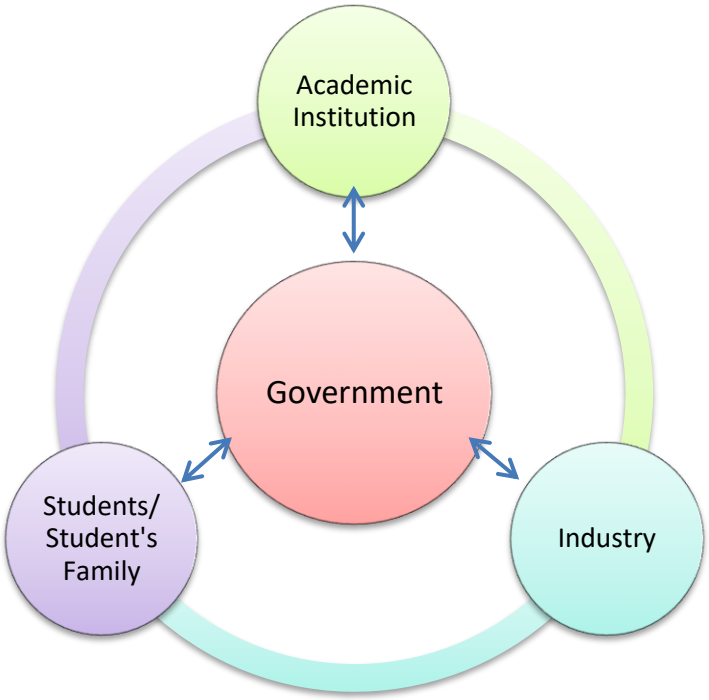

Figure 1.2: Liaison among Four TVET Stakeholders

Therefore, the main difference in TEVT systems in developed and developing countries is the level of collaboration among the stakeholders which is a prime factor in upgrading the skill levels of trainees. The workforce produced by technical institutions in developing countries lack the skill levels required by the industry/market in general (Kell et al., 2014).

2.5 WORLD-WIDE IMPACT OF TVET SYSTEM AND INDUSTRY

It has been observed that developing countries follow and adopt the successful system of the developed nation. However, the literature shows the same type of TVET programs which is successful in one country cannot be replicated. Various factors, including cultural and societal may impacts on how youth move to work and career, as their characters and capabilities are shaped by these factors. The successful TVET programs of other countries become less useful because it is not aligned with the needs of industry (Stuart, 2012). Therefore, countries need to customize the successful program or system of other countries as per their demands and requirements.

Countries all over the world have realized the vital contribution of the TVET in the economic development of their countries. Therefore, they are

spending lot of money for the up-gradation of the infrastructure of TVET system and connecting them with their industrial sector. In these countries both TVET system and employers are working jointly. The TVET system of Australia, Germany, Japan, U.S. and Malaysia etc. are the best example to be followed by the under developing countries like Pakistan. The government of Ghana has initiated various initiatives to equip their graduates as per market demand. Recently, Competency Based Training programs have been introduced in its TVET system to equip graduates with the required workplace and professional skills to reduce unemployment (Boahin and Hofman, 2012).

The TVET System of Australia considers all the strata of the society and facilitates in every circumstance whenever and wherever they let themselves to grow. According to Stephen Lamb (2011), the Australian government has targeted the early school leavers and also helping the adults who has left their formal education so many years before. They have recognized technical and vocational education as pivotal contributor in economic development and social wellbeing of their people. It brings close the socially and economically divided people, thus it is playing important role in uniting the sooty which is good sign for the progress of the country. They are ready to meet the challenges of the 21st century and also planned, proactive for building and sustaining the change (Saunders, 2012). In Australia the labor markets is more regulated as compared to some other developed nations in terms of the types and level of qualifications required for occupations and industry jobs (Keating, 2009). Australian technical education is placing a lot of emphasis on generating skilled labor at school level keeping in view the demands of industry and it is the industry that theoretically defines the vocational qualification they require in their skilled workers. Many intermediary agencies are also working as a link between the labor market and education and training programs and qualifications. In 2005 the Australian employment services industry was estimated to be worth US$ 8.16bn - of which 88% was generated through temporary placements and the remainder through permanent placements - meaning that the temporary staffing industry accounted for 1.5% of the country's GDP (Coe et al., 2008).

In South Africa, Government is revising policies for vocational education keeping in view shortage of skills and inflexible market which is causing unemployment. They are working on legislation that will protect the young graduates and bound employers to provide on job training to the trainees. The on-job-training will help in gainful employment of the graduates and quality workforce to the job market (Allais, 2012).

Malaysia like other developed countries is also focusing to produce demand driven technically skilled people, not only in terms of skills but they

are showing concern other weak area in collaboration with employers. People are technically skilled but they are not motivated and lacking in interpersonal, critical thinking, problem solving and entrepreneurship skills (Sua, 2012). Husman (2005) has also pointed out that more than half graduates from technical field have technical skills but are still unemployed because they did not acquire employability skills. They are all agreed that several short courses should be conducted in order to develop the request skills so that they could earn their livelihood.

Malaysian Government is also strengthening their Vocational Education and Training (VET) in response to the challenge of the skilled manpower demands arising from an all-out effort to expand the economy. Its government has renewed its efforts to turn itself into a fully industrialized nation by the year 2020 (Ibrahim, 2010). In industrialized countries, efforts have been made by governments to generate human skills to increase labor productivity so that it can improve the economy (Abbasenejad et al., 2011). But for these efforts to succeed there have to be jobs on offer for qualified skilled employees so families are assured that the investment in their children's education will give an economic return. Malaysian Government is focusing to include the employment skills in the curricula that will help the transition from school to work and ultimately will reduce unemployment. They are of the view it need not to start it with new subject rather these skills may be infused in the existing curricula (Bakar et al., 2013). The Ministry of Education of Malaysia is working on the issues of employment skills. The TVET institute facing funding problems are funded and strengthened. They are also inviting the volunteer organization either within or outside the country that are willing to offer places and facilities for students to develop the much needed employment skills. They are formulating a professional body that will coordinate for implementation of employment skills inside or outside the class rooms (Dania et al., 2014).

The Ministry of Higher Education of Malaysia has aggressively launched a mission to equip the students with soft skills in order to produce high quality human capital, knowledgeable, competitive, creative and innovative in line with industry requirements and social needs of the country. Bridgstock (2009) also reminded that Malaysia is considering soft and technical skills that are required by employers when reviewing job applicants. So the TVET system in Malaysia is closely working with the industry and both understand the need of each other.

Taiwan is also thinking to bring TVET sector and industry close to each other for reducing the pressure of oversupply on its technical institutions. For this purpose they have developed a sector specific model for technical and

vocational institutions. This model will integrates the TVET institutions with specific industry and also analyze the institutional performance by integrating it with the model (Huang, 2012). A study carried out in Taiwan, for uplift of TVET system has pointed that for the production of quality skilled workforce, the industry-academic collaboration and curriculum design in line with industry demand is compulsory. A strategic alliance and partnership with prestigious institutions or universities is necessary for innovation and to gain competitive advantage in the market (Huang and Lee, 2012).

The employers in America are not satisfied all over the world by the skilled workforce produced of their countries. Technically skilled people in America do not have enough technical skills or knowledge because they do not have enough non-technical skills (Rasul et al., 2010). This means employers are showing concern on the services by the TVET system which shows the interest of the industry and that is healthy sign for the TVET system because in future Government will pay attention for the development of TVET sector.

All over the world, focused has been remained on the gaps between industry and TVET institutions. During a research carried out in Saudi Arabia, it has been observed the gaps between private sector employers and potential skilled worker produce by TVET institution in Saud Arabia. The perceived skills gap centers on three factors including work ethics, specialized knowledge and generic skills (Baqadir et al., 2011). China like USA, Germany and UK is also reducing the gap between its engineering education and engineering practice. They are focusing to bridge the network among all the stakeholders of TVET sector including institution, government, industry and students. This network will help in provision of quality workforce to the industry, reduce unemployment and ultimately bring prosperity to the country (Wang, et al., 2011). Keeping in view the role of VET in economic development, China is focusing to uplift the vocational education by bringing it at par with general education because it promote employment and solve the issues pertinent to agriculture and industrial sector (Wang and Ross, 2013).

The role of TVET system for the production of skilled manpower-integral component for economic development-cannot be achieved if an efficient and effective teaching and examination is not maintained. No nation can progress without vocational and technical education. Therefore, solution to the economic development for a country is that there should be strong commitment for accepting vocational and technical education. The TVET graduates are not being given proper training in developing countries, therefore, are unable to be engaged in the area of maintenance of roads, pipe water, electricity, refineries, improving the food supplies and other areas of practical life (Obiwerei and Nwosu, 2013). In most of the developed Asian

countries (China, Indonesia, Malaysia, and Thailand) the TVET system has been very successful and has made important contribution in the economic development. In these countries there is strong liaison between the TVET institutions and industry. The TVET system in these countries is providing demand driven skilled workforce to the job market due to collaboration among TVET stakeholders. But TVET system has not matured enough to fulfill the demand in the global job market. It also has been contributing its role in under developing countries like Pakistan, Afghanistan and Bangladesh but has not been as successful as in other developed countries of Asia. In developing or underdeveloped countries, delivering TEVT is problematic because the systems that provide TEVT in the developed and industrialized regions rely on the liaison of four sets of stakeholders (Gaidzanwa, 2008). The first set of stakeholders is that of employers who need workers with technical skills to keep businesses competitive. The second set consists of governments who want their national workforces to attract multi nationals' employers as well as to provide skilled workers for state enterprises. Other stakeholders are the trainees/students and their families. It has been assessed that in these countries have a weak liaison between the TVET institution and the industry (Agrawal, 2013). The TVET system in developing countries is also sustains the economic development because it equips the people with the life-skills necessary for the labour market. This system also provides technical support to keep up with the fast changing market by expanding the necessary skills and competencies to the TVET graduates. This type of education considered to be a source for maintaining the quality of life of the people through developing knowledge and skills required in the market (Oluwale et al., 2013).

A search carried out in Bangladesh has pointed out that participation of industry in curriculum development is necessary for engendering relevant job oriented skills among the TVET graduates. It also helps in removing the irrelevant matter which is overburden on the students. The question selected for the assessment should measure the particle approach of the students (Haolader et al., 2013). In Bangladesh it has been emphasized that TVET system may be given a status of industry because it generates the skilled manpower that runs the industry. They are also thinking to establish a central communication-hub that will responsible for creating communication n channel between pass outs of TVET institute and the concerned industry (Newaz, 2013).

The TVET system in Sri Lanka is more structured as compared to Pakistan, India and Bangladesh. The TVET system in Sri Lanka is the most priority for the Government (Maurer, 2012) and is focusing the employability of TVET graduates in industry which is very vital in every country. The Government is focusing to train their instructional staff and inject in them the

spirit of enthusiasm to train their graduates keeping in view the job market. Chandrakumara (2014) has emphasized that students should acquire professional qualification and hard skills, soft skills and social capital is not requires in every job. The graduates should be trained with enthusiasm keeping in view the challenges they have to face at workplace. This shows that Sri Lankan is conscious about the linkage of TVET system with the employers.

2.6 TVET SYSTEM IN PAKISTAN

TVET system in Pakistan is designed on a bi-layered form. At Federal level, National Vocational and Technical Training Commission (NAVTTC) and at provincial level Technical Educational and Vocational Training Authorities (TEVTAs) are managing TVET institutions. The programs are organized by various federal, provincial and private agencies; vocational institutions, Technical Training Centers and Apprenticeship Training Centers are now under the supervisions of provincially administered TEVTAs.

According to Agrawal (2013) in Pakistan, unfortunately skills development has been among the most neglected areas. No serious efforts have been made to improve vocational and job skills. The five big challenges in vocational education in Pakistan are:

1. 30 to 40 % teaching posts are lying vacant and existing faculty do not have enough industrial experience.
2. Curriculum is next most important factor, the mostly the books are imported and in English medium, the curriculum followed is outdated, equipment machinery are obsolete. The next is course curriculum: most text books are imported and in the English language, the curriculum followed in the institutions is out-dated and theoretical.
3. The teaching and learning materials are of not good quality,
4. The drop-out ratio from the institutions is very high.
5. There is a weak linkage between TVET institutions and industry.

In recent past, the National Vocational Technical Training Commission (2014) has developed a National Skills Strategy 2009-2013. The main objectives of NSS are: production of relevant skilled workforce for industry, easy access to equality and employability and assurance of quality trainings by integrated approach. The NSS has three main objectives: the provision of relevant skills for industrial and economic development; the improvement of access, equity and employability; and the assurance of quality through an integrated approach. The government is also planning to set up additional

technical and vocational institutions and increasing the enrolment in institutions to fulfill the demand of industry. The GIZ is copartner of NAVTTC who is helping in implementing of NSS through various TVET Reforms projects with provincial TEVTAs along with other TVET organizations.

There are total 3,257 technical and vocational institutions of which 977 (30%) are in public sector and 2,280 (70%) in private sector. The total enrolment in the technical and vocational institutions is 0.289 million of which 0.126 million (44%) in public sector and 0.163 million (56%) in private sector. The total male enrolment in the technical and vocational institutions is 0.180 million (62%), whereas, the female enrolment is 0.109 million (38%). The total teachers in the technical and vocational institutions are 15,847, out of which 7,976 (50%) is in public and 7,871(50%) is in private sector. There are 10,768 (68%) male teachers and 5,079 (32%) female teachers (Pakistan Education Statistics, 2011-12). The size of the total workforce is 57.3 million.

Table 2.1
Statistics of TVET Institutions in Pakistan

Description	Public Institutions		Private Institutions		Total
	Number	% age	Number	%age	
No. of Institutions	977	30	2,280	70	3,257
Enrollment	0.126 m	44	0.163	56	0.289 m
Teachers	7,976	50	7,871	50	15,847

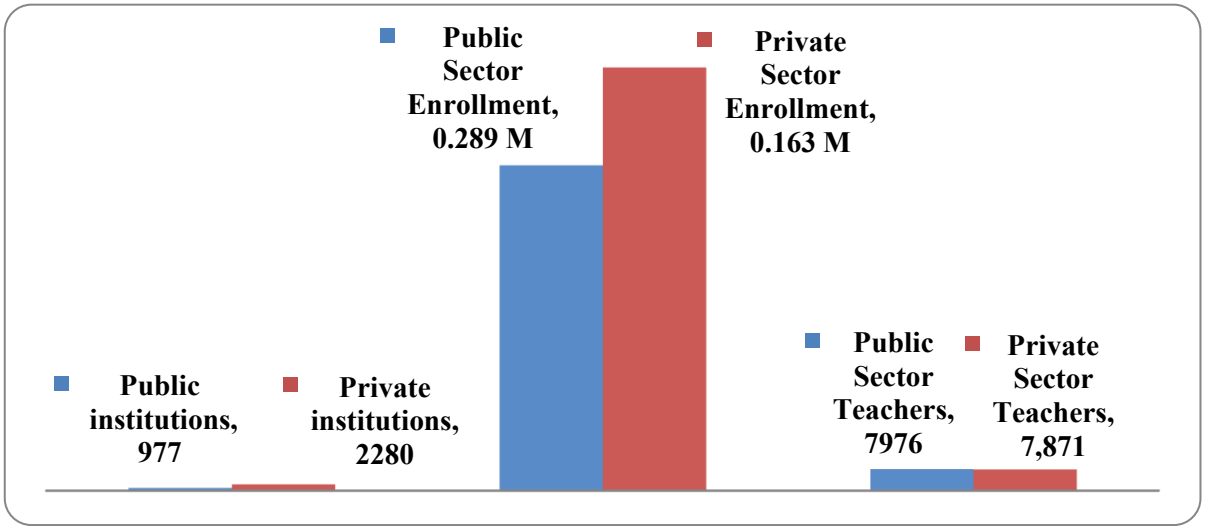

Figure 2.1: Statistics of TVET Institutions in Pakistan

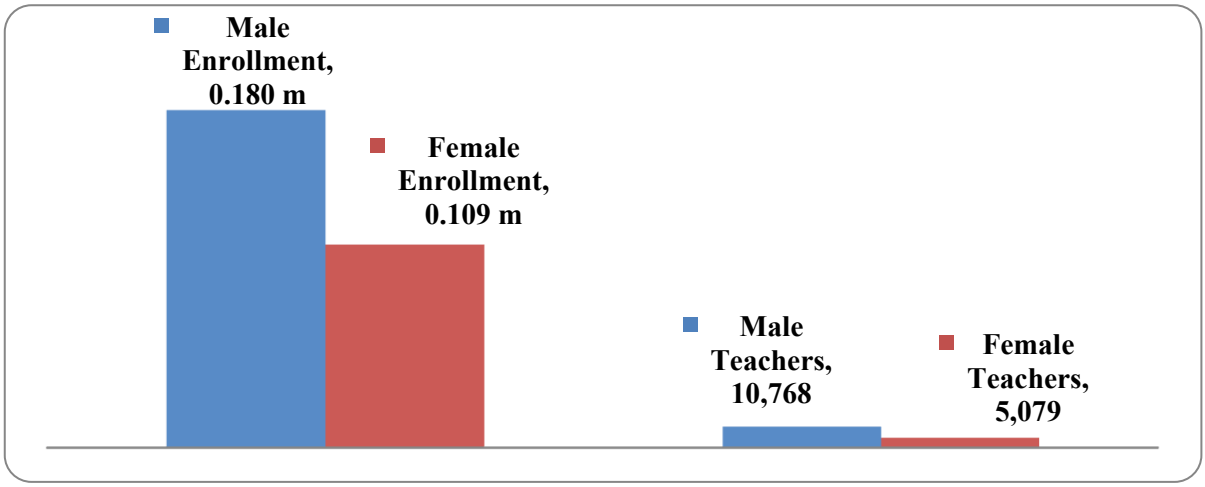

Figure 2.2: Gender wise Statistics of TVET Institutions in Pakistan

2.7 INDUSTRY-INSTITUTION LINKAGES IN PAKISTAN

Pakistan inherited a weak Vocational Education and Training (VET) base at the time of independence in 1947 (Akram and Khan, 2007). The skilled workforce produced in Pakistan is not demand driven for domestic or global markets, and the plans for technical/vocational education have been conceived without due analysis of the employment situation or the changing patterns of the skills (Janjua, 2011). Technological changes have shifted

At the time of independence Pakistan had very low industrial base and its contribution to the economy was only 4%. Pakistan realized to industrialize in 1950 and notable progress was made in 1960. The TVET system was paid special heed to increase and sustain the growth of the manufacturing sector in the country. In the beginning due to lack of resources and commitment of successive government the TVET sector could not speed up as it was required and gradually lost its way to fulfill the needs of the emerging job markets. A large number of drop outs and non-school –going children were engaged in the informal skills-imparting sector which is commonly known as system of traditional apprenticeship. Through this system only God gifted young people succeeded in their respective skill area.

