

Skills Gap Analysis

Punjab

FOREWORD

National Vocational and Technical Training Commission (NAVTTTC) has developed National Skills Strategy 2009-2013 urging a paradigm shift from curricula-based education to competency-based training. One of the main focuses, among others; is provision of relevant skills for industrial and economic development, improvement of access and employability and assurance of quality through an integrated approach.

Employability and productivity of the workforce is crucially linked with their level of Technical Education and Vocational Training (TEVT) competencies. The demand for trained and skilled workforce increases with every step towards promotion of industrialization and modernization of production processes. Swift technological changes and ever-increasing global competition under a new world of work has also made knowledgeable, skilled and adaptable workforce indispensable for a country which aims to compete in the global economy and targets prosperity for its people. Indeed, these developments require a TEVT system that is fully responsive to the challenges of a rapidly globalizing economy.

Economic development of a nation hinges on the right mix of policies for optimal use of available resources combined with valuable human resources. Economic growth leads to poverty reduction and generation of resources to sustain development through properly skilled human resource. In order to secure results of economic growth in terms of high-skilled human resource, first-hand information about characteristics of the existing labour force such as their distribution by region and gender, age composition, skill level, productivity etc. are essential for informed and evidence based decision making.

“Skills Gap Analysis - Punjab” is a comprehensive report, which indicates skilled workforce supply and demand mismatch. This is contributing into the un-employment rate on one side and skilled workforce shortage on the other side, in addition to lowering productivity of the industrial sector.

Preparation and publication of this report would not have been possible without the support of Industries Department and TEVTA Punjab. The inputs of employers, chamber of commerce and industries and field staff who braved all sorts of problems to collect the data and valuable support of NAVTTTC-NSIS Team are commendable.

I hope this report will be useful for policymakers, researchers and other TVET stakeholders in formulation and implementation of policies and programmes that would help in creating decent employment and enhancing productivity of the industrial sector in Pakistan.

Dr. Nasir Khan

Executive Director, NAVTTTC

CHAIRMAN MESSAGE

National Vocational & Technical Training Commission (NAVTTTC) is the apex body for TVET Sector in Pakistan. To fulfill the vision of a developed, industrialized, just and prosperous country through rapid and sustainable development, the present Government is paying special attention to skill development for enhancing greater employability of youth and industrial productivity. National “Skills for All” Strategy, 2019 sets the direction in this regard. The strategy aims in providing relevant and market-oriented skills to enhance employability, improve quality of TVET and reduce mismatch between demand and supply of skilled youth.

An in-depth and accurate analysis of the job market trends is always the first step in introducing the right policies, strategies and programmes for skills development. Being cognizant, NAVTTTC established National Skills Information System (NSIS) with the purpose to collect, analyze and disseminate labour market information to relevant stakeholders. The Skills Gap Analysis in Punjab Report for year 2018 provides important information about job trends in the province and highlights mismatch in demand and supply of skilled workforce. The analysis and recommendations provided in this report would help in taking corrective actions and evidence-based decision making for skills development initiatives, setting priorities and future investments in the sector.

I want to acknowledge and appreciate work of NSIS Team, their hard work and amount of time dedicated to preparation of this report. I am also thankful to TVET Sector Support Programme (TSSP) which supported us diligently in this endeavor.

Syed Javed Hassan
Chairman NAVTTTC

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ACRONYMS USED

AJK	Azad Jammu and Kashmir
BTE	Board of Technical Education
CBT&A	Competency-based Training and Assessment approach
DAE	Diploma of Associate Engineer
DIT	Diploma of Information Technology
D.G Khan	Dara Ghazi Khan
FATA	Federally Administrative Triable Area
GB	Gilgit Baltistan
GIZ	Deutsche Gesellschaft for Internationale Zusammenarbeit
ICT	Islamabad Capital Territory
KP	Khyber Pakhtunkhwa
NAVTTTC	National Vocational & Technical Training Commission
NSIS	National Skills Information System
NSS	National Skills Strategy
NVQF	National Vocational Qualification Framework
PBOS	Provincial Bureau of Statistics
SPSS	Statistical Packages for Social Sciences
STATA	Statistical Packages for Analysis
SSP	Sector Support Program
TEVTA	Technical Education & Vocational Training Authority
TTB	Trade Testing Board
TVET	Technical & Vocational Education & Training
TWG	Technical Working Group

EXECUTIVE SUMMARY

The unhindered progress and prosperity of any country rests with sustainability in the growth and development of skilled workforce in different sectors of economy. The measurement of skills gap in the labor market assists and guides the policy makers for decision making in maintaining balanced labor market in the country. The unavailability of potential workers, shortage of the required skills and trainings result in rise of unfilled jobs in the industry leading to persistence of skills gap as barrier to higher industrial growth. The National Skills Information System (NSIS) (www.skillingpakistan.org) has been created to provide ready information on skills to various stakeholders.