In the current scenario, the Industry spends considerable amount of time and resources to re-skill fresh engineering graduates, simply because their skill levels and awareness is not up to the mark. Consequently, fresh graduates take up valuable time to become productive members of their employing organizations. Technical Institutions need to understand these training requirements and provide customized curricula which can effectively meet these needs. For instance, prospective employers visiting the institutions for

placement should be encouraged to select engineering candidates in the beginning of the last year. The institute could then train the selected candidates based on the inputs on training needs required by the employer. This would require redefining the scope of the Industry-Institute collaboration. The redefined scope of TVET Institute-industry linkage would help the Industry cut training costs to a large extent (Gupta, 2011). The potential of TVET can be capitalize by addressing the challenge of participation of employers in improving TVET curriculum to enhance the students' employability and reflect labour market needs (Mensah and Alagaraja, 2013).

The TVET System in developing countries have not been so successful in transmitting the technical skills, attitude, personnel skills and know-how that facilitate an individual to transmits its personality from formal system to job market (Grunwald and Becker, 2013). In the developed countries all the TVET stakeholders are working jointly for the production of demand driven skilled work. TVET system in several developed countries has been used as an instrument for national and sustainable development but it is not as good to the people as general education. The following recommendations should be followed by developing countries like Pakistan to produce marked driven skilled workforce (Okwelle et al., 2014):

1. Government should formulate steps for creating better image of TVET system among the masses.
2. Provision of funds by government for purchase of latest machinery and equipment relevant to the market
3. Infrastructure of career counseling and vocational guidance for students both at primary and secondary level
4. Strong liaison between TVET schools and industries

Historical references show that the effective TVET system is private-driven and also demands driven (Mehrotra, 2014).The concept of Public-Private Partnership is emerging in under developing countries like Pakistan. This concept is not yet formalized in Pakistan. The Government needs to formalize the contact between industry and TVET institutions. However the Apprenticeship Ordinance 1962 provides is only legal framework that provides an equal opportunities and bound employers to produce apprenticeship in various trades, like electrical, machinists, chemists and electricians, etc. (Chaudhary et al., 2013). But this produce only 10,000 to 12,000 apprentices annually which is quite low. For the smooth functioning of these TEVTA has to enter into formal agreements with the TVET stakeholders like Chambers, Trade Associations, Industrial States Association, major employers and recruitment(local & foreign) agencies. This public-private partnership would help as under:

1. Demand driven & Quality skilled labor
2. Industry will find quality skilled workforce
3. Explore new trades / technologies
4. Disseminate concept of entrepreneurship ideas
5. Raise employment ratio (local & foreign)
6. Better image of TVET system

Public–private partnership is envisaged in the form of active participation of the industry/private sector in every stage of design and implementation of this scheme:

1. Forecasting of emerging areas of employment at micro level
2. Development of course curricula of various trades
3. Development of instructional material for training
4. Assist in the training of trainers, wherever required
5. Making available their training and testing facilities, wherever required
6. Provide on-the-job training in their establishments
7. Development of assessment standards
8. Monitoring and quality assurance
9. Assistance in placement of graduates
10. Provide trade experts to work as assessors of competencies
11. Voluntary donation of equipment to the ITIs/other training institutions
12. Providing guest faculty in new trades

TVET system in Pakistan did not receive the due recognition from the planners and Government (Ansari and Wu, 2013). Numerous efforts have been made since 1947 to promote technical education but no progress was recorded as compared to the developed nations. Consequently Pakistan is facing serious skills gap and people are under pressure to acquire the job oriented skills. There are various reasons for it, including lack of commitment by the Government, outdated curricula, high student drop out ratio, out dated technology, lack of trained staff and market information. Instead of all these issues Pakistan has made considerable progress by establishing NAVTTC at federal level and TEVTAs at provincial level to National Skill Strategy (2009-13) for reforming TVET system. In Pakistan there are various factors that are the reasons of low quality of vocational training, including quality of contents, staff selection and qualification, teaching method, assessment and examination, counseling and vocational guidance, physical resources, management and organization, and interrelation with industry (Kamran et al, 2014).

2.8 ROLE OF RECRUITMENT AGENCIES IN LINKAGE OF TVET SYSTEM WITH INDUSTRY

The recruitment agencies have great role in building the liaison of technical and vocational institution with their relevant employers. These agencies are in linkage with the industry for the collection of jobs and arrangement of interviews for the TVET graduates. The recruitment agencies are public as well as private.

Overseas Employment Corporation (OEC) is the only one employment promotion agency in public sector that was established by the Government of Pakistan in 1976. Its main objective was to facilitate foreign employers in recruitment of manpower from Pakistan and to explore job opportunities for Pakistani workforce in abroad. For the last 37 years it is a highly renowned recruitment agency providing service for both public and private categories. Since its inception it claims to supply more than 135,000 manpower including qualified professionals of medicine, engineering, education, science, agriculture, manufacturing, services, and shipping etc. (Overseas Employment Corporation, 2014).

There are 2170 private foreign recruiters working in Pakistan (Bureau of Emigration & Overseas Employment of Pakistan, 2013). These recruiters are registered and license has been issued by the Bureau of Emigration for foreign employment. The recruiters remain in contact with the foreign industries and their demand is advertised in the local newspapers. The delegations of the foreign companies test the candidate's skills and other required abilities on the working place, and selected candidates are exported through the platform of Bureau of Emigration & Overseas Employment of Pakistan. The recruiters are engaged in foreign placement for various countries but majority of the stakeholders are the industrialists of Middle East Countries. According to Hamdan (2011) in the world of globalization, the role educational institutions has been changed and increased. These institutions need to interact with other progressive actor like industry. The collaboration between industry and institutions could boast the economic condition of the country. The close interaction between the two not only transfer knowledge but will also give competitive advantage to the products of the industry which will ensure the prosperity of the country.

CHAPTER 3

METHODOLOGY

3.1 RESEARCH DESIGN AND THE OBJECTIVES

The objectives of this research are to explore the present situation of technical education and vocational training in Pakistan to assess the level of liaison between all the stakeholders involved in the TVET system, to evaluate the exposure of TVET learners to industrial environment during their learning/course period, to find the employers' and students' perceptions of the standard of TVET institutions and to collect the TVET graduates ratings of utilization of the taught relevant skills after employment. For the aforementioned purposes, the study was carried out through questionnaire based surveys, with three groups of respondents, viz., Principals of TVET institutions, TVET graduates and the industrial employers.

3.2 POPULATION

Study population is the Punjab TEVTA, which is producing approximately 100,000 skilled graduates annually in various trades / technologies in 356 technical & vocational training institutions in the province. The breakdown of institutions is given in Table 3.1.

Table 3.1
Breakdown of TEVTA Institutions in Punjab

Type of institution	Courses offered	Number of Institutions
Government college of technologies	diploma program of three years	30
Government technical training institutions	six months to two years of courses are offered	47
Govt. Technical Training Centers	3-12 months of certification programs	124
Government vocational training institutions for female	Short courses	132
Service centers	training for the skilled workforce in collaboration with industry	18
Apprenticeship training centers	Provides apprenticeship training for notified industries.	5
Total number of institutions		356

The data of TEVTA graduates of five technologies of DAE of previous five years are as described in Table 3.2 … as under:

Table 3.2
Summary of TEVTA Graduates in Punjab

S#	Course	No. of Institutions	2007	2008	2009	2010	2011	Total	% age of the Total
1	DAE Chemical	4	625	561	804	1018	863	3,871	6
2	DAE Civil	6	984	1222	2441	4059	6642	15,348	21
3	DAE Electrical	7	3126	3805	5200	5687	5927	23,745	33
4	DAE Electronics	7	2528	3226	3618	3254	2503	15,129	21
5	DAE Mechanical	6	1077	2187	2886	3484	3701	13,335	19
Total		30						71,428	100

Source: Punjab Board of Technical Education, Pakistan

3.3 SAMPLING SCHEME

This study targeted the graduates, principals and industries related to the 30 Government College of Technologies (GCTs) and five associated engineering technologies. The study population consisted of the following three groups:

1. **Group I:** Principals of all the GCTs, Punjab (List of institutions **Annex-C**).

2. **Group II**: All Punjab TEVTA students who had graduated during the five years period of 2007-2011, in five technologies falling under the category of Diploma in Associate Engineers (DAEs), who were also employed in the industries were the population.

3. **Group III:** Industrial employers in Punjab, i.e. HR Managers of all the industries where the GCTs' graduates are employed (List of industries **Annex-D**).

To ensure representation of all the technologies in respondent groups a Multi-Framed Stratified Random Sampling Scheme was adopted for sample selection. In the stratified probability sampling technique, the target population is separated into "mutually exclusive, homogeneous segments (strata), and then a simple random sample is selected from each segment (stratum)". The samples selected from the assorted strata are subsequently combined into a single sample. Following the technique, the relevant population was divided into five subgroups or strata based on five technologies i.e.

1. Chemical
2. Civil
3. Electrical
4. Electronics
5. Mechanical

Thereafter three sampling frames for five technologies were formulated. Three sampling frames were as follows:

Frame-1: Lists of all the institutions offering different DAEs
Frame-2: List of employed graduates in each technology
Frame-3: List of all the industries where the graduates are employed

3.4 SAMPLE SIZE DETERMINATION FOR THE THREE GROUPS/FRAMES.

We use Neyman optimum allocation procedure for the stratified random sampling procedure which is as follows:

$$n_h = n * \left[\left(N_h * \sigma_h \right) \right] / \left[\Sigma \left(N_i * \sigma_i \right) \right] \qquad (1)$$

where n_h denotes the h^{th} stratum sample size, N_h denotes population size of the h^{th} stratum and σ_h is the standard deviation of the h^{th} stratum. Using formula (1), we get sample size $n = \Sigma\, n_h \ldots$ The values of N_h and σ_h are given in the tables… (I WILL LATER INDICATE THE TABLES FROM WHERE THE VALUES ARE TAKEN FOR THE FORMULA).

The sample values for the graduate employees, Principals and Industrial employers are given in the tables ahead.

3.4.1 Sample Selection of Employed Graduates

There are 30 DAE institutions in all, which have produced almost 6% of DAE (chemical), 21% of DAE (Civil), 33% of DAE (Electrical), 21% of DAE (Electronics) and 19% of DAE (Mechanical) as per Table 3.2. The universe (Population) for group II was defined as all the students who graduated from GCTs in Punjab in a five years period ranging from 2007-2011, in five technologies falling under the category of Diploma in Associate Engineers (DAEs) and who subsequently got employed in the industries. The said population was divided into subgroups or strata according to technologies. The sample size, chosen for group II was 54 according the formula (1) given below. According to the literature, a sample size particularly in cases of stratified sampling design yields better results as it can reduce costs and incorporate precision, particularly when the population is geographically dispersed and the strata are sufficiently homogenous (Cohen, 2011).

The frame for the survey was developed by obtaining list of TEVTA graduates who were employed in the industries. The sampling frame was divided into strata according to the stratification variables, creating a separate sampling frame for each stratum. Keeping in view the sample size, the sampling units were selected from each group using proportionate stratified sampling technique to avoid under coverage. Targeted numbers of elements were then randomly selected from each stratum. The selection proportions and the frequency of elements are given in Table 3.3 as under:

Table 3.3
Sample of Employees/TVET Graduates/ in Five Technologies

S#	Trade (DAE) of Employee Graduates	Population of Graduate Employees in the trade N_h	Population Percent	Stratum Samples n_h
1	Chemical	047	3%	3
2	Civil	251	17%	9
3	Electrical	516	36%	18
4	Electronics	048	3%	4
5	Mechanical	588	40%	20
Total		**1450**	**100%**	**54**

3.4.2 Sample Selection of the Industrial Employers

There are 1040 industries in the five technologies and the TEVT graduates are placed in 350 of these institutions. Keeping in view the percentage of representation, approximately the same sampling fraction was used for all the strata for sampling out industrial employers. The list of all the

industries was defined as the frame for the population for group III, and with the decided sample size of 20, the sampling units i.e. the HR managers from all the five strata were selected randomly. The sample size of each stratum was calculated using the proportionate stratified sampling technique. Table 3.4 describes the sampling scheme for selection of the industrial employers.

Table 3.4
Sample Selection of Industrial Employers

S#	Trade (DAE) of Industries	Total No. of Industries N_h	Industries where TEVTA Graduates are placed		Proportionate Stratified Sample n_h	
			Frequency	Percent	Frequency	Percent
5	Chemical	287	040	11%	2	10%
4	Civil	232	089	25%	5	25%
3	Electrical	225	104	30%	6	30%
2	Electronics	058	033	10%	2	10%
1	Mechanical	238	084	24%	5	25%
Total		**1040**	**350**	**100%**	**20**	**100%**

3.4.3 Sample Selection of Principals

There are 30 government institutions i.e. Government College of Technologies (GCTs) which offer the Diploma in Associate Engineers (DAEs) in the five technologies, which are sufficiently homogenous in terms of infrastructure, size, quality of education offered, policies, rules and regulations. Therefore a sample size of 5 was considered to be sufficient for the research objectives. Hence one institution was selected at random and its principal was interviewed.

Table 3.5
Sample Selection of the Three Stakeholders

S#	Trade (DAE) of Employees	Total number of institutions	Calculated sample size of principals	No. of Industries where TVET Graduates employed	Calculated sample size of employers	Total Number of Graduates Working in Industry	Calculated Sample Size of Employees
1	Chemical	4	1	040	2	047	03
2	Civil	6	1	089	5	251	09
3	Electrical	7	1	104	6	516	18
4	Electronics	7	1	033	2	048	04
5	Mechanical	6	1	084	5	588	20
Total		**30**	**5**	**350**	**20**	**1450**	**54**

3.5 DEVELOPING QUESTIONNAIRES

In view of the objectives of this research, separate questionnaires were developed, tested and validated for three stakeholders namely employers, TVET graduates and principals of institution. This being an exploratory study, particularly in context of Pakistan, where no study of this kind has been performed, developing questionnaires required extensive work. Primary help was sought from the literature and the pilot study (discussed in Chapter 1) and a rough draft was then presented to experts in the field of TVET and in higher education. The experts were a principal of TVET institution, one senior professor and two industrial experts including an employer and a supervisor. Questionnaires were improved in the light of the feedback provided by the experts. The comments of the experts were related to the content, logical sequence and simplification of language keeping in view the level of understanding of the respondents.

The questionnaires developed for employers, TVET graduates working in the industry and Principal / HOIs of TVET institutions, contained items related to the following contents of the:

3.5.1 Contents for Employers: (Annex-E)

1. Profile of the company / industry
2. Comparison between the skills level of the newly recruited and existing skilled workforce.
3. Training facility for the newly skilled workforce
4. Linkage with TVET Institutions
5. Linkage with TVET stakeholders

3.5.2 Contents for Principal of TVET Institute: (Annex-F)

1. Profile of the TVET Institute
2. Efforts by the institutions for career counseling & job placement service
3. Quality of TVET Skilled workforce
4. Linking strategies with TVET stakeholders
5. existence and role of an Intermediary Agency / National Labor Market Information System
6. Education quality assessment system

3.5.3 Contents for TVET Graduates placed in Industry: (Annex-G)

1. Personal profile of the TVET graduates
2. Satisfaction with the standard of achieved training and skill
3. Experience after hiring at industry
4. Suggestions for quality of skilled workforce

3.6 DATA COLLECTION

The respondents' groups were contacted according to pre-set or pre-arranged appointments, to avoid inconvenience.

Table 3.6
Populations and Sample Size of the Respondents

S#	Trade (DAE) of Employees	Total number of institutions	Total Number of Graduates of 2007-2011	Total Number of Graduates Working in Industry	No. of Industries where TVET Graduates Employed	Sample size of the Respondents		
						Group I Principals	Group II TVET Graduate Employees	Group III Industrial Employers
1.	Chemical	4	3871	047	040	1	20	5
2.	Civil	6	15348	251	089	1	18	6
3.	Electrical	7	23745	516	104	1	04	2
4.	Electronics	7	15129	048	033	1	09	5
5.	Mechanical	6	13335	588	084	1	04	2
	Total	**30**	**71428**	**1450**	**350**	**5**	**55**	**20**

CHAPTER 4

RESULTS & ANALYSIS

This research aims to identify the existing gaps in the TVET system of Pakistan, such as a lack of latest industry relevant skills in the TVET graduates, or the absence of liaison between the institutions and the related industries. The study is exploratory in nature as the overall objectives of the study are to assess the present situation of technical education and vocational training in Pakistan. The sought for aims were to:

1. Review the TVET system in Pakistan.
2. Assess the exposure of TVET learners to industrial environment during their learning/course period
3. Review the employers' and students' perceptions of the standard of TVET institutions

Thus the broad hypotheses for enhanced focus of the research were formulated as under:

1. Skills acquired by TVET graduates are inadequate for their industrial work experience.
2. There is no link/partnership between industry and TVET institutions
3. The quality of skills and absence of links impacts the employment prospects of the TVET graduates

The TVET system comprises various stakeholders, such as the skilled graduates, the institutions, the industrial market and the government. The TVET system and the link between TVET stakeholders were assessed by measuring perception of the skilled graduates, the principals of the TVET institutions and human resource managers from the relevant industries, relating to the following factors:

1. Level and quality of the skills in the TVET graduates.
2. Strategies for linking all the TVET stakeholders.
3. Suggestions for improving the TVET system.

4.1 DESCRIPTIVE ANALYSIS

4.1.1 The Respondents

To review and assess the TVET system holistically, there were three sets of respondents in this study. **Group I** consisted of 5 principals, each heading a Government College of Technology in the areas of five DAEs. The principals were selected from 30 GCT institutions in all. **Group II** consisted of 55 Punjab TEVTA students who had graduated during the five years period of 2007-2011, in five technologies falling under the category of Diploma in Associate Engineers (DAEs) and was currently employed in the related industries. **Group III** contained 20 industrial employers in Punjab, who were the HR managers in the related industries where the GCTs' graduates are employed. Breakdown of respondents for **Group I** can be seen in Table 4.1.

Table 4.1
Respondents - Group I

S#	Trade (DAE)	Total Number of Institutions	Principals
1.	Chemical	4	1
2.	Civil	6	1
3.	Electrical	7	1
4.	Electronics	7	1
5.	Mechanical	6	1
Total		**30**	**5**

There are almost 1040 industries related to the five undertaken technologies working in Punjab. 350 of these industries were identified as ones where the study's required respondents of TVET graduates were working. Total numbers of TVET graduates placed in these industries are 1450 and using the stratified sampling technique, 54 of these graduates/employees were selected as study sample. From the same list of industries, 20 HR managers too were surveyed. The break-up of respondents for Groups II and III is shown in Table 4.2 and qualification wise, percentage of respondents in Group II are described in Table 4.3.

Table 4.2
Respondents - Group II & III

S#	Trade (DAE) of Employees	Total No. of Industries	No. of Industries where TVET Graduates Employed	Total Number of Graduates Working in Industry	Group II TVET Graduate Employees	Group III Industrial Employers
1	Chemical	238	040	047	03	5
2	Civil	058	089	251	09	6
3	Electrical	225	104	516	18	2
4	Electronics	232	033	048	04	5
5	Mechanical	287	084	588	20	2
Total		**1040**	**350**	**1450**	**54**	**20**

The principals were serving as per the government tenure track system and all were scale 20 government employees, whereas all the HR managers were MBAs and had an experience of minimum four years. The respondents in **Group II** had graduated during the period 2007-2011, and 33% were DAE mechanical, 33% Electrical and 16% were working in the industry related to DAE Civil (Table 4.3).

Table 4.3
Qualification wise Breakup of Data for Group II

Qualification		Frequency	Percent
1.	Chemical	3	5.6%
2.	Civil	9	16.7%
3.	Electrical	18	33.3%
4.	Electronics	4	7.4%
5.	Mechanical	20	37.0%
	Total	54	100%

Job duration of the graduate employees in the industry/organization was from less than one year to more than four years. 27% of the graduate employees had been employed for less than one year, 24% for more than 3 years cumulatively and only 3% had been employed for more than four years. The breakdown of data according to technologies shows that these 3% of the respondents were related to the chemical industry. Majority i.e. 75%, 60% and 56% of the graduates employed for less than one year belonged to the Electronics, Mechanical and Civil trades respectively, whereas, 44% of graduates had been employed in the Electrical industry for more than three years (Table 4.4)

Table 4.4
Group II - Job Duration in Organization

Job Duration	Total		Qualification wise Breakup				
	Frequency	Percent	Chemical	Civil	Electrical	Electronics	Mechanical
Less than one year	27	50.0	0%	56%	39%	75%	60%
1-2 years	9	16.7	0%	11%	17%	25%	20%
More than 3 years	15	27.8	0%	33%	44%	0%	20%
More than 4 years	3	5.6	100%	0%	0%	0%	0%
Total	54	100.0	100%	100%	100.0%	100%	100.0%

Almost 78% of the total graduate/employees opted for their trade due to personal interest and the rest were guided by their parents, family or friends (Table 4.5).

Table 4.5
Option for Trade

Reason for Opting	Total		Qualification wise Breakup				
	Frequency	Percent	Chemical	Civil	Electrical	Electronics	Mechanical
Personal Interest	42	78%	100%	56%	78%	75%	85%
Other guided	12	22%	0%	44%	22%	25%	15%
Total	54	100%	100%	100%	100%	100%	100%

4.2 PRELIMINARY ASSESSMENTS OF THE TVET SYSTEM

To assess the TVET system preliminarily, the heads of the TVET institutions were surveyed.

Table 4.6
Assessing Skill Quality

S#	Assessing Skill Quality	Yes	No
1.	Are the institutions producing ready-for-job graduates?	60%	40%
2.	Do they receive adequate knowledge?	60%	40%
3.	Is structured workplace learning part of the curricula?	40%	60%
4.	Are the resources, facilities, equipment, supplies or support services at your institute adequate for instructional staff and the trainees	60%	40%
5.	Are the present curricula relevant to the emerging needs of labor market?	60%	40%
6.	Are there assessment criteria to measure if the quality of skills is as per market demands?	20%	80%
7.	Is there a system for feedback from the industry to assess skill levels?	40%	60%

Assessing the level and quality of skills taught at the institutions, 60% of the HOIs were of the opinion that the institutions are producing ready-for-job graduates, who receive adequate knowledge and skills. However, 60% institutions do not have a structured workplace learning program and according to 80% of the respondents there are no assessment criteria whatsoever to measure whether the skills are as per the market demands (Table 4.6). As far as job market is concerned, according to 60% of the respondents there is an effective placement system, 80% of the institutions keep a database of the graduates, but the said database doesn't keep a track of their employment records. Moreover, 70% of the institutions do not have a career counseling system, 40% of the institutions do not have strategies to build contacts with the industry regarding job placements and 60% of the institutions have no training contracts with the industries, which are few of the main inconsistencies that refute the existence of an effective job-placement system (Table 4.7).

Table 4.7
Assessing Job-Placement Efforts

S#	Job-Placement Efforts	Yes	No
1.	An effective placement system	40%	60%
2.	Database of the graduates	80%	20%
3.	Does the database record employment track of your graduates	40%	60%
4.	A system to maintain tracer study of the graduates	40%	60%
5.	Career counseling system for the graduates	30%	80%
6.	A designated (exclusive) placement officer in the institutions	40%	60%
7.	Strategies for building contacts with the relevant industries for graduates' job placement	60%	40%

On linking strategies, 60% of the HOIs said that there is a specific government policy for TEVTA Institutions to contact industry with reference to the internships/placements of graduates, but the supporting factors seem non-existent. There is no intermediary agency to strengthen liaison of institution with industry, 80% of the institutions do not have on-field training programs for their instructional staff, 80% of institutions do not have a system to assess employer/industrialists' demands, neither the employers nor the institutions have any linking strategies for building contact with each other, as per 60% of the HOIs. 80% of institutions do not have any system to assess employer/ industrialists' demands neither are there apprenticeship and training contracts with the industry, according to approximately 60% of the respondents (Table 4.8).

Table 4.8
Assessing Linking Strategies

S#	Linking Strategies	Yes	No
1.	Is there any specific policy for TEVTA Institutions to contact industry with reference to the Internships/ Placements of graduates	60%	40%
2.	Are there Institution Management Committees (IMCs) for the institutions	40%	60%
3.	Does the District Board of Management help in linkage with industry for placement of trainees	40%	60%
4.	on-field training programs for your instructional staff	20%	80%
5.	Teachers' visits to industries for assessment of industrial environment	60%	40%
6.	invite industry experts to share their knowledge with your faculty and students	60%	40%
7.	training contracts for your students with the industry	40%	60%
8.	arrange student visits to industries	60%	40%
9.	Do the employers contact for skilled workforce	40%	60%
10.	Does the institution contact with concerned industry / employer	40%	60%
11.	Is there any system to assess employer/ industrialists' demands	20%	80%
12.	Is there any intermediary agency to strengthen liaison of institution with industry	0%	100%

4.3 IN-DEPTH ASSESSMENT OF THE TVET SYSTEM

Table 4.9
Industrial Assessments

S#	Industrial assessment	Percentage
1	Shortage of skilled workforce	55%
2	Performance of the organization affected by the shortage of skilled force	100%
3	industries respond to this shortage through training	20%
4	Industries respond to the shortage through over working the existing workforce	35%
5	Industries are ISO certified and use internationally compatible sophisticated manufacturing standards	100%
6	Industries that would prefer having an intermediary agency for acquiring market compatible workforce	95%

After the preliminary assessment, the study was directed towards an in-depth assessment of the existing TVET system. This assessment pertained to the ground realities as highlighted by the graduates employed in the industries and the industrial employers.

Assessment of the markets by the industrial employers revealed that all the industrial organizations under survey had diversification and expansion plans. 35% wanted to go global in the next ten years, hence were ISO certified, and were already using internationally compatible sophisticated manufacturing standards. However, 55% of the industries reported shortage of skilled workforce, affecting performance of the industries. 20% of the industries cope with this shortage by training the newly hired skilled force, whereas 35% deal with it by over working the existing workforce. 95% of the industries suggested having an intermediary agency for acquiring market compatible workforce; all are willing to give their feedback to the intermediary for improving the skill levels. They also suggested public-private partnership for the intermediaries.

The stress on presence of an intermediary, as per the respondents, is due to the fact that it would assist in enhancing the liaison between the industry and institutions, and will help in improving the skill level of the trainees as well as provide a better platform for job placement. As far as structure of the intermediary is concerned, 60% of the respondents were of the view that it should be formed on a public-private partnership.

Table 4.10
Role of Intermediary Agency

S#	Description	Percentage
1	Presence of Intermediary would enhance liaison between industry and institution	95%
2	Agency should be public-private based	60%
3	Agency will improve skill level of Graduates	95%

4.3.1 Quality of TVET Skills and Employment Prospects

The quality of TVET skills were measured through the ‘level of skill learnt’ during the course period, ‘acquiring additional training’ and the ‘level of skill utilized (after job utilization of the technical training and theoretical knowledge)’. Then its relationships with ‘Employment prospects’, measured through ‘Timely employment after certification’ and the ‘Ease in finding employment’, were subsequently tested.

4.3.2 Employment Prospects-Timely and Easy-to-Find- Employment

Timely employment was measured through the time taken to find job (1=very timely=less than one year; 2=Timely=1-2 years; and 3=not timely= more than 2 years). The data from Group II on the timeliness in finding employment after completion of the certification/diploma program reveal that it had taken more than two years for 83.3% of the graduate/employees in Electrical, 60% in the mechanical and 33% of the graduate/employees in the chemical industry to find these jobs, whereas it took less than one year for the civil diploma/certificate holders to get an employment (Table 4.11).

Table 4.11
Timely Employment after Completing Diploma

Time taken to find job	All Respondents		Qualification wise Breakup				
	Frequency	Percent	Chemical	Civil	Electrical	Electronics	Mechanical
Less than one year	11	20.4%	67%	100%	5.6%	0%	5.0%
1-2 years	15	27.8%	0%	0%	11.1%	100%	35.0%
More than 2 years	28	51.9%	33%	0%	83.3%	0%	60.0%
Total	54	100.0%	100%	100%	100.0%	100%	100.0%

As far as ease in finding employment is considered, almost 80% of all the graduates found it ‘not easy’ to find a job. The qualification wise data reveal that almost all i.e. 100% of the diploma-holders/graduates of DAE chemical and DAE electronics also found it ‘not easy’ to find job (Table 4.12).

Table 4.12
Was it Easy to Find Job after Qualifying

Response	All respondents		Qualification wise Breakup				
	Frequency	Percent	Chemical	Civil	Electrical	Electronics	Mechanical
Easy	11	20.4	0%	11%	33%	0%	20%
Not Easy	43	79.6	100%	89%	67%	100%	80%
Total	54	100%	100%	100%	100.0%	100%	100%

In the overall analysis, training at TEVTA has been found to be a helpful factor in getting the job for 61% of the employees and 39% did not find their training helpful in hiring. However, segregated data reveal that 70% of the employees in the area of mechanical technology found their training a

helpful factor, whereas 67% of the employees in civil and chemical technology did not find it helpful (Table 4.13).

Table 4.13
Was Your Training at TEVTA, Helpful in Your Hiring?

Response	All Respondents		Qualification wise Breakup				
	Frequency	Percent	Chemical	Civil	Electrical	Electronics	Mechanical
Helpful	33	61%	33%	33%	56%	50%	70%
Not helpful	21	39%	67%	67%	44%	50%	30%
Total	54	100.0%	100%	100%	100.0%	100%	100.0%

Comparing the mean scores of all the three items related to employment prospects show a trend of not an easy job hunt after completion of the academic program, in almost all the areas of DAE as it took them longer period of time to find job and training from TEVTA institutions was not very helpful (Table 4.14).

Table 4.14
Employment Prospects-Comparison of Mean Scores

Qualification	Easy to find Employment after qualifying 1=Yes 2=No	Timely employment after completing your certificate / diploma 1=Less than 1 year 2= 1-2 years 3=More than 2 years	Was your training at TEVTA, helpful in your hiring? 1=Yes 2=No
Chemical	2.00	2.33	1.67
Civil	1.89	1.00	1.33
Electrical	1.67	2.78	1.44
Electronics	2.00	2.00	1.50
Mechanical	1.80	2.60	1.30
Total mean score	1.80	2.33	1.39

4.3.3 Quality of TVET Skills

The quality of the 'skills learnt' during the course period, was measured firstly by the perception of the respondents from Group III i.e. the employers, who were asked to rate the level of skills of their TVET graduate recruits. Secondly, perception of Group II about the adequacy of their skills learnt was

measured i.e. if they found that they had received adequate Technical training and adequate theoretical knowledge, and if they had to undergo additional training for either getting the employment or during the employment for fulfilling task requirements.

4.3.3.1 Level of the Skills Learnt

The employers were asked to give their opinion on the newly skilled labor as compared to their already existing workforce, on related work, skill level, work attitude and personal grooming and 10% of the respondents found the new recruits aptly skilled, only 2% found them better than the existing workforce, 35% found them in need of improvement and 55% found their skills inapt (Table 4.15).

Table 4.15
Level of Skills of Newly Hired Skilled Workforce as per the Industrial Employers

Level of Skills	Frequency	Percent
Aptly skilled	2	10%
inaptly skilled	11	55%
Need improvement & training	7	35%
Better than existing	2	10%

The new workforce comprising graduates from TEVTA was rated as having outdated skills by 55% of the employers, 30% said that the graduates can be improved by training and only 15% of the employers considered them holding up to the mark skill level (Table 4.16).

Table 4.16
Level of the Skills / Training Provided by TEVTA Institutions as per the Industrial Employers

Level of Skills	Frequency	Percent
Up to the mark	3	15%
Needs improvement	6	30%
Out dated	11	55%
Total	20	100%

The results of Group II revealed that only 20% of all the respondents found themselves adequately trained and possessing market relevant theoretical knowledge. Majority of the respondents did not seem to be satisfied, 28% felt that they had received outdated training and 52% felt the need for improvement. Qualification wise too, the majority of the respondents perceived their skill as out dated and in need of further improvement (Table 4.17).

Table 4.17
Level of the Skills Learnt as per the Graduate/Employees

Level of skills	All Respondents		Qualification wise Breakup				
	Frequency	Percent	Chemical	Civil	Electrical	Electronics	Mechanical
Up to the Mark	11	20%	0%	44%	17%	50%	10%
Needs Improvement	28	52%	100%	33%	50%	50%	55%
Outdated	15	28%	0%	22%	33%	0%	35%
Total	54	100%	100%	100%	100%	100%	100%

4.3.3.2 Utilization of the Skills Learnt

Gauging the utilization of the 'Skills Learnt' through 'after job utilization of the technical training and theoretical knowledge' on a five point likert scale reveals not a very high level or quality of the skills learnt during the diploma/certification period. Only 4% of the total graduate employees could utilize 100% of the technical training and almost 52% of the graduates claimed to have been able to utilize only 25% of the technical skill that they had learnt (Table 4.18).

Table 4.18
After Job Utilization of Technical Training

Training Utilization	Total		Qualification wise Breakup				
	Frequency	Percent	Chemical	Civil	Electrical	Electronics	Mechanical
100%	2	4%	0%	0%	0%	0%	10%
75%	17	31%	0%	33%	50%	0%	25%
50%	7	13%	33%	22%	0%	0%	20%
25%	28	52%	67%	45%	50%	100%	45%
Total	54	100%	100%	100%	100%	100%	100%

Similar results can be seen qua the 'after Job Utilization of Theoretical Knowledge' and only 7% of the respondents found their theoretical knowledge of 100% use in their jobs. 32% of the employees found their knowledge 75% useful whereas, 37% of the respondents found it only 25% useful (Table 4.19).

Table 4.19
After Job Utilization of Theoretical Knowledge

Training Utilization	Total		Qualification wise Breakup				
	Frequency	Percent	Chemical	Civil	Electrical	Electronics	Mechanical
100%	4	7%	0%	0%	6%	0%	15%
75%	17	32%	33%	33%	33%	75%	20%
50%	13	24%	33%	11%	33%	0%	25%
25%	20	37%	34%	56%	28%	25%	40%
0%	0	0%	0%	0%	0%	0%	0%
Total	54	100%	100%	100%	100%	100%	100%

4.3.3.3 Additional Skills Learnt

59% of graduates sought additional training for better job prospects; particularly 67% of DAE (Chemical) and 70% of DAE (Mechanical), after exploring the job market felt the need and subsequently sought additional training for better job prospects that aided them in finding their current employments (Table 4.20).

Table 4.20
Sought Additional Training for Better Job Prospects

Additional training	Total		Qualification wise Breakup				
	Frequency	Percent	Chemical	Civil	Electrical	Electronics	Mechanical
Was Not Required	22	41%	33%	56%	44%	50%	30%
Was Required	32	59%	67%	44%	56%	50%	70%
Total	54	100%	100%	100%	100%	100%	100%

On the other hand, 61% of all the graduate employees had to undergo additional training to fulfill their job requirements and the training was provided by their employers. 67% of the diploma holders in chemical, 61% in electrical, 75% in electronics and 70% in mechanical were trained by their employers during the course of their employment (Table 4.21).

Table 4.21
Additional Training during Employment

Additional training by employer	Total		Qualification wise Breakup				
	Frequency	Percent	Chemical	Civil	Electrical	Electronics	Mechanical
Was Not Provided	21	39%	33%	67%	39%	25%	30%
Was Provided	33	61%	67%	33%	61%	75%	70%
Total	54	100%	100%	100%	100%	100%	100%

4.3.4 Relationships between Quality of Skills Learnt and Employment Prospects

To assess the association between the quality of skills and employment prospects, Odds ratios test, correlation and regression analyses were applied. As per the odds ratios, the respondents with additional training had better employment prospects, i.e. they were more likely to find employment easily as well as timely. The level of aptness of skill of the graduated employees was assessed through their own insight about the skill and they were asked how well they thought that they had received skills from the TVET institution, i.e. whether they perceived it to be up to the mark or updated. They were asked about both i.e. the level of practical training and the theoretical knowledge provided by TVET institutions.

Table 4.22
Odd Ratio between Quality of Skills Learnt and Employment Prospects

	Difficult to Find Employment	Not Difficult to Find Employment	
Inaptly Skilled	34	8	42
Aptly Skilled	9	3	12
	43	11	54
Odds Ratio	1.4167		
95 % CI	0.3108 to 6.4564		
z statistic	0.450		
	P = 0.6526		

The industrial employers too were asked about the skill aptness level of the employees. The odds ratio analysis shows that employers perceived the skills to be 1.5 times more inapt than that of what the employees perceived of the quality of their own skills.

Table 4.23
Odd Ratio between Employees & Employers and Level of Quality Training

	Aptly Skilled	Inaptly Skilled	
Employees	11	43	54
Employers	3	17	20
	14	60	74
Odds ratio	1.4496		
95 % CI	0.3594 to 5.8472		
z statistic	0.522		
	P = 0.6018		

Odds ratio test was also applied to analyze the relationship of the aptness of skills learnt with getting timely or delayed employment and difficulty in finding employment. The graduates who considered themselves inaptly trained or skilled found it 1.4 times more difficult to find employment than those who found their skills to be adequate or apt.

Table 4.24
Odd Ratio between Additional Training and Employment

	Difficult to find Employment	Not Difficult to find Employment	
Additional Training required	36	7	43
Additional Training Not required	7	4	11
	43	11	54
Odds ratio	2.9388		
95 % CI	0.6748 to 12.7980		
z statistic	1.436		
	P = 0.1510		

Similarly, the need or requirement for additional training was assessed through the graduated employees' perception regarding adequacy of their skills learnt i.e. how adequate they thought were the technical training and theoretical knowledge that they had received in the TVET institution. The odds ratios reveal that graduates who were assessed as in need of additional training

were more 1.7 times more at risk of delays in finding employment and almost 2.9 times more prone to facing difficulties in finding employment.