A survey has been carried out in this regard across Punjab to obtain data from employers in the manufacturing, services, construction and energy & power sectors. The objective is to measure the existing demand of labor market with the annual supply of skilled workforce coming from TVET institutes to find out skills gap in the provincial labor market.

There are 1,836 TVET institutes registered in the province including 666 technical institutes and 1,170 vocational institutes. Out of which, 205 institutes offer vocational training and 160 institutes are engaged in imparting technical education. At present, there are 545 vocational and 249 technical women institutes in the province whereas, number of functional male vocational and technical institutes are 420 and 257, respectively, to fulfill the demand of skilled workforce. The males' share in the annual skilled workforce supply is 74% while females share is around 26% in Punjab.

The manufacturing sector employers leads the highest coverage at 68%, followed by construction 24%, Hospitality 7% and energy & power 1% each. Data shows high gender disparity in skilled workforce with 97% male and 3% female. The low level of female workforce participation is an indicator of weak employment opportunities available in the formal economy, however the self-employment in female related trades is high.

The analysis of skilled workforce in sampled establishments in Punjab shows that work-based learners constitute 39% followed by informal sector at 36%. The least skilled workforce is provided by TVET sector at 25% of total workforce. Skill deficiency analysis presents that 19% deficiency is found in the manufacturing sector, followed by 30% in construction sector. Energy and Power is the least deficit sectors amongst others. Services sector experiences highest shortage of skilled force at 38%.

The estimates of supply by level shows that the highest demand of skilled workforce has been recorded in level of short courses with 47% followed by 22% demand in diploma level and 15% demand in certificate level, respectively. The least demand of skilled workforce has been registered under category of others level with 8% followed by 5% demand in DAE level and 2% demand in B. Tech level, respectively. The short course is the level that provides the highest skilled workforce with 54% followed by diploma level with 32% and certificate level with 23%. The least level is B. Tech with 2% provision of skilled workforce followed by DAE with 9%, respectively.

The analysis of supply and demand skills gap shows that manufacturing sector leads with demand of 81% (202,640) against 17% (41,918) supply indicating gap in supply to the sector. Services sector with supply of 64% (160,227) against demand of 24% (62,261) of total skilled persons presents a gap on demand side. Less difference between demand and supply of skilled workforce is found only in construction sector with demand of 14% (35,356) against supply of 10% (26,801). The least demand and supply of skilled workforce has been recorded in energy and power sector that comprises of 4% (7,665) of skilled persons against less demand of 2% (5,439) skilled persons. There is an urgent need to bridge the gap between supply and demand of skilled workforce in these sectors for relevant supply against ever changing demand to ensure improved industrial production.

The data analyzed after taking interview of different employers has shown that 47% respondents showed satisfaction towards supply of various TVET graduates while 18% are not satisfied. The remaining 35% did not respond to the survey.

District wise estimates shows that highest employment trend is found in Sialkot district with 8.8% (430,647) of total number of people covered in the survey. It was followed by Lahore with 7.7% (375,988), Rawalpindi with 7.5% (370,156), Gujranwala and Gujrat with each 6.8%, Faisalabad with 5.8% and DG Khan with 4.8% employment of trends in the skilled workforce. The least employment trend has been recorded in Chinot with 0.1% followed by Pakpattan with 0.7% Nankana Shaib with 0.8 % and Khushab with 1%, respectively. Similarly, a mix employment trend is found in other districts.

The key findings of this study will facilitate the policy planners at federal and provincial level, training institutes and other TVET stakeholders for evidence-based decision making for designing and implementing the demand driven training system to reduce the demand supply gap in the province.