Table 4.25
Odd Ratio between Additional Training and Prompt Employment

	Delayed Employment	**Timely Employment**	
Additional Training required	35	8	43
Additional Training Not required	8	3	11
	43	11	54
Odds ratio	1.6406		
95 % CI	0.3541 to 7.6010		
z statistic	0.633		
	P = 0.5268		

It was further observed that the graduates who had received additional training after qualifying from TVET, either from the same institution or from the private sector were 1.26 times more quick in finding employment, i.e. they got employed in less than one year and it took more than one and more than two years to find a job for the graduates who did not learn additional skills.

Table 4.26
Odd Ratio between Additional Training Received and Prompt Employment

	Timely	**Not Timely/Delayed**	
Additional Training Received	7	25	32
Additional Training not received	4	18	22
	11	43	54
Odds ratio	1.2600		
95 % CI	0.3202 to 4.9574		
z statistic	0.331		
	P = 0.7409		

Moreover, it was also found that the graduates who actually improved their skills through additional training before getting an employment found it 1.28 times easier to find employment than the ones who did not improve their skills.

Table 4.27
Odd Ratio between Additional Training and Employment

	Not Difficult to find Employment	Difficult to find Employment	
Additional Training Received	6	26	32
Additional Training Not received	5	17	22
	11	43	54
Odds ratio	1.2857		
95 % CI	0.3470 to 4.7640		
z statistic	0.376		
	P = 0.7069		

4.4 CORRELATIONS AND REGRESSION

The test reveals significant positive relationships between the quality of skills learnt and employment prospects as also between skill utilization and job satisfaction. Significant Correlation at 0.04 level with a Pearson correlation coefficient r = 0.389, has been found between the 'TVET Training' and 'employment prospects', implying a statistically significant positive association between the two variables. As per the correlation matrix, the higher the skill Quality learnt from TVET institutions, the easier and timely it was for graduates to find job. But graduates with additional skills were found to have better employment prospects, as the correlation between the skills learnt and the employment prospects showed increase for respondents who had undergone additional training (Table 4.28).

Table 4.28
Correlation between TVET Training-Additional Training and Employment Prospects

Correlations

		Employment Prospects	TVET Training	TVET and Additional Training
Employment prospects	Pearson Correlation	1	.389**	.392**
	Sig. (2-tailed)		.004	.003
	N	54	54	54
TVET Training	Pearson Correlation	.389**	1	.730**
	Sig. (2-tailed)	.004		.000
	N	54	54	54
TVET and additional training	Pearson Correlation	.392**	.730**	1
	Sig. (2-tailed)	.003	.000	
	N	54	54	54

**. Correlation is significant at the 0.01 level (2-tailed).

From the regression Table 4.29 we can see that the TVET training with $\beta = 0.389$ at $P = 0.004 < 0.05$ significantly predict outcome variable Employment prospects.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.389[a]	.151	.135	.40449

a. Predictors: (Constant), TVET Training

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.515	1	1.515	9.261	.004[b]
	Residual	8.508	52	.164		
	Total	10.023	53			

a. Dependent Variable: Employment prospects
b. Predictors: (Constant), TVET Training

Table 4.29
Regression between TVET Training and Employment Prospects

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.318	.251		5.245	.000
	TVET Training	.486	.160	.389	3.043	.004

a. Dependent Variable: Employment prospects

The Table 4.27 indicates that TVET and additional training with $\beta = 0.392$ at $P = 0.003 < 0.05$ significantly predict outcome variable Employment prospects which means that additional has cast more impact on the Employment prospects.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.392[a]	.154	.138	.40384

a. Predictors: (Constant), TVET and additional training

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.543	1	1.543	9.459	.003[b]
	Residual	8.481	52	.163		
	Total	10.023	53			

a. Dependent Variable: Employment prospects
b. Predictors: (Constant), TVET and additional training

Table 4.30
Regression between TVET and Additional Training and Employment Prospects

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.992	.353		2.810	.007
	TVET and additional training	.683	.222	.392	3.076	.003

a. Dependent Variable: Employment prospects

4.4.1 Skill Utilization

Another observation that can be drawn from the results is that the graduates who had received additional training also showed 2.04 times higher skill utilization (Table 4.31).

Table 4.31
Odd Ratio between Additional Training and Skill Utilization

	High Skill Utilization	**Low Skill Utilization**	
Additional Training	10	22	32
Training	4	18	22
	13	41	54
Odds ratio	2.0455		
95 % CI	0.5484 to 7.6286		
z statistic	1.066		
	P = 0.2866		

It was also observed that the graduates who found difficulty in finding employment were also 1.2 times low in their skill utilization, than the ones who faced lesser difficulty (4.29).

Table 4.32
Odd Ratio Skill Utilization and Ease of Employment

	Difficult to find Employment	**Not Difficult to find Employment**	
Low skill utilization	33	8	41
High skill utilization	10	3	13
	43	11	54
Odds ratio	1.2375		
95 % CI	0.2751 to 5.5670		
z statistic	0.278		
	P = 0.7812		

Similarly, with a Pearson correlation coefficient $r = 0.294$, statistically significant at $p = .031 < 0.05$, there is a positive association between skill utilization and job satisfaction. Job satisfaction was measured on a 4 point likert scale asking the respondents if they were satisfied with their jobs in terms of the facilities provided by the industries and salaries and that if they found these factors compatible with their skills.

Table 4.33
Correlation between Skills Utilization and Job Satisfaction
Correlations

		Skill Utilization	Job Satisfaction
Skill Utilization	Pearson Correlation	1	.294*
	Sig. (2-tailed)		.031
	N	54	54
Job Satisfaction	Pearson Correlation	.294*	1
	Sig. (2-tailed)	.031	
	N	54	54

*. Correlation is significant at the 0.05 level (2-tailed).

The regression table shows that "skill utilization", with $\beta = 0.294$ at $p = 0.031 < 0.05$ significantly predicts the outcome variable "job satisfaction", implying that the satisfied respondents who had learnt utilizable skills, were more satisfied with the work facilities and the salaries (Table 4.34).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.294[a]	.086	.069	.40493

a. Predictors: (Constant), Skill Utilization

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.807	1	.807	4.921	.031[b]
	Residual	8.526	52	.164		
	Total	9.333	53			

a. Dependent Variable: Job Satisfaction
b. Predictors: (Constant), Skill Utilization

Table 4.34
Regression between Skills Utilization and Job Satisfaction
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.508	.253		5.956	.000
	Skill Utilization	.182	.082	.294	2.218	.031

a. Dependent Variable: Job Satisfaction

4.4.2 Reforms required for the TVET System

The most prominent factor identified by the respondents was provision of a career counseling service by the institution with a mean score of 4 (4 = Most important and 0=Not important), the second most important factor was provision of well-equipped labs with a score of 3.9, whereas quality of teachers and requirement of a strict evaluation system with a score of 3.6 have been identified as the third most important factors that are needed to reform the TVET system.

Table 4.35
Reforms for Quality of TVET

Reforms required for enhancing quality of TVET	Qualification wise break up											
	Total / 54		Chemical / 3		Civil / 9		Electrical / 18		Electronics / 4		Mechanical / 20	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
Well-equipped Labs/Shops	3.9	.47	3.7	.57	4.0	.00	3.8	.54	4.0	.00	3.8	.55
Books & Examination should be in English	3.1	.68	3.0	1.7	3.1	.33	2.9	.47	3.0	1.4	3.2	.61
Evaluation system be strict	3.6	.60	3.4	1.1	3.7	.50	3.3	.57	4.0	.00	3.7	.57
Quality of teachers must be improved	3.6	.60	4.0	.00	3.7	.50	3.4	.60	3.8	.50	3.6	.68
Quality of teachers must be assessed	3.4	.64	4.0	.00	3.1	.33	3.2	.70	3.8	.50	3.5	.68
Institution must provide a career counseling service	4.0	.35	4.0	.00	3.8	.44	4	.23	4.0	.00	4.0	.44

4.5 LINKS/PARTNERSHIP BETWEEN INDUSTRY AND TVET INSTITUTIONS

There are a number of strategies for interlinking the institutions and the industries, such as the apprenticeship contracts, on-job training contracts, financial and resource support, visiting demonstrators and feedback from relevant industries, on-field visits and training programs for instructional staff, career counseling/placement systems based on intermediary agencies etc. The purpose of all these strategies is to build a link between the industries and the institutions that, on one hand opens up job opportunities for the graduates and on the other allows the industrial employers an easy access to ready-for-job/

demand driven/ aptly skilled work force, without wasting any time and extra resources(on additional training).

The most obtrusive empirical evidence on lack of links or absence of industry-institution partnership is the hiring mode. As per 75% of the industrial employers, they usually adopt advertisement for hiring purposes. In only 5% of the cases, the skilled force is directly recruited from the institutions. Almost all of the employers were of the view that they would prefer hiring from the TVET institutions provided the opportunity.

Table 4.36
Hiring Mode – Industrial Employers & Graduates

Hiring Modes	Industrial Employers	Graduates
Through the TEVT institution	5%	19%
Advertisement	75%	11%
Reference	20%	70%
Total	100%	100.0

On the other hand, 19% of the graduate/employee respondents were hired through the career counseling/job placement system in their institution, only 11% got their job through advertisement and 70% of the graduates used their references for being employed. Had there been a link between the institution and the industry, both the parties would have had a common platform and hiring would have been quicker and convenient. The graduate employees were asked their opinions on linking strategies that could produce better employment prospects. Opinion on all five 'linking strategies' were measured using a four point likert scale, ranging from 1= 'Disagree' to 4= 'Strongly agree'. The graduates were asked if the presence of the linking strategies would have made their job hunt easier. The data on five linking strategies show that 92% and 83% of the respondents strongly agree that strengthening of career counseling/placement systems by the intuitions and beforehand practical on-job training contracts would make it easy for them to find employment (Table 4.37).

Table 4.37
Linking Strategies

S#	Linking Strategies	Disagree	Partially agree	Agree	Strongly agree
1.	Practical on job training contracts	0%	4%	13%	83%
2.	Apprenticeship contracts	0%	7%	50%	43%
3.	Visiting demonstrators & feedback from relevant industry	4%	4%	46%	46%
4.	Career Counseling/placement System acting as an intermediary	0%	2%	6%	92%
5.	institution- relevant industry Affiliation	7%	34%	35%	24%

The mean scores of the segregated data also show that career counseling/job placement system based on an intermediary agency with a mean score of 3.9 was considered the most important predictor of easier job hunt.

Table 4.38
Mean Scores of Linking Strategies

Respondents	Apprent-iceship Contracts	Institution-Relevant Industry Affiliation	Visiting Demonstrators & Feedback from Relevant Industry	Career Counseling/ Placement System	On Job Training Contracts	Over all Linking Strategies
All	3.4	2.8	3.4	3.9	3.8	3.5
Chemical	4.0	3.0	2.3	4.0	3.7	3.5
Civil	3.2	2.8	3.4	3.8	3.8	3.5
Electrical	3.1	2.6	3.3	3.9	3.8	3.4
Electronics	3.8	3.2	3.0	4.0	3.9	3.6
Mechanical	3.4	2.8	3.6	3.9	3.8	3.5
Total Mean of mean Scores	3.5	2.9	3.1	3.9	3.8	3.5

The correlation matrix below shows a positive association between the overall linking strategies and Ease in finding employment, with Pearson's correlation coefficient = .300 at .028 which is significant at 0.05 level (2-tailed) (Table 4.39).

Table 4.39
Correlation between Linking Strategies and Ease of Finding Employment

Correlations

		Linking Strategies	Ease in finding employment
Linking Strategies	Pearson Correlation	1	.300*
	Sig. (2-tailed)		.028
	N	54	54
Ease in finding employment	Pearson Correlation	.300*	1
	Sig. (2-tailed)	.028	
	N	54	54

*. Correlation is significant at the 0.05 level (2-tailed).

In addition to this, the regression model is found significant with Beta coefficient = .300 at p = .028, which shows that existence of linking strategies can significantly impact and make the job hunt easier (Table 4.36).

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.787	1	.787	5.136	.028[b]
	Residual	7.972	52	.153		
	Total	8.759	53			

a. Dependent Variable: Ease in finding employment
b. Predictors: (Constant), Linking Strategies

Table 4.40
Regression between Linking Strategies and Ease of Finding Employment

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.147	.730		.202	.841
	Linking Strategies	.473	.209	.300	2.266	.028

a. Dependent Variable: Ease in finding employment

Ranking the linking strategies by combining the mean scores of all the three groups of respondents shows that Career Counseling/placement System by the Institution is the most prominent of all the strategies with a mean score of 3.6 followed by on-job training with a mean score of 3.4, and Institutions-

Industries' (Feedback and financial) Affiliation has taken the third place with a mean score of 3.2 (Table 4.34).

Table 4.41
Ranked Linking Strategies

S#	Linking Strategies	Group I	Group II	Group III	Mean of means
1.	Career Counseling/placement System acting as an intermediary	3.4	3.9	3.3	3.6
2.	On Job Training	3.0	3.8	3.4	3.4
3.	Institutions-Industries'(Feedback and financial) Affiliation	3.6	2.9	3.1	3.2
4.	Apprenticeship	3.12	3.5	2.6	3.1
5.	Visiting demonstrators & feedback from relevant industries	3.2	3.1	2.3	2.9

The top ranking of the counselors/placement systems is further supported by the odds ratio analysis according to which, presence of a counselor/placement system makes it 1.6 times earlier and 3.5 times easier for the graduates to find employment.

	Not easy to find Employment	Easy to find Employment	N
Others Means	37	7	44
Through Counselors	6	4	10
	43	11	54
Odds ratio	3.5238		
95 % CI	0.7854 to 15.8100		
z statistic	1.645		
	P = 0.1001		

	Not Timely/Delayed	Timely	
Others Means	23	21	44
Through Counselors	4	6	10
	27	27	54
Odds ratio	1.6429		
95 % CI	0.4065 to 6.6398		
z statistic	0.697		
	P = 0.4860		

CHAPTER 5

DISCUSSION & CONCLUSION

The objectives of this research were to review the TVET system in Pakistan, to find out the employers' and students' perceptions about the standard of TVET institutions, assess the pre-employment exposure of TVET learners to industrial environment and finally to identify the existing gaps. To fulfill the objectives, a holistic approach was adopted and the system was assessed initially by a thorough literature review, which led to the finding that the area of VET education was considerably new and scant research had been done in the context of Pakistan. The literature especially research on academia-industry collaboration has not been explored in depth (Mumtaz et al., 2010). Hence an exploratory design, including an initial assessment and subsequently an in-depth assessment was made to find out the ground realities. The main broad hypotheses were that the skills acquired by TVET graduates are inadequate for their industrial work experience and that there is no link/partnership between industry and TVET institutions, which required inclusion of the various stakeholders of the TVET system, such as the skilled graduates, the institutions, the industrial market and the government, hence the study was designed to incorporate the three main players and survey was conducted on the skilled graduates, the principals of the TVET institutions and human resource managers from the relevant industries in Punjab, relating to the following factors:

1. Level and quality of the skills in the TVET graduates
2. Strategies for linking all the TVET stakeholders
3. Suggestions for improving the TVET system

There are 356 institutions in Punjab, offering short courses of three months to three years diploma programs that produce approximately 100,000 skilled workforce annually (TEVTA, 2014), however, due to research limitations, the population for this study were confined to only the three years diploma holders in five technologies, who had graduated during the period 2007-2011. There are almost 1040 industries related to the five undertaken technologies working in Punjab. 1450 diploma holders are working in 350 of these industries. The three groups of respondents for this study were taken from these institutions and industries. The data and the results do not show any significant inter-technologies difference, hence the discussion comprises an overall analysis of the TVET system.

5.1 THE TVET SYSTEM

Development of TVET system in most of the developed countries has been possible with the help of the government and its policies. There are policies for TVET system in Pakistan, but they are not implementation in their true spirits (Ansari and Wu, 2013). The results of this study have also highlighted that although, there is a specific government policy for TEVTA institutions to contact industry with reference to the internships/ placements of graduates but there is no implementation mechanism. The Institute Management Committees and District Board of Management are not playing their role and not helping the institutions in coordinating with the industry. These bodies do not make regular visits to the institutions and take no steps to find their problems and requirements, and do not take any initiative to provide guidance to the institutions for placement of their trainees in the relevant industries. Moreover, the Institution management lacks determination to take steps to up-grade the skills level of their trainees. and majority of the TVET graduates have to face difficulties in finding jobs after completing diplomas from the TEVT institutions.

Another major step to develop any TVET system is to link it with the industry. The linkage through an agency may help the TVET institutions and industry to work in collaboration for quality workforce and economic development (Coe et al., 2008; Martinez-Fernandez and Powell, 2010). But the results in this study show the absence of any such link in the present TVET system. As per the Heads of the institutions, there is a specific government policy for TEVTA Institutions to contact industry with reference to the internships/placements of graduates, but the supporting factors seem non-existent. There is no intermediary agency to strengthen liaison of institution with industry, Most of the institutions do not have on-field training programs for their instructional staff or apprenticeship and training contracts for their students, nor 80% of institutions have a system to assess employer/ industrialists' demands, implying that neither the employers nor the institutions have any linking strategies for building contact with each other, Majority of the institutions maintain the database of their graduates, however there is no system of keeping their employment records nor is there any database to keep track of employing industries, which is necessary for the future course of action like placement of the trainees in the industries. Again the presence of an intermediary agency at this interface could help the institutions and their trainees in finding better relevant jobs and the industries in finding requisite workforce. These agencies can bridge the gap between the institutions and the industries, by providing a common platform, where both the sides can come up with their desired requisitions. 95% of the industries suggested having an intermediary agency for acquiring market compatible workforce and all are willing to give their feedback to the intermediary for

improving the skill levels. The intermediary agency for academia and industry reduce the gap between the two. Public-private partnership for the intermediaries too came forward as a suggestion.

The TVET learning program too needs to be focused, as is revealed by the results. Diploma of Associate Engineering (DAEs) in five technologies is being offered in 30 institutions of Punjab, but the institutions under study do not have a structured workplace learning program and nor are they following any uniform, formal and proper placement policy or strategy. Also, there are no assessment criteria whatsoever to measure whether the skills are as per the market demands or not. As far as job market is concerned, many do have a placement system and keep a database of the graduates, but the said database doesn't keep a track of their employment records. Moreover, majority of the institutions do not have a career counseling system, or strategies to build contacts with the industry regarding job placements or training contracts with the industries, which are few of the main inconsistencies that refute the existence of an effective job-placement system. Some institutions do have strategies for building links with the relevant industries for graduates' job placement but the data do not show the role of career counseling system. The findings are consistent with other studies (Ansari and Wu, 2013), which suggest that the designated placement system is designed to help out in preparing TVET graduates as per market demands (Arthur-Menshah and Alagaraja, 2013).The study results reveal that most of the institutions under study do not have a career counseling system for the graduates, nor are there exclusively designated placement officers. Majority of the graduates claimed to have pursued their career as a personal choice and almost all of them identified absence of career counseling as a major gap. This is further strengthened by the fact that majority of the sampled graduates in this study got job either through advertisement or their own references, and only a small proportion of the graduates were placed through TVET institution counselors. This shows that whatever system that exists is in its initial stages and is not well structured. Had there been effective placement system and designated placement / institution counselors, more students would be adjusted or employed in the market.

5.2 QUALITY OF TVET SKILLS

To improve the quality of skills, both the theoretical as well as practical knowledge need to be in line with the industrial demands. Various studies have suggested that curricula should be revised and updated after completion of diploma in every area(Komla 2011) and the contents of the curricula should be improved as per the industrial skills standard (Papp and Risko, 2014). Assessing the quality of skills in the TVET sector in Pakistan, we find that

most of the HOIs believe their institutions to be producing ready-for-job workforce, but the empirical evidence does not seem to support or corroborate the assertion, and the results are not different from other such studies which have highlighted the fact that the TVET sector in Pakistan is not producing quality workforce for the industry(Janjua, 2011).The adequacy of theoretical knowledge and training necessitates demand driven text related to latest technological development as also a structured work place training system wherein the students and the instructional staff get an opportunity of practical on-field training. Secondly, being qualified and adequately trained should also imply that the trainees do not have to learn additional skills after or before getting the job, which is time and resource consuming for the industry. The purpose of apprenticeship and on job training contracts is precisely for the purpose of creating a demand driven workforce. The TVET curricula in Pakistan needs to be updated to match the contemporary industrial demands, as the results have shown industrial employers and the graduates themselves as dissatisfied with the level of theoretical knowledge and the training program.

Table 5.1
Level of Skills-Comparison of Groups

Level of Skills Learnt	**Group I** Principals	**Group II** Graduate Employees	**Group III** Industrial Employers
Up to the Mark	.6	.2	.15
Needs Improvement	0	.52	.30
Out dated	.4	.28	.55

The curricula taught at the institutions in Pakistan, have not been updated regularly, and do not incorporate knowledge adequate for the competing and emerging labor demands, which is only possible with the intervention of the industries that are in the best position to identify market needs and demands. The employers have also shown their concern regarding the training provided by TVET institutions and have rated them as outdated and not as per market demand. This result too is consistent with other studies (such as Rasul, 2010) and it reveals that the employers are generally not satisfied with their newly recruited skilled workforce of TVET sector. Comparing the ratios of perception of the three groups on level of skills learnt shows that majority of the institutions perceive their training as adequate, whereas the majority of the employers and the graduates were not satisfied with the level of training provided by the TVET institutions. The industrial employers perceive this training as out dated and majority of both the groups think that the newly trained workforce needs a lot of improvement (Table 5.1). The empirical evidence in this research corroborates with other studies that suggest that the training institutions in Pakistan are imparting technical skills in isolation (Khan et al., 2009).

TVET education has been modernized and needs a fully equipped academic infrastructure (Jagannathan, 2013). The basic modern infrastructure is weak as per this research. Without fully equipped labs and workshops, updated curricula and structured workplace learning, it is not possible for the institutions to equip their trainees with demand driven skills. There is no system in place to seek market feedback and demands, no regular apprenticeship contracts' or on job training contracts' strategies for the trainee students. Similarly, majority of the institutions do not have any programs that allow their instructional staff to enhance their understanding of the workplace environment neither are demonstrators from the industry invited to share their knowledge. Moreover, there are no assessment criteria to measure the quality of skills, either internally or externally in the form of feedback from the industry, which deprives the institutions from benchmarking the level of theoretical knowledge and technical training, which is a key factor in preparing graduates for the markets, where industries are expanding, diversifying and planning to go global in the next ten years, using internationally compatible sophisticated manufacturing standards. As a result, the TVET institutions are passing on skills that are either redundant or they lack the competitive edge. The results clearly have shown that majority of the industrial employers find the TVET graduates inaptly skilled and possessing outdated knowledge and majority of the graduates themselves feel their knowledge to be inapt.

On the other hand, the analysis of the feedback of employers indicates that they are striving hard to produce sophisticated manufacturing. They are training their HR on international standards and their organizations are ISO certified. They assured that whatever human resource they have, has the ability to compete with the international standards and they are also planning to improve their business process which is vital for sophisticated manufacturing. But the ground realities have been highlighted as quite different and what the results reveal is that the industry in Pakistan is facing a shortage of skilled force, which is affecting performance of the industries and the employers cope with this shortage by over working the existing workforce. The newly skilled labor, however is inaptly skilled, possessing outdated knowledge and in need of a lot of training in terms of work/market relevant knowledge, skill, attitude and personal grooming. Many studies (such as Rasul, 2010; Stuen et al., 2012; Murray and Polesel, 2013), have pointed out towards the inaptness of skills which leads to lower employment prospects and difficulty in managing employment tasks. Major reason put forth have been the absence of link with the industrial environment and outdated training modules. Similar to the previous findings, this study too verifies that the TVET graduates do not hold skills and knowledge as per market relevancy and only one fourth of their training fulfills their work requirements. Majority of the graduates had to learn

additional skills for better job prospects and to fulfill the requirements of their existing jobs. Similarly, a high percentage of the graduate employees had to be trained by their employers. This leads to the inference that the institutions are training the students in isolation and that there is weak linkage of TVET institutions with the industry. Had there been a link, the passing out graduates would not have to rely on additional trainings for securing employment and the employers would not have had to incur expenses on provision of additional training.

The inaptness of skills not only hampers the employment prospects for the graduates, but it also impedes skill utilization. 80% of the graduates do not find it easy to get employment and a heavy percentage of them do not find training from TEVTA helpful in their hiring. In the overall analysis, training at TEVTA has been found to be a helpful factor in getting the job for 61% of the employees and 39% did not find their training helpful in hiring. However, segregated data reveal that 70% of the employees in the area of mechanical technology found their training a helpful factor, whereas 67% of the employees in civil and chemical technology did not find it helpful. The quality of skill learnt has been found to be positively related to better employment prospects. The more trained a graduate, the higher and quick are the chances of being employed. More than 50% of the TEVTA Graduates took more than 2 years to find job and only 20% of them were employed within a year. Only the civil diploma/certificate holders were able to secure an employment in less than one year. The inaptly skilled workforce finds it 1.4 times more difficult to find employment than the aptly skilled, and graduates in need of additional training are 1.7 times more at risk of delays in finding employment and almost 2.9 times more prone to facing difficulties in finding employment. It was further observed that the graduates who receive additional training after qualifying from TVET, either from the same institution or from the private sector are almost 1.3 times more quick in finding employment, i.e. they got employed in less than one year and it takes more than one or more than two years to find a job for the graduates who do not undergo additional training. Moreover, it was also found that the graduates who improve their skills through additional training before getting an employment find it 1.3 times easier to find employment than the ones who did not improve their skills. Another significant observation is that the graduates who undergo additional training have better employment prospects than those with only the training provided by TEVTA institutions. Also the graduates who find difficulty in finding employment are 1.2 times low in their skill utilization, than the ones who face lesser difficulty and the graduates who receive additional training are twice as good at their skill utilization than the ones who relied on TVET training alone. The overall results more or less imply that TVET institution are not producing demand driven work force and need to update their curricula and to develop infrastructure for practical on field training, career

counseling and job placement services and launch a system to get feedback from the industry, that would help the students in preparing themselves as per market demands.

5.3 LINKS/PARTNERSHIP BETWEEN INDUSTRY AND TVET INSTITUTIONS

Developing links between the institutions and the industries is very crucial for technological advancement and for generating a demand driven skilled workforce (Wallenborn, 2010). In developing countries particularly, the weak liaison among the TVET stakeholders is the leading factor for producing low quality workforce (Amankwah, 2001). Positive relationship between the linking strategies and easy job hunt has also been empirically supported in this study. There are a number of strategies for interlinking the institutions and the industries, such as the apprenticeship contracts, on-job training contracts, financial and resource support, visiting demonstrators and feedback from relevant industries, on-field visits and training programs for instructional staff, career counseling/placement systems based on intermediary agencies etc. The purpose of all these strategies is to build a link between the industries and the institutions that, on one hand opens up job opportunities for the graduates and on the other allows the industrial employers an easy access to ready-for-job/ demand driven/ aptly skilled work force, without wasting any time and extra resources on additional training.

However, the data finds evidence on weak links between the two stakeholders. The most conspicuous empirical evidence on lack of links or absence of industry-institution partnership is the hiring mode. As per 75% of the industrial employers, they usually adopt advertisement for hiring purposes. In only 5% of the cases, the skilled force is directly recruited from the institutions. Almost all of the employers were of the view that they would prefer hiring from the TVET institutions provided the opportunity. Similarly, the majority i.e. 70% of the graduate employees have revealed that they found their present jobs through references. However the graduates from institutions which implement the linking strategies find it easier to find employment, For instance, the presence of a counselor/placement system makes it 1.6 times earlier and 3.5 times easier for the graduates to find employment.

The study also highlights the need for an intermediary agency where data / information of skilled workforce and employers will be readily available. The industry too is prepared to share their information and feedback to introduce the new technology that is being used in the global market (Maringa, 2014). This in turn will help in improving the skill level of the

trainees as well as provide a better platform for job placement. As far as structure of the intermediary is concerned, it should be formed on a public-private partnership. Its establishment will enhance the industry-institution link which is vital for demand driven workforce.

Table 5.2
Highlights of the Study

S#	Gaps identified	Reforms	Linking Strategies
1.	Absence of Career Counselor / placement officer	Institution must provide a career counseling service	Career Counseling/ placement System acting as an intermediary agency
2.	Low Quality of Acquired skills	Well-equipped Labs/Shops	On Job Training
3.	Out dated training Modes	Books & Examination should be in English	Institutions-Industries' (Feedback and financial) Affiliation
4.	No on field training for the students or the faculty	Evaluation system be strict	Apprenticeship
5.	No assessment system internally/ no external assessment system e.g. in form of the feedback from the industry	Quality of teachers must be improved and assessed	Visiting demonstrators & feedback from relevant industries

5.4 GAPS IDENTIFIED

The major reason of lack of quality skilled workforce that have come to light are outdated curricula and the practical knowledge, lack of practical skills and personal grooming. The trainees are not properly counseled and guided at the time of admission and during the delivery of course. To conclude the review of the TVET system, the most highlighted gaps can be stated as under;

1. Absence of Career Counseling / placement system
2. Shortage of skilled manpower
3. Low quality of acquired skills
4. Lack of link between the institutions and the industries
5. Lack of up to date curricula
6. Lack of practical and structured workplace training
7. No proper skill evaluation or assessment system, internally or externally(in form of the feedback from the industries)

5.5 PROBABLE REASONS AND THE REFORMS SUGGESTED

The major reasons for lack of quality skilled workforce that have come to light are outdated curricula, lack of practical skills and personal grooming. The trainees are not properly counseled and guided at the time of admission and during the delivery of course. The most probable and prominent factor that has been highlighted as being responsible for the weaknesses in the TVET system is the absence of a link between the industry and the TVET institutions, From the overall analyses, the reforms that can be suggested are firstly to update curricula, enhance the quality of teaching programs, to develop skill evaluation system, and to provide a career counseling service for the graduates. However, all of these reforms require one most basic element and that is to establish the missing link between the institutions and their relevant industries. Establishing the link is critical for a number of reasons, which are stated as under:

1. It would provide industrial feedback to improve and update the curricula according to the industrial demands.
2. The link if established, would allow the faculty to improve their field knowledge through industrial visits.
3. The link will also be helpful, in engaging the industrial demonstrators' to visit the institutions and share their knowledge with the graduates
4. The link would help provision of on field training contracts and apprenticeship programs that would allow the graduates to be prepared for the post-employment work life
5. The link would also allow developing skill assessment system by involving the industries in developing and monitoring the training programs.
6. Another important advantage of establish ink the said link would be availability of a placement system that not only would facilitate employment opportunities for the graduates but also would allow the industrial employers an easy access to ready-for-job/ demand driven/ aptly skilled work force, without wasting any time and extra resources(on additional training).

5.6 LINKING STRATEGIES

The purpose of linking strategies is to build a link between the industries and the institutions that, on one hand opens up job opportunities for the graduates and on the other allows the industrial employers an easy access to ready-for-job/ demand driven/ aptly skilled work force, without wasting any

time and extra resources(on additional training). From amongst the various linking strategies the following have been identified as the top most relevant strategies:

1. Career Counseling/placement System acting as an intermediary agency
2. On Job Training
3. Institutions-Industries' (Feedback and financial) Affiliation
4. Apprenticeship
5. Visiting demonstrators & feedback from relevant industries

5.7 STUDY CONTRIBUTIONS

The study was set to explore the TVET system in Pakistan, which, despite a well-established Ministry of Science and Technology, a huge TVET structure comprising technical and vocational institution, polytechnics, technical colleges and universities, has been unable to make a mark in the technological domain.

In view of the results and analysis this study proposes a theoretical model incorporating the missing link in the TVET system. The model defines the role of each stakeholder for producing skilled workforce as per industrial demands. It addresses the weaknesses and gaps found at the institution level that would help the TVET management to establish the infrastructure of career counseling and designated placement system which is the top most relevant strategies, identified by the TVET graduates employed in the industry.

This model also stimulate government to develop a legal framework for the industry to provide the internship / OJT/ apprenticeship for the trainees and this linkage would help the government to formulate policies for the TVET sector in coordination with industry for the economic development of the country. This model proposes the establishment of Intermediary Agency (IA) that would serve the role of National Labour Market Information System which is vital for integrating all the TVET stakeholders on a single platform (Murray and Polesel, 2013). This agency would serve a role of bridge for all stakeholders of the TVET sector. All the TVET institutions will be registered with IA and will upload the data of their graduates on IA and at the same time it will also hold the information of the concerned industry with their complete details so that relevant TVET graduates may be adjusted / absorbed in the industry. The annual reports generated by IA would help the government to develop policy for better TVET sector that will produce skilled workforce equally acceptable in local and global market. The major stakeholders are

discussed in this study are TVET institutions in Pakistan, market both national/ international, Government, Public / Private institutions, foreign minister, foreign Pakistani community. This IA as proposed by the model be developed national level under the supervision of Federal Govt. The detailed functions of actor discussed here as private under:

On Industry and Technical Institutions Linkage Model

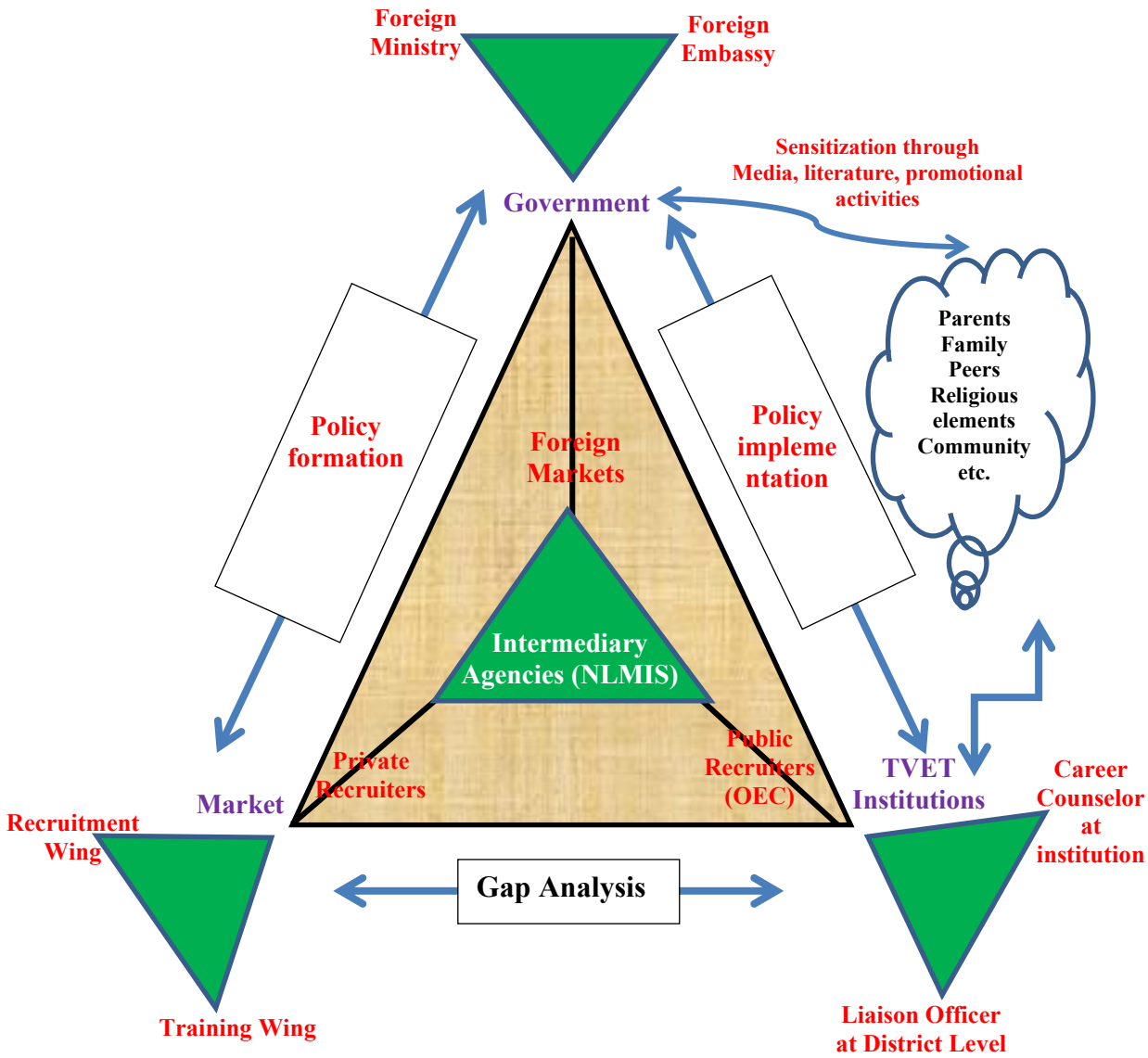

Figure 5.1: On Industry-Technical Institutions Linkages Model (A Triangular Approach)

Table 5.3
TVET Stakeholders

Market	TVET Institutions	Government	Intermediary Agencies
• Local - Industry - Chamber - Trade Associations • Foreign - Global Market	• NAVTTC • All TEVTAs • PVTC • Private institutions	• Federal • Provincial • Foreign Embassy	• Public recruiters (OEC) • Private recruiters - Foreign - Local

5.7.1 TVET Institution

The institutions will include all TVET institution in Pakistan. The management of TVET institutions designates an institution counselor at the institute level and will be responsible to facilitate the industrial visits of students and faculty that would help them to visualize the actual working where he/she has to work after graduating. The institute management will also pay attention and analyze the feedback of the Institution Counselor deputed at the institution and the Liaison Officer, who is working at the district level for collaboration with institution and industry. The Principal of the institute will communicate the results and suggestion to authority for the policy making. He will also address the weakness of his / trainees, instructional staff and coordinate with the Institution Counselor and Liaison Officer.

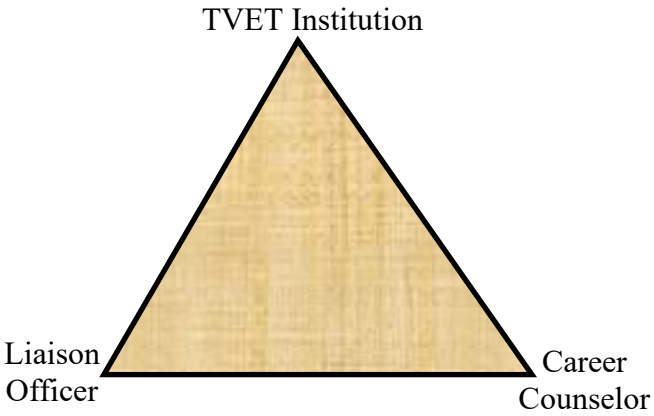

Figure 5.2: Linkage at Institution Level

5.7.1.1 TVET Institution Career Counselor

The Career Counselor of the institute will arrange counseling sessions at the time of admission, during the delivery of course and at the completion of diploma / certificate. He / she also maintain database of students and relevant employers. He / she will also manage trainings on soft skills, job fairs, seminars, career days and industrial visits of students / teachers in collaboration with Liaison Officer.

5.7.1.2 Liaison Officer

The Liaison Officer will work at district level and will coordinate with all industries and TVET institutions in the district. He will arrange job fairs, seminars in coordination Institution Counselor at the district level. For promotion of entrepreneurial culture among the TVET graduates he will coordinate with finance provider for micro financing. He will also maintain and guides the institution counselor how to maintain the database of students, alumni and employers for employability. The data will also help in arranging OJT / apprenticeship of the trainees. His / her prime role will be to identify the emerging technologies in the industry and communicate to the TVET management for initiation at the institution. He will also share feedback of employers on the skilled working force at the industry

5.7.2 Market

The market is a partner of TVET sector which join hands with TVET institution for provision of job opportunities (Komla et al., 2011). The market includes job market, both local (industry, chamber, trade association) and foreign (global). The industry will guide its recruitment manager / training officer to assess the weakness of the recruited workforce and communicate to both Intermediary Agency (IA) and institution, so that appropriate measures may be taken for the removing the unwanted skills and to provide demand driven workforce.

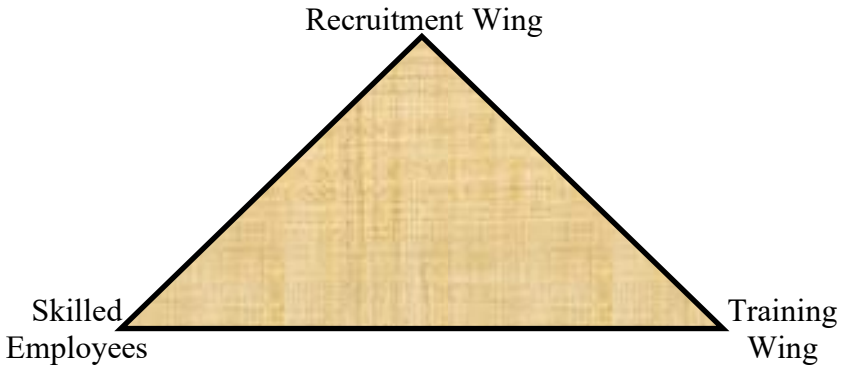

Figure 5.3: Linkage at Industry Level

5.7.2.1 Recruitment Wing of Industry

The recruit wing is the big source of information regarding the provided skilled workforce. The recruitment manager can better guide the Liaison Officer about the weakness of the TVET graduates. He holds the details of job description of the required skilled workforce that would help the Liaison Officer and Institute Counselor how to guide their graduates in the light of job description. The Liaison Officer in coordination with Recruitment Manager can forecast & communicate the demand of industry that would help the training institution to guide their trainees in the line of demand of industry. The feedback will be more equate if the Liaison Officers part of the interview panel for the skilled workforce. So the Recruitment Wing of the industry is big source that can highlight & communicate the weakness of TVET graduates to the LO& Institutions Counselor.

5.7.2.2 Training Wing of Industry

The industry / employers have their own training wing for the skill up gradation of their employees, so it is an important wing that can share the weak area of the provided skilled manpower. This wing better guide the LO and IC to counsel their TVET Graduates so that the trainee may not has to face the difficulty after recruitment. It will enhance the acceptability of the TVET graduates in the job market.

5.7.3 Skilled Employees of Industry

The skilled workforce working in the industry is the main and authentic source for the LO and IC to collect the feedback on the trainings provided by

the TVET institute and the industry. He /she will identify& communicate to LO what he had to learn or unlearn after joining the industry. Those learned and unlearn skills can be included and removed from the curricula being taught in the institute. These employees can be invited in the in job fair / workshop / seminars arranged by Liaison Officer at Institution level to guide the student about industrial environment.

5.7.4 Intermediary Agency (N-LMIS)

Intermediary Agency (National Labour Market Information System) will maintain the database of all TVET stakeholders. It is key factor in the proposed model that will be interlinked with other stakeholders including skill providing institution, market both local and international and third, government whose determination will ensure the quality of workforce. IA will generate annual report which will show the significant impact of TVET sector on economy of the country. The expert at IA will collect and analyze the feedback of market, regarding the recruited manpower and will communicate to the TVET management / institution. It is further linked with Overseas Employment Corporation (Public Recruiter), Private Recruiters and Foreign Market. The functions of these stakeholders are as under:

Figure 5.4: Linkage at Recruitment Agency & Foreign Market Level

5.7.4.1 OEC (Public Recruiters)

The Overseas Employment Corporation (OEC) is a Public Recruiters whose branches are located in provincial city of every province. It is supervised by the Federal Government. As it is in interlinked with the foreign market and also maintain database of foreign employers and alumni working there. It will communicate the about the new technologies, demand for future employment and feedback of employers on the skilled force to the LO. It will

also assist the Government in formulating policy for training institution. It may also arrange foreign visits of LO in collaboration with foreign employers. It will also ensure legal and legal formalities to be fulfilled for foreign recruitment.

5.7.4.2 Foreign Market / Employers

The foreign market / employer will invite Liaison Officers and Institution Counselor to visit the foreign market through OEC to assess the demand of industry. They will communicate the gap identified and other areas of workforce so that necessary measure may be taken. They will suggest what new trades / technology to introduce and meat the further need of foreign employers. They will also be responsible for the provision of safety and hazards free environment for the trainees.

5.7.4.3 Private Recruiters

The Private Recruiters in Pakistan are playing vital roles in maintaining liaison with the local and foreign market. The Private Recruiters are big source for sharing the feedback regarding the skilled workforce because they maintain the data of foreign recruiters / alumni. They may propose the trainings for the skilled workforce and Liaison Officer LO can assess the weak areas if he /she is allowed to be part of interview panel when foreign delegation will visit the technical training centers. They can also assist OEC in identifying the gaps of skilled workforce. They may help in arrangement of On Job Training/ apprenticeship of students

5.7.5 Government

Government (Federal and Provincial) is an important stakeholder, responsible for formulation policies and implementation of polices for local industry, TVET institutions and Intermediary Agency (Gaidzanwa, 2008). Government should make legislation for the industry to provide OJT /Apprentice and job opportunities to the graduates of TVET Institution. The government should make agreement with foreign organization especially with Middle East countries for hiring of skilled workforce from Pakistan.

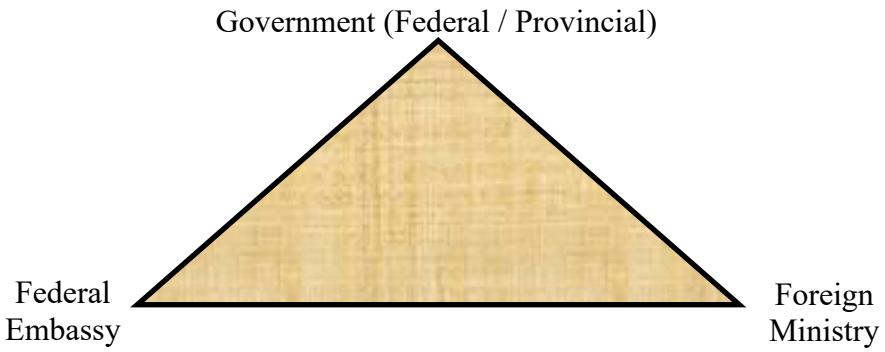

Figure 5.5: Linkage at Govt. Level

5.7.5.1 Government (Federal / Provincial)

The Government machinery both at Federal and Provincial level is responsible for the formulation of policies for TVET system in the light of feedback received from Intermediary agency, marketing training. They provide funds for up-gradation and introduction of new technology to the training institution and arrangement of foreign trainings for instructional and other staff. It is the prime responsibility of the Government to notify local industry to provide OJT / apprenticeship and appropriate stipend for trainees. The Government should also scan emerging needs of job market and ensure provision of modern technology / tools required in training institution as per demand of industry local or foreign.

5.7.5.2 Foreign Embassy

The foreign Ambassadors are appointed by the Govt. to maintain good relation with other countries. They can be good resource for approaching foreign market and maintain liaison with industry. They may facilitate foreign employers in coordination with OEC & foreign recruiters and can assist the visit of Liaison Officer &Institution Counselor to the foreign industry. They can further guide Govt. to provide the necessary support to the training institution as per demand of foreign industry.

5.7.5.3 Foreign Ministry

The Foreign Minister of the country can also help in making liaison with Pakistani people doing business in foreign market and with the coordination of foreign embassy can approach the foreign market / employers. The TVET institution may go into agreement / MoU with foreign based industries / job market.

5.8 IMPLICATION OF THE CONTRIBUTION

The proposed Intermediary Agency (National Labour Market System) will work under National Vocational Technical Training Commission (NAVTTC) under the federal government. It will facilitate all TVET institutions and industry in the country and all TVET stakeholders will be registered with the IA. It will help the TVET sector to produce skilled manpower on industrial skill standard and industry will have quality workforce that will improve the quality of products. The TVET graduates will be able to access the foreign market and in this way it would a great contribution to the economic development of Pakistan.

5.9 STRENGTHS, LIMITATIONS AND FUTURE DIRECTIONS

Despite its contribution in national economy as can be seen in the developed world, research on TVET system in Pakistan is quite scant and the area has yet to be explored. This study was conducted to review and assess the present TVET system and to identify the existing gaps and come up with recommendations. However, there are a number of strengths and weaknesses of this research. The TVET sector in Pakistan, particularly that of Punjab is huge with a large number of institutions and their relevant industries. One of the most strong feature of this study is its sampling design, viz. the multi phased stratified sampling design that ensures external validity of the results and allows the results to be generalized to the whole population. Another strength is that it is one of its kind study that has been conducted in Pakistan. However the study has a number of limitations as well. Such as the institutions, graduates and the industrial employers have been taken from only five main technologies, and the rest of technical education such as vocational and apprenticeship institutions have not been considered,

The language plays an important role in communication ideas and thoughts from one person to other. The language for questionnaires developed for this study were in English while the trainees of TVET system do not come from an English medium educational background rather they belong to the lower strata of the society. If the questionnaires were translated into their native language Urdu, the results might have been different (Podsakoff et al., 2003).

This is a very useful study and may be applied for the general education after certain amendments and may develop a frame work that would help the policymaker for formulating strategies for producing the graduates on

industrial skills standards by both TVET sector and general education. The quality of teachers play an important role in producing quality workforce, therefore, future research may be focused on how to improve the quality of teachers in collaboration with the employers (Hanushek, 2011). Future research can also be made on the role and impact of Intermediary Agency / National Labour Marketing Information System (proposed by this study), on both TVET system and industry, and its contribution in economic development of the country. In the light of impact of this system, the proposed model may be revised or up-graded. This research has highlighted gaps at different level. The lack of infrastructure for career counseling and guidance at institutional level is an important issue (Koen et al., 2010). However, there is no infrastructure of career counseling and vocational guidance for the TVET graduates under TVET system in Pakistan. A future research may be done to highlight the impact of career counseling and vocational guidance before and counseling of TVET graduates.

CONCLUSION

The objectives of this research study were to review the feedback of main stakeholders of TVET system i.e. employers, TVET institutions and graduates employed in the industry and in the light of results to propose a viable solution to produce industrial skills standards workforce. To catch the native hue of the perception of the stakeholders, separate questionnaires were developed in the light of literature review. The data / information was analyzed by using statistical tool and it was observed that Skills acquired by TVET graduates are inadequate for their industrial work experience, there is no link/partnership between industry and TVET institutions, and also the quality of skills and absence of links impacts the employment prospects of the TVET graduates. The main reason observed for all the gaps was the missing link between the industry and the institutions, which implies that the TVET institutions and their relevant industries are working in isolation as proposed by the model. In the light of feedback stakeholders and practices adopted by developed countries, as discussed in the literature review and the gaps observed during the analysis, an institution-industry linkage was proposed that would provide a platform for all stakeholders to input their feedback / proposals and in the light of reports, Government of Pakistan may initiate steps for the promotion of TVET sector. It would also help the graduates to absorb in local and international market that would be important factor for strengthening economic position of Pakistan.

REFERENCES

1. Abbasenejad, T., Baerz, M.A., Rostamay, A.A.A. and Azar, A. (2011). Factors affecting on collaboration of industry with University. *African Journal of Business Management,* 5(32), 12401-12407.

2. African Union (2007). Strategy to revitalize technical and vocational education and training (TVET) in Africa. In *Meeting of the Bureau of the Conference of Ministers of Education of the African Union (COMEDAF II+),* 29-31 May 2007, Addis Ababa Ethiopia.

3. Agrawal, R. (2013). Vocational education and training program: Asian perspective. *Asia-Pacific Journal of Cooperative Education*, 14(1), 15-26.

4. Agrawal, R. (2014). Role of vocational education in shaping socio-economic landscape in India. *Indian Journal of Industrial Relations*, 49(3), 483-498.

5. Akhtaruzzaman and Clement, C.K. (2011). Vocational education and training in human resource development: A case study of Bangladesh. *Academic Research International*, 1(1), 266-275.

6. Akram, M. and Khan, F.J. (2007). Public provision of education and government spending in Pakistan. *PIDE Working Papers*, 2007:40, Pakistan Institute of Development Economics, Islamabad, Pakistan

7. Alam, M.G. (2009). The Role of science and technology education at network age population for sustainable development of Bangladesh through human resource development. *Scientific Research and Essay,* 11, 1992-2248.

8. Ali, A. (2011). Incentives and Initiatives Provided for the Implementation of Employability Skills in Technical and Vocational Education and Training (TVET): The Malaysian Experience. *Sixth Saudi Technical Conference and Exhibition* (STCEX 6), Riyadh, Saudi Arabia.

9. Allais, S. (2012). Will skills save us? Rethinking the relationships between vocational education, skills development policies, and social policy in South Africa. *International Journal of Educational Development*, 32(5), 632-642.

10. Aluko, Y.A. and Aluko, O. (2012). Human Capital Development: Nigeria's Greatest Challenge. *Journal of Management*, 13(1), 163-170.

11. Amankwah, E. and Swanzy, P. (2011). The Role of stakeholder in building adequate competencies in students for the job market. *International Journal of Vocational and Technical Education,* 3(8), 107-112.

12. Andersen, R. and Van de Werfhorst, H.G. (2010). Education and occupational status in 14 countries: the role of educational institutions and labour market coordination. *The British Journal of Sociology*, 61(2), 336-355.

13. Ansah, K.S. and Ernest, K. (2013). Technical and vocational education and training in Ghana: A tool for skill development and industrial development. *Journal of Education and Practice*, 4(16), 172-180.

14. Ansari, B and Wu, X. (2013). Development of Pakistan's technical and vocational education and training: An analysis of Pakistan skilling reforms. *Journal of Technical Education and Training,* 5(21), 2229-8932.

15. Arpaia, A. and Mourre, G. (2012). Institutions and performance in European labour markets: taking a fresh look at evidence. *Journal of Economic Surveys*, 26(1), 1-41.

16. Arthur-Mensah, N. and Alagaraja, M. (2013). Exploring technical vocational education and training systems in emerging markets: A case study on Ghana. *European Journal of Training and Development*, 37(9), 835-850.

17. Asunsung, A.A., Zaato, G.S. and Owusu, J. (2013). Evaluation of enterprise training on youth employment within the Kumasi Metropolis of Ghana. *International Journal Business and Social Research* (IJBSR), 3(8), 66-74.

18. Atchoerena, D. and Delluc, A. (2001). *Revisiting Technical and Vocational Education in Sub - Saharan Africa: An update on trends innovations and challenges. Washington, District of Columbia: World Bank.* http://unesco.org/llep.

19. Attanasio, O.P., Kugler, A.D. and Meghir, C. (2009). Subsidizing Vocational Training for Disadvantaged Youth in Developing Countries: Evidence from a Randomized Trial. *IZA Discussion Paper No. 4251*, *http://papers.ssrn.com/so13/papers.cfm?abstract_id=1426738.*

20. Audu, R., Igwe, C.O. and Onoh, C.E.C. (2013). Human capital development in technical vocational education for sustainable national development. *Journal of Education and Practice*, 4(7), 100-106.

21. Augustine, S.M. and Jafari, S.M. (2013). Modeling the impact of knowledge and technology transfer between TVET Institutes and industries. *CAPA Scientific Journal,* 1(1), 47-70.

22. Bakar, R.A., Mohamed, S. and Hamzah, R. (2013). An assessment of workplace skills acquired by students of vocational and technical education institutions. *International Education Studies*, 6(11), 15-20.

23. Baqadir, A., Patrick, F. and Burns, G. (2011). Addressing the skills gap in Saudi Arabia: does vocational education address the needs of private sector employers? *Journal of Vocational Education & Training*, 63(4), 551-561.

24. Bartlett, W. (2009). The effectiveness of vocational education in promoting equity and occupational mobility amongst young people. *Economic Annals,* 180(9), 7-39.

25. Boahin, P. and Hofman, A. (2012). Implementation of innovations in higher education: the competency-based training in Ghana. *Innovation in Education and Teaching International*, 49(3), 283-293.

26. Bridgstock, R. (2009). The graduate attributes we've overlooked: Enhancing graduate employability through career management skills. *Higher Education Research & Development*, 28(1), 31-44.

27. Brown, A., Bimrose, J., Barnes, S.A. and Hughes, D. (2012). The role of career adaptabilities for mid-career changers. *Journal of Vocational Behavior*, 80(3), 754-761.

28. Bureau of Emigration & Overseas Employment, Government of Pakistan. Retrieved April 12, 2014 from www.beoe.gov.pk

29. Casner-Lotto, J. and Barrington, L. (2006). *Are They Really Ready to Work? Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century US Workforce*. Partnership for 21st Century Skills. 1 Massachusetts Avenue NW Suite 700, Washington, DC 20001.

30. CEDEFOP (2008). Detailed thematic analysis: Germany, *Initial Vocational Education and Training*.

31. Cedefop (2008). *Terminology of European education and training policy. A selection of 100 key terms.* Luxembourg: Office for Official Publications of the European Communities. Available at: http://www.cedefop.europa.eu/en/Files/4064_EN.PDF

32. Cedefop (2011). *Vocational education and training at higher qualification levels, Research Paper No. 15,* Luxembourg: Publications Office of the European Union.

33. Chandrakumara, D.P.S. (2014). Employability of new graduates in Sri Lanka: Implications for Policy Development. Discussion Paper 197.

34. Chaudhary, S.M., Sohail, F. and Riaz, N. (2013). Impact of employee relation on employee performance in hospitality industry of Pakistan. *Entrepreneurship and Innovation Management Journal*, 1(1), 60-72.

35. Coe, M.N., Johon, J. and Ward, K. (2008). Agents of casualization? The temporary staffing industry and labor market restructuring in Australia. *Journal of Economic Geography*, 9, 55-84.

36. Cohen, M.P. (2011). Stratified Sampling. *International Encyclopedia of Statistical Science*, 1547-1550.

37. Cornell University, INSEAD and WIPO (2013). *The Global Innovation Index 2013: The Local dynamics of innovation,* Geneva, Ithaca and Fontainebleau.

38. D'Este, P. and Patel, P. (2007). University–industry linkages in the UK: What are the factors underlying the variety of interactions with industry? *Research Policy*, 36(9), 1295-1313.

39. Dania, J., Bakar, R.A. and Mohamed, S. (2014). Factors influencing the acquisition of employment skills by students of selected technical secondary school in Malaysia. *International Education Studies*, 7(2), 117-124.

40. de Guzman, A.B. and Choi, K.O. (2013). The relations of employability skills to career adaptability among technical school students. *Journal of Vocational Behavior*, 82(3), 199-207.

41. European Commission (2010). *A new impetus for European cooperation in vocational education and training to support the Europe 2020 strategy, Available at*: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0296:FIN:EN:PDF

42. Evans, D. (2000). *The history of technical education*. T Magazine Limited, Alex Wood Hall, Cambridge, UK.

43. Gaidzanwa, R.B. (2008). Gender issues in technical and vocational education and training. In *Biennale on Education in Africa Conference*. Maputo, Mozambique.

44. Gentry, J.R. and Shen, W. (2013). The impact of performance relative to analyst forecasts and analyst coverage on firm R&D intensity. *Strategic Management Journal*, 34, 121-130.

45. Grunwald, E. and Becker, B. (2013). Successful in Transmitting the TVET System and Shaping the Society: The Example the Mubarak Khol Initiative. *The Architecture of Initiative Apprenticeship Technical & Vocational Education and Training: Issues, Concerns and Prospects*. 18, 296-306.

46. Gupta, A. (2011). Innovation in Higher Technical Education in India: A Status Report. *MIER Journal of Educational Studies, Trends & Practices,* 1(1), 2795-2802. http//www.actuariesindia.org/GCA.

47. Hamdan, H., Yusof, F., Omar, D., Abdullah, F., Nasrudin, N. and Abullah, I.C. (2011). University industrial linkages: relationship towards economic growth and development in Malaysia. *World Academy of Science, Engineering and Technology*, 5(10), 27-34.

48. Hanushek, E.A. (2013). Economic growth in developing countries: The role of human capital. *Economics of Education Review*, 37, 204-212.

49. Hanushek, E.A., Woessmann, L. and Zhang, L. (2011). *General education, vocational education and labor-market outcomes over the life-cycle* (No. w17504). National Bureau of Economic Research.

50. Haolader, A.F. and Paul, D.K. (2013). The present status of polytechnic curriculum and students' assessment approach in Bangladesh. *Asian Journal of Management Sciences and Education,* 2(1), 125-137.

51. Hart, J. and Rogojinaru, A. (2007). The development of national qualifications and quality assurance frameworks in the context of the TVET reform in Romania. *European Journal of Education*, 42(4), 549-571.

52. Hausmann, R., Hwang, J. and Rodrik, D. (2007). What You Export Matters. *Journal of Economic Growth*, 12(1), 1-25.

53. Hijzen, A., Görg, H. and Hine, R.C. (2005). International Outsourcing and the Skill Structure of Labour Demand in the United Kingdom. *The Economic Journal*, 115(506), 860-878.

54. Hill, R.B., Kuchinke, K.P. and Zinser, R. (2013). Guest editorial (re) connecting workforce education and human resource development. *Human Resource Development Review*, 12(1), 3-10.

55. Hollander, A. and Mar, Y.N. (2009). International Handbook of Education for the Changing World of Work*: Towards Achieving TVET for All: The Role of the UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training.* Springer Science Business Media. B.V., 41-57.

56. Huang, H.I. and Lee, C.F. (2012). Strategic management for competitive advantage: a case study of higher technical and vocational education in Taiwan. *Journal of Higher Education Policy and Management*, 34(6), 611-628.

57. Husman, S.H.S. (2005). Meeting the needs of employers. In p*roceedings of national seminar on the development of technology and technical-vocational education and training in an era of globalization: Trend and issues,* Kuala Lumpur.

58. Hyslop, A. (2011). CTE and 21st century skills in college and career readiness. *Techniques: Connecting Education & Careers*, 86(3), 10-11.

59. Ibrahim, A. (2010). Vocational education and training (VET) practices in industrialized economies: A benchmark to improve vet practices in Malaysia. *SEAVERN Journals*, 2(1). http://ojs.voctech.org/index.php/seavern/article/view/62/16

60. Islam, N. (2008). *Availability of data related to technical and vocational education and training (TVET) in Bangladesh*, Project research report series BD: 2/08, Funded by the European Union and executed by the ILO.

61. Jagannathan, S. (2013). Skills for Inclusive and Sustainable Growth in Developing Asia and the Pacific. In *Skills Development for Inclusive and Sustainable Growth in Developing Asia-Pacific* (369-380). Springer Netherlands.

62. Janjua, S. (2011). Is skill training a good investment for the poor? The evidence from Pakistan. *International Journal of Training Research*, 9(1-2), 95-109.

63. Kamran, M., Ochinowski, T. and Abbas, Q. (2014). An empirical investigation of vocational and training programs: A case vocational training institutes of Southern, Punjab. *World Applied Sciences Journal*, 31(4), 468-478.

64. Keating, J. (2009*). Matching supply of demand for skills: International perspectives*. Center for Post-compulsory Education and Lifelong Learning, University of Melbourne. Retrieved March 15, 2012, from *http://scholar.google.com.pk/scholar*

65. Kell, P., Cameron, R., Joyce, D. and Wallace, M. (2014). International developments in skills migration: a case study of the opportunities, threats and dilemmas for Australia. *In Workforce Development*, 37-55. Springer Singapore.

66. Khan, M., Kiani, F.A., Ashraf, A. and Iftikhar-ul-Husnain, M. (2009). Skills, Competitiveness and Productivity. *The Pakistan Development Review*, 48(4), 473-486.

67. Koen, J., Klehe, U.C., Van Vianen, A.E., Zikic, J. and Nauta, A. (2010). Job-search strategies and reemployment quality: The impact of career adaptability. *Journal of Vocational Behavior*, 77(1), 126-139.

68. Komla, A. and Offei-Ansah, C. (2011). Linking tertiary institutions to industries: Evidence from the Vocational and Technical Education Department of the University of Cape Coast. *International Journal of Vocational and Technical Education,* 2(5), 53-60.

69. Lall, S., Weiss, J. and Zhang, J. (2005). *The sophistication 'of exports: A new measure of product characteristics*. Working Paper No. 123, (QEH Working Paper Series – QEHWPS 123). Queen Elizabeth House, Oxford University.

70. Lamb, S. (2011). The TVET and Poor: Challenges and Possibilities. The future of Technical and Vocational Education. *International Journal of Training Research*, 9, 60-71.

71. Latchem, C.R. (2014). Informal learning and non-formal education for development. *Journal of Learning for Development-JL4D*, 1(1). http://www.jl4d.org/index.php/ejl4d/article/view/6

72. Lukas, A.B., Whitwell, J.G. and Heide, B.J. (2013). Why do customers get more than they need? How organizational culture shapes product capability decisions. *Journal of Marketing*, 77, 1-12.

73. MacDonald, S., Nink, C. and Duggan, S. (2010). *Principles and strategies of a successful TVET program*. MTC Institute, USA.

74. Mansor, M. and Rashid, A.M. (2013). Career Indecision: A Cross-Sectional Survey among Students of National Youth Skills Training Institutes. *Middle-East Journal of Scientific Research*, 17(8), 1073-1079.

75. Maringa, M. (2014). Proposed interventions for the technical industrial and vocational enterprise training sector in Kenya. *Journal of Technical Education and Training (JTET)*, 6(11), 2229-8932.

76. Martinez-Fernandez, C. and Choi, K. (2013). Skills Development Pathways in Asia. In *Skills Development for Inclusive and Sustainable Growth in Developing Asia-Pacific* (pp. 155-179). Springer Netherlands.

77. Martinez-Fernandez, C. and Powell, M. (2010). *Employment and skills strategies in Southeast Asia: setting the scene* (No. 2010/1). OECD Publishing.

78. Maurer, M. (2012). Structural elaboration of technical and vocational education and training system in developing countries: the cases of Bangladesh and Sri Lanka. *Comparative Education*, 48(4), 487-503.

79. Mehrotra, S. (2014). Quantity and quality: Policies to meet the twin challenges of employability in Indian labour market. *Indian Journal of Industrial Relations*, 49(3), 367-377.

80. Meijers, F., Kuijpers, M. and Gundy, C. (2013). The relationship between career competencies, career identity, motivation and quality of choice. *International Journal Education Vocational Guidance*, 13, 47-66.

81. Mensah, A.A. and Alagaraja, M. (2013). Exploring technical vocation education and training system in emerging market: A case study in Ghana. *European Journal of Training and Development*, 37(7), 835-850.

82. Mumtaz, K., Saleem, N., Shujat, S. and Qureshi, J. (2010). Informal Economy Budget Analysis in Pakistan and Ravi Town, Lahore. *Women in Informal Employment: Globalizing and Organizing (WIEGO).* Retrieved from http://www.wiego.org/publications/urban_policies_rr3_mumtaz_saleem. pdf

83. Murgor, T.K. (2014). Relationship between technical and vocational acquired skills and skills required in job market; Evidence from TVET Institutes, Uasin Gisho County, Kenya. *Journal of Education and Practice*, 4(19), 77-83.

84. Murray, P. and Polesel, J. (2013). A comparative exploration of learning pathways and transition systems in Denmark and Australia. *European Journal of Education*, 48(2), 233-246.

85. National Vocational Technical Training Commission (2014). Retrieved May 15, 2014 from www.navttc.org

86. Newaz, M.T. and Murtaza, F. and Sadia, F. (2013). Vocational education and training in Bangladesh: why it is not working. *International Journal of Research Studies in Education*, 2(40), 29-40.

87. Obiwerei, O.F. and Nwosu, O.B. (2013). The role vocational and technical education in Nigeria economic development. *Educational Research Quarterly*, 36(3), p47.

88. Obwoge, E.M., Mwangi, M.S. and Nyongesa, J.W. (2013). Linking TVET institution and industry in Kenya: Where are we? *International Journal of Economy, Management and Sciences*, 2(4), 91-96.

89. Okoye, E.R.K. and Chijioke, P.O. (2013). Private-public partnership and technical vocational education and training in developing economy. *Arabian Journal of Business and Management Review*, 2(10), 51-61.

90. Okwelle, P.C. and Ayonmike, C.S. (2014). Towards Value Re-orientation of Youths on the Role of Technical Vocational Education and Training (TVET) for Sustainable Development in Nigeria. *Journal of Education and Practice*, 5(8), 186-191.

91. Oluwale, B.A., Jegede, O.O. and Olamade, O.O. (2013). Technical and vocational skills depletion in Nigeria and need for policy intervention. *International Journal of Vocational and Technical Education*, 5(6), 100-109.

92. Onyene, V., Salisu, R., Johnson, O. and Olusanya, O. (2014). Indigenous orientation in the technical and vocational education programme: Tool for a sustainable society, *International Studies in Educational Administration (ISEA)*, 42(1).

93. Overseas Employment Corporation (2014). Retrieved May 15, 2014 from *www.oec.gov.pk*

94. Pakistan Education Statistics (2011-12). *Academy of Educational Planning and Management.* National Educational Management Information System Ministry of Education, Islamabad, Pakistan. http://www.aepam.edu.pk.

95. Pap, I.C. and Riskó, T.C. (2014). Agricultural vocational training and the labour market in Hungary. *Economic Affairs*, 59(1), 1-10.

96. Punjab Technical Education and Vocational Authority (P.TEVTA). (2014). Retrieved May 10, 2014 from www.tevta.org.

97. Rahim, N.A. and Said, S.M. (2007). *Malaysia country report: The industry-university relationship*. Retrieved March, 25, 2009. www.visbdev.net/visbdev/fe/docs/ui_1.pdf

98. Rasul, M.S., Ismail, M., Ismail, N., Rajuddin, M.R., Rauf, A. and Amnah, R. (2010). Development of employability skills assessment tool for manufacturing industry. *JurnalMekanikal: An International Journal*, 30, 48-61.

99. Saunders, R. (2012). An assessment of professional development for teachers in the vocational education and training sector: An examination of concerned of the concerned based model. *Australian Journal of Education*, 56(2), 182-2014.

100. Schmidtke, C. and Chen, P. (2012). Philosophy of vocational education in China: A historical overview. *Journal of Philosophy of Education*, 46(3), 432-448.

101. Schrock, G. (2014). Connecting people and place, prosperity workforce development and urban planning in scholarship and practice. *Journal of Planning Literature*, 29(3), 257-271.

102. Schwab, K. (2011). The Global Competitiveness Report. *World Economic Forum, Geneva Switzerland.* http://www.ifap.ru/library/book494.pdf

103. Seng, S.L. (2007). *Vocational Technical Education and Economics Development–the Singapore Experience. ITE Paper No. 8, Institute of Technical Education.* Retrieved March 12, 2012, from *http://scholar.google.com.pk/scholar*

104. Seung, N. (2014). Relationship between TVET System and Employment. *New Frontiers of Educational Research*, 9, 109-125.

105. Stuart, D.J. (2012). An examination of factors in adopting a technical and vocational education and training (TVET) program within South Africa. *Human Resource Development International*, 15(2), 249-257.

106. Stuen, E.T., Mobarak, A.M. and Maskus, K.E. (2012). Skilled immigration and innovation: evidence from enrolment fluctuations in US doctoral programmes. *The Economic Journal*, 122(565), 1143-1176.

107. Sua, Y.T. (2012). Democratizing of secondary education in Malaysia: Emerging problems and challenges of educational reform. *International Journal of Educational Development*, 32(1), 53-64.

108. Syjuco, B.A. (2009). The Philippine Technical Vocational Education and Training (TVET) System. Secretary and Director General, Technical Education and Skills Development Authority (TESDA), Philippines.

109. Symonds, W.C., Schwartz, R.B. and Ferguson, R. (2011). *Pathways to prosperity: Meeting the challenge of preparing young Americans for the 21st century*. Report issued by the Pathways to Prosperity Project, Harvard Graduate School of Education.

110. Terra, L. (2014). New histories for a new state: a study of history textbook content in Northern Ireland. *Journal of Curriculum Studies*, 46(2), 225-248.

111. Umunadi, E.K. (2014). Knowledge management and global Information dissemination. *Education*, 134(3), 395-403.

112. UNESCO (2001). *Revised Recommendation Concerning Technical and Vocational Education (2001)*, in Normative instruments concerning Technical and Vocational Education*, Available at: http://unesdoc.unesco.org/images/0014/001406/140603e.pdf*

113. UNESCO (2002). *Technical and vocational education and training in the twentieth century-new roles and challenges for guidance and counseling*. United Nations Educational, Scientific and Cultural Organization, 7 Place de Fontenoy, 75352 Paris 07 SP (France).

114. Wallenborn, M. (2010). Vocational education and training and human capital development: Current practice and future options. *European Journal of Education*, 45(2), 181-198.

115. Wang, L. and Ross, H. (2013). Vocational Education (I): Current Issues and Challenges. *Chinese Education & Society*, 46(4), 3-11.

116. Wang, Y., Qi, Z., Li, Z. and Zhang, L. (2011). Institute-industry interoperation model: an industry-oriented engineering education strategy in China. Asia Pacific Education Review, 12(4), 665-674. www.trainingvillage.gr/etv/Information_resources/NationalVet/Thematic/analysis.asp.

117. Zelloth, H. (2014). Technical and vocational education and training (TVET) and career guidance: The interface. In *Handbook of Career Development*, 271-290. Springer New York.

ANNEX-A

TEST NAME: CAREER ASSESSMENT INVENTORY

General purpose:

The CAI is an interest inventory which is oriented for people considering direct placement, technical, business or community college

Target group:

The general adult population is considered the target group for the Career Assessment Inventory. The preponderance of research and norming, however, has been performed on graduating high school students and persons entering technical or community college. It is viewed in the literature as a good test for career exploration. It has very high reliability (test-retest .90 or above, up to 30 days and .80 up to 7 years). Its content and construct validity are also high (.70 to .80).

Test administration:

The CAI can be self-, individually-, or group-administered. It is untimed. It usually requires 20 to 25 minutes to complete.

Testing considerations/accommodations:

The CAI requires a sixth-grade reading level. It is paper-pencil and is taken on a computerized scan sheet which may be difficult for persons with visual impairments.

Scoring/interpretation:

The CAI is computer-scored and usually takes about 1 week to process. The computer scoring process provides an interesting, albeit complex, printout indicative of the theoretical foundation upon which it was developed.

Reviewer comments:

The Career Assessment Inventory is a well-developed interest inventory which has great application for persons in the process of career planning. It is geared more toward those persons who are considering the semi-skilled and skilled types of work while others who want to consider a 4-year degree or beyond might want to consider to alternative interest inventories (i.e., the Strong Campbell, the Self-Directed Search).

CAREER INTEREST INVENTORY

Circle the letter in front of each statement that best describes you. Circle as many as you wish but try to limit your choices to the statements you feel strongest about.

Group (A)

1. I like playing sports
2. I like solving puzzles
3. I like being the leader in a group
4. I like to talk
5. I enjoy drawing pictures
6. I ask a lot of question

Group (B)

1. I like to spend my free time outdoors
2. Arithmetic is my favourite subject
3. I would rather act in a play then watch one
4. I enjoy being part of a group & solve issue
5. When I grow up I want to be my own boss
6. Science is my favourite subject in school

Group (C)

1. I like to make the from scratch out of wood, Paper, metal, cloth, etc.
2. When I grow up, I want to run my own business
3. I enjoy helping people
4. I enjoy making up stories
5. I can sit and watch birds at a feeder a long time
6. I like to make lists of the things I need to do

Group (D)

1. I like working with plants and animals
2. My handwriting is clear and neat
3. I would enjoy being the mayor of my hometown
4. I would rather work by myself in a group
5. I like to solve complicated puzzles and problem
6. I like putting my feelings into writing

Group (E)

1. I like to work with tools
2. I feel better when my room is neat and clean
3. I am happier playing in a group than by myself
4. I am never shy about telling my friends what I thing
5. I would enjoy decorating my whole house
6. I enjoy looking through an encyclopedia

Group (F)

1. I like to build models
2. I enjoy working on a computer
3. I enjoy doing group projects in school
4. I enjoy meeting new people and making new friend
5. Music is my favourite subject
6. I would enjoy traveling

Count the number of Group A's, B's, C's, etc. you circles and record the results in the blanks below

A's, _____ B's, _____ C's, _____
D's, _____ E's, _____ F's, _____

If you have a score of four or more next to any letter, you might be interested in learning more about the careers similar to these in the clusters listed below. If you did not score four in any category, your interests are still developing.

A	B	C	D	E	F
Coaching	Computer operator/ programmer	Salesperson	Teacher	Actor	College Professor
Mechanic		Manager of a small business	Social worker	Artist	Researcher
Farmer	Accountant		Doctor	Owner of small business	Archaeologist
Veterinarian	Secretary	Clergy	Nurse		Engineer
Plumber	Banker	Lawyer	Paramedic	Fashion designer	
Electrician		Business Manager	Journalist	Architect	
Pilot			Advertising	Musician	
Carpenter			Reporter		

ANNEX-B

GAPS ASSESSMENT TOOL

Q. No. 1. What is the aim of your life?

Q. No. 2. Why did you choose technical education for your career?

Q. No. 3. Did you receive guidance at the time of admission by institution counselor on career counseling?

Q. No. 4. Have you ever got training on career counseling and vocational guidance?

Q. No. 5. Did any industrial expert visit your institute for sharing industrial experience with your class?

Q. No. 6. Have any industrialist visited your institute?

Q. No. 7. Are you satisfied with your theoretical and practical knowledge at institute?

Q. No. 8. Do you have any information about you future Job/Employability/business?

Q. No. 9. Would you like to do job or do self-employment?

Q. No. 10. Did you receive guidance on CV format, interview techniques and presentation skills?

ANNEX-C

LIST OF TEVTA INSTITUTES
(GOVT. COLLEGE OF TECHNOLOGY)

1. Govt. College of Technology Qasimpur Colony Multan, District Multan

2. Govt. College of Technology for Boys, Samnadabad District Faisalabad

3. Govt. College of Technology for Boys, Railway Road, Lahore, District Lahore

4. Govt. College of Technology for Women, Lytton Road, Lahore, District Lahore

5. Govt. College of Technology for Boys, Raiwind Road, Lahore, District Lahore

ANNEX-D

LIST OF EMPLOYERS

1) Mr. Muhammad Asif, Assistant Manager (HR), Kamal Textile Mills, 25 KM, Khurrianwala, Faisalabad.
2) Mr. Muhammad Bahshir, Manager, Bashir Associates, 10 KM, Khurianwala, Faisalabad.
3) Mr. Attique Rehmat, Assistant Manager, Pak Elektron Limited, 14 KM, Ferozepur Road, Lahore.
4) Mr. Shahzad, Masood Textile, 32 KM, Sheikhupura Road, Faisalabad.
5) Mr. Saleem, Senior Manager (Productions), MECAS Engineering (Pvt) Limited (MEL), ½ KM, Katar Bund Road, Thokar Niaz Baig, Lahore.
6) Mr. Jahangir Mushtaq Khan, Al-Aziz Group, 10 KM, Lathianwala Stop, Khurianwala, Faisalabad.
7) Mr. Muhammad Sarfraz, Assistant Manager (HR), PEPSI Cola, 10 KM Sumandry Road, Faisalabad.
8) Mr. Asad Abu Bakar, HR Executive, DESCON Engineering Limited, 18 KM, Ferozepur Road, Lahore.
9) Mr. Muhammad Arif Lodhi, Manager HR & Legal, Allah Wasaya Textile & Finishing Mills, Multan.
10) Mr. Wazar Ahmed, GM (HR), 10 KM Samundary Road, Faisalabad.
11) Mian Shahzad, Executive, 3D Construction, Madina Town, Faisalabad.
12) Mr. Muhammad Ahmad, Interloop Pvt Limited, 85 KM Khurianwala Road, Faisalabad.
13) Mr. Nasir Hussain, DGM, Chen One Store, Main Head Office, Faisalabad.
14) Mr. Sajjad Ahmed, DGM, DGM, Chenab Limited, Nishatabad, Faisalabad.
15) Mr. Sajjad, Assistant Manager, Mughal Steel, 17 KM, Sheikupura Road, Lahore.
16) Mr. Muhammad Yasir, Al – Hilal Industries (Pvt) Limited, Vehari Road, Mutan.
17) Ch. Latif Qamar, Exin Chemicals Corporations, 33 – B Industrial Estate, Multan.
18) A. Razzaq & Co. Mr. Jawad Ahmad, Managing Partner, 70 – Steel Sheet Market Landa Bazar, Lahore.
19) Mr. Amir Riaz, Propriter, A.H Steel Industries, MominPura Road, Darogewala, Lahore.
20) Mr. Riaz, Coca-Cola, 6 – KM Samundari Road, Faisalabad.

ANNEX-E

QUESTIONNAIRE
(Employer/HR/Training Manager)
Organisation Profile

1. Name (optional):_____
   a. Position:_____
   b. Qualification:_____
   c. Contact_____

2. Name & address of the organization with contact No._____
   _____

3. Year of establishment:_____

4. Organization related to:_____
   a. Construction
   b. Pharmaceutical
   c. Chemical
   d. Manufacturing
   e. Transport Communication
   f. Any other (Please specify)_____

5. Total number of employees (all types):

	Male	Female	Total
a. Unskilled			
b. Semiskilled			
c. Skilled			

6. Number of workers by job titles:

S#	Employee's Trade/Field Designation	Office work		Field work		Industrial Work		Marketing		Any Other (Pl. specify)		Total	
		M	F	M	F	M	F	M	F	M	F	M	F
1													
2													
3													
4													
5													
6													

7. What type of productions /Services is your industry in? (Please enlist name of your products / Services).
   a. _____
   b. _____
   c. _____

Skilled Employees

8. How do you hire skilled work-force?
   a. through the TVET institution
   b. Advertisement
   c. Reference
   d. Any other

9. Do you think that your newly hired skilled labor is?
   a. Appropriately skilled
   b. Not appropriately skilled
   c. Needs a lot of improvement & training

10. How would you rate the newly hired skilled labor, as compared to your existing work-force?
    a. Better than the existing in terms of skill level and work attitude.
    b. Need a lot of improvement, grooming and training

11. Do you think that the skills / training provided by TEVTA Institutions are?
    a. up to mark
    b. according to industry demand
    c. out dated
    d. not relevant

12. The priority for training as a strategy in your organization is:
    a. High
    b. Low
    c. Uncertain

13. Does your organization have a :
    a. Training Section/ Unit
    b. Training Officer/manager
    c. Other Training System_____

14. Do you provide training to your skilled workforce?
    a. Regularly
    b. Don't need to
    c. When required

15. What sorts of training is required or you have provided to the newly inducted workforce?
    1. _____
    2. _____
    3. _____
    4. _____
    5. _____

Linkage with institutions

16. Please answer the following and comment where required:

S#	Description	Yes	No	Please comment/specify
A	Is there any instructions, by the government to your industry to provide OJT / placement to the TEVTA graduates?	Yes	No	
B	Does your enterprise have a contact with TVET institutions?	Yes	No	
C	Do the TEVTA Institutions contact your industry for seeking job opportunities /feedback of their pass outs.	Yes	No	
D	Have the principals of TEVT Institutions ever visited your organization?	Yes	No	
E	Have the TVET institutions ever asked for training of their faculty in your organization?	Yes	No	
F	Is there any other agency that contacts your organization seeking job opportunities for TVET pass outs?	Yes	No	

17. For an effective implementation of TVET System, linkage between industry and TVET Institution is vital. Are you willing to extend your cooperation to these institutions in the form of:-

S#	Description	Yes	No	Please comment/specify
A	Internship contracts	Yes	No	
B	Lectures by your executive at the institutions	Yes	No	
C	Practical training of the teaching staff in your setup	Yes	No	
D	Liaison with some education forums	Yes	No	
E	Encouraging visits by student groups to your industry/organization	Yes	No	
F	Scholarships for needy students	Yes	No	
G	Financial assistance to the technical and vocational institutions	Yes	No	
H	Assisting the institute by provision of equipment and renewal	Yes	No	
I	Provision of regular information of the industry/organization, having implications for training, in the form of:			
J	Publications	Yes	No	
K	Newsletter	Yes	No	

Linkage through an Intermediary Agencies

18. Do you think Intermediary agencies would enhance industry - institution linkage?

S#	Description	Yes	No
A	Is there any organization/ agency that plays a role of an intermediary between your industry and TVET institutions for hiring of skilled work force? If yes, identify _____	Yes	No
B	Would you prefer to have any such agency where data on the skilled workforce is readily available and which can provide you with job-ready skilled work force	Yes	No
C	Do you think that presence of an intermediary agency would enhance the linkage between industry and technical institutions?	Yes	No
D	Will you provide feedback on trainees to the intermediary agency to improve their skills level	Yes	No
E	Do you think that existence of an intermediary agency would help in production of quality skill workforce for industry?	Yes	No
F	The intermediary agency should be purely government owned	Yes	No
G	The intermediary agency should be public-private partnership based	Yes	No
H	What would be your suggestion?		

Shortage of Skilled Force

19. Is there a shortage of skilled labor in the country? State your opinion:
    a. there is shortage of skilled labor
    b. the skilled labor is more than the requirements
    c. never thought about it
    d. never faced any problem
    e. other:_____

20. In case of shortage what kind of problems industry is facing?
    a. _____
    b. _____

21. Is your organization performance affected by the shortage of skilled work force?
    ❒ Yes ❒ No

22. How does your organization respond to the shortage of skilled workforce?
    (Check all that apply/rank)
    a. Keep vacancies unfilled.
    b. Allow or require over timework / outsourcing
    c. Purchase labour saving equipment.
    d. Improve in-service training for latest equipment.
    e. Raise wages offers.
    f. Others:_____

Future Plans

23. What are the plans of your organization/industry in next ten years?
    1. To expand
    2. To diversify
    3. To go for international standards
    4. Develop HR
    5. Any other,_____

24. Skills competitiveness with international standards?

S#	Statement	Yes	No
A	Do you use international standards for the production of quality Product?		
B	Is your organization ISO certified?		
C	Do you train your employees on the international standards?		
D	Do you think that your skilled workforce is compatible according to global standards of Sophisticated Manufacturing?		

25. What new skills do you think would be needed to match the future demand of the industry?
    a. _____
    b. _____
    c. _____

26. Pleaseindicateinwhichtrade/technologiesyouremployeesneedup-gradation
    a. _____
    b. _____
    c. _____

27. State a few measures which should be taken by TVET organizations to improve the quality of skilled Workforce
    a. _____
    b. _____
    c. _____

28. What are the major reasons for lack of skilled labor problems at the institution end?
    a. Outdated TVET curricula
    b. in adequate practical training
    c. Out dated theoretical knowledge
    d. Unqualified faculty
    e. Lack of proper counseling / guidance
    f. Lack of personal grooming

29. Please give some suggestions to improve curricula of institutes
    _____
    _____
    _____
    _____

ANNEX-F

QUESTIONNAIRE
Principal / HOIs

I- Profile of Institution

1. Institute's Name & Address_____
   _____
2. Relevant District_____
3. Name of the Principal _____

II- Student Placement

S#	Description	Yes	No	Comments/suggestions
1.	Is there Institution Management Committee (IMC) of your institute?	Yes	No	
2.	Is there a system at your institute to maintain at racer study of your graduates?	Yes	No	
3.	Do you have a designated (exclusive) placement officer in your institution?	Yes	No	
4.	Do you have an effective placement system?	Yes	No	
5.	Is there a data base of your graduates?	Yes	No	
6.	Does the data base record employment tracks of your graduates?	Yes	No	
7.	Is there a training officer / councilor at local level for your graduates for their career counseling?	Yes	No	
8.	Is there any system for the Career counseling of institution trainees at the time of admission in between and at the completion of certificate/diploma?	Yes	No	
9.	Do you maintain any sort of contact with the relevant industries for your graduates' placement?	Yes	No	
10.	Do employers contact your institute for employees?	Yes	No	
11.	Do you have training contracts for your instructional staff with the industry?	Yes	No	
12.	Do you have training contracts for your students with the industry?	Yes	No	
13.	If yes, What is the response of industry? Please comment			
14.	Any suggestion/comment from your side regarding any of the above matters?			

III- Skill Development & Enhancement Efforts

S#	Description	Yes	No	Comments/suggestions
1.	Do you have assessment centre at institute to measure the quality of skills of graduates for suitable opportunities?	Yes	No	
2.	Do you have a system to invite industries employers at assessment center to analyze the skills level of your graduates?	Yes	No	
3.	Do you arrange on-field training programs for your instructional staff?	Yes	No	
4.	Do you arrange teacher's visits to industries for assessment of industrial environment	Yes	No	
5.	Is it part of job description of your instructional staff to contact industry or enterprise for arrangement of students visit to the industry?	Yes	No	
6.	Do you arrange student visits to industries?	Yes	No	
7.	Are the resources, facilities, equipments, supplies or support services at your institute adequate for instructional staff?	Yes	No	
8.	Are the resources, facilities, equipments, supplies or support services at your institute adequate for the trainees?	Yes	No	
9.	Do you think you are producing job-ready graduates?	Yes	No	
10.	Do you think you equip your graduates with adaptable knowledge which helps them to settle in a changed or improved skill-environment?	Yes	No	
11.	Is structured workplace learning part of the curricula?	Yes	No	
12.	Do you think the curricula is being taught in your institution is relevant to the emerging need of labor market?	Yes	No	
13.	Do you invite industry experts to share their knowledge with your faculty and students?	Yes	No	

IV-TVET System - Stakeholders Link

Field Management

S#	Description	Yes	No	Comments/suggestions
1.	Do the District Board Members visit your institutions?	Yes	No	
2.	Does the District Board of Management helps in linkage with industry for placement of trainees?	Yes	No	
3.	Do Institution Management Committee (IMC) help in linkage with industry?	Yes	No	

Industry

S#	Description	Yes	No	Comments/suggestions
1.	Is there any mechanism to review feedback of industry in terms of the quality of skill level?	Yes	No	
2.	Is there any specific instruction to TEVTA Institutions to contact industry with reference to arrange Internship/OJT/Placement for his / her trainees?	Yes	No	
3.	What are the sources of contact with concerned industry / employer?	**Industry Visit**	**Alumnae**	**Job fairs / workshops** / **News-papers** / **Any other**
4.	What percentages, of your graduates, are placed in the industry?	**0-30 %**	**30-50 %**	**50-70 %** / **70-100 %** / **No idea**
5.	Do the employers contact your organization for in case they need to fill up skilled workforce vacancies	Yes	No	If YES, then through: a. Through BOM b. Through IMC c. Physical visits d. Telephonically e. Advertisements f. Seminars/workshops g. Any other_____

Role of an Intermediary Agency

S#	Description	Yes	No	Comments/suggestions
1.	Is there any intermediary agency to strengthen liaison of institution with industry?	Yes	No	
2.	Can the existence of intermediary enhance the level of employment by keeping liaison with industry.	Yes	No	
3.	Is there any system to assess employer/ industrialists' demands?	Yes	No	

Flaws in the TVET System & Recommendations

S#	Statement	Comment please:
1.	What are the reasons for low absorption of trainees in industry?	a. Poor quality of TVET graduate b. Irrelevant Curricula c. Weak industry institution links d. Obsolete theoretical knowledge e. Any other reason_____
2.	What efforts are required by your institution to deal with skill deficiencies?	a. _____ b. _____ c. _____
3.	How else can the skill deficiency be managed?	a. _____ b. _____ c. _____
4.	What changes would you recommend in curricula?	a. _____ b. _____ c. _____

19. Recommendations / suggestions for better industry – Institution linkage for absorption of trainees?

a. _____

b. _____

c. _____

QUESTIONNAIRE
for Graduates/Employees

I- Personal Profile

1. Name: _____
2. Job Title: _____
3. Organization's Name: _____
4. Job duration in this organization: _____
5. Qualification: _____
6. Graduation year: _____
7. Institute's Name: _____
8. Group/ Trade & Specialization: _____
9. Why did you opt for this trade? _____
10. Any additional Qualification or experience: _____

    _____
11. Why did you opt for TVET Education? _____
12. Contact No: _____

II- Experience at Industry

1. Experience received after getting job in industry.

a	What was your hiring mode?	a. Institution Counselor b. Advertisement c. Reference d. Any other _____			
b	Time taken to find this job after completing your certificate / diploma?	Within 01 year	Within 2 years	Within 3 years	More than 3 years
c	Was it difficult to find job after qualifying?	Yes	No	Comments, if any:	
d	Was your training at TEVTA, helpful in your hiring?	Yes	No		
e	Do you think you were adequately trained by your institution?	Yes	No		
f	Do you think you received adequate theoretical knowledge?	Yes	No		

g	Utilization of your acquired skills in the current job is:	100%	75%	50%	25%	Not at all
h	Utilization of your theoretical knowledge in the current job is:	100%	75%	50%	25%	Not at all
i	Did you learn additional skills to fulfill current job requirements?	Yes	No	If yes what type of skills? a. _____ b. _____		
j	Was additional training provided to you by your employer?	Yes	No	Comments, if any:		
k	Are you satisfied with your existing job?	100%	75%	50%	25%	Not at all
l	Are you satisfied with your salary and other facilities provided by the organization?	Very satisfied	Partly satisfied	Not at all satisfied		Got no other option
m	What improvements would you want in terms of your job?	a. _____ b. _____ c. _____				

2. In your opinion which group / trade or technology has more scope in the field as far as job opportunity is concerned?

_____

_____

_____

3. Why aren't you in that trade?

_____

_____

4. Suggest ways to create a link between the institute and the industry?
   a. _____
   b. _____
   c. _____

5. Identify gaps between the training you received from your institute and industries skill needs?
   a. _____
   b. _____
   c. _____

6. Suggest at least three most necessary skills for job in industry:
   a. _____
   b. _____
   c. _____

III- Suggestion / Measures

7. To meet market demands. Which of the following suggestions / measures should be implemented in the institution?

S#	Description	Strongly Agree	Agree	Partially Agree	Disagree
a	Practical on job Training (OJT) must be compulsory.				
b	Students industrial / organizational visits for internships				
c	Affiliation of each institution with relevant industry				
d	Visiting teacher / demonstrator from relevant industry.				
e	Well-equipped Labs/ Shops				
f	Books & Examination should be in English				
g	Evaluation system be strict				
h	Make on-field training part of the curricula				
i	Institute should provide a career counseling service				
j	Quality of teachers must be improved				
k	Quality of teachers must be assessed				

8. What are your suggestions for better absorption of TEVTA trainees in industry?

_____

_____

_____

_____

_____

_____

Thanks