INTRODUCTION

Measuring skills gap in the labor market assists policy makers in informed decision making that enhances the quality of skills supplied to labor market, resulting in improved business climate. The regular research and monitoring of the skills gap can enable policy makers to improve the TVET system and to produce a demand based skilled workforce. This is essential for improving the country's international competitiveness, which can help attract investment and foster higher economic growth. The skills mismatch in Pakistani national and provincial labor market is the result of lack of standardization and coordination among the training providers/TVET authorities and employers.

Recognizing the critical role of skills development in achieving sustainable economic and social development, maintaining global competitiveness and responding timely to changes in technology and work patterns, the Government of Pakistan has committed to a major reform of its system of Technical Education and Vocational Training (TVET). Since April 2011, the TVET Sector Support Programme (TSSP) have been assisting the Government of Pakistan in the implementation of its ambitious TVET sector reform. The programme is co-funded by the European Union and the Federal Republic of Germany and implemented by the Deutsche Gesellschaft for Internationale Zusammenarbeit (GIZ) GmbH¹. Programme partners include the National Vocational and Technical Training Commission (NAVTTTC), the Technical Education and Vocational Training Authorities (TEVTAs) in provinces and regions, Punjab Vocational Training Council (PVTTC) and many other stakeholders.

The National Skills Strategy (NSS), which forms the basis of the on-going reform in the TVET sector, has the following three objectives:

1. Providing relevant skills for industrial and economic development
2. Improving access, equity and employability
3. Assuring quality to address the major issues confronting the TVET system.

Based on guidelines provided in the NSS and the Vision 2025, the Ministry of Federal Education and Professional Training has developed a broader National TVET Policy with the consultation of various stakeholders from both the public and private sectors. The TVET policy places emphasis on increasing training opportunities for young people, reskilling existing workers, implementing the National Vocational Qualification Framework (NVQF) and the

1 Project document TVET SSP

Competency-based Training and Assessment approach (CBT&A).

NATIONAL SKILLS INFORMATION SYSTEM

The TSSP supported NAVTTC in establishment of National Skills Information System (NSIS). The NSIS supports decision makers and TVET planners in policy formulation and execution by providing research-based labor market data. It also facilitates career guidance and placement services for TVET jobs seekers and employers. The main objectives of the NSIS Cell include:

- To provide reliable national skills information for skills development of the workforce in employable skills
- To provide timely and accurate information for demand and supply analysis to TVET planners, training institutes, industry, academia, students and public in general;
- To establish and facilitate career/vocational guidance and placement services for TVET graduates and potential employers;

It is essential to have a complete picture of skilled workforce supply to labor market and skills demand. The mismatch in the supply and demand is the main cause of unemployment of the TVET graduates. To ensure proper functioning of NSIS as well as accuracy of the information/data available, it is important to feed labor market data from both supply and demand side in the system. The supply side data, i.e., data from TVET institutes and provincial/regional TVET governing bodies (e.g. TEVTAs) was added through the supply side census last year. The demand side data i.e. data from the employers and industry about skilled workforce requirement has been collected already for Khyber Pakhtunkhwa, Baluchistan, AJK, Gilgit and Sindh.

Institutional arrangements for collection of data is an integral part of NSIS. The ability to collect and gather relevant information on regular basis, with scope of sustainability by NSIS is directly dependent on the institutional structure in which the system operates. Linkages are required between government departments, responsible for various policies affecting the labor market, on the one hand, and statistical agencies on the other. The use of administrative records or the operation of a system of key informants, involves establishing a network of many organizations, including both users and producers of information.

OBJECTIVES OF REPORT

The overall objective of this report prepared by the NSIS Cell was to collect data to calculate labor market demand for skilled workforce in Punjab for the following purpose:

To calculate and predict the skilled workforce demand of the provincial labor market

To compute the supply of skilled workforce produced annually by TVET institutes in the province by different trades

To calculate supply-demand skills gap by different skills/trades in provincial labor market

To generate actionable policy recommendations for reducing the skills deficiency gaps in Punjab

METHODOLOGY

On the recommendations of Technical Working Group (TWG), the NSIS Cell developed a short questionnaire for collecting demand side information on skilled workforce from the major industries/ employers in the province. This demand side questionnaire has been implemented in the mentioned target area of Punjab, with the support of provincial stakeholders. Data from around 10,000 establishments was collected from large scale industries in the province, as shown in following table. Supply side data collection on the number of TVET graduates produced annually is a regular process of collection of information from all public and private TVET institute across the country since 2015. Data collected from main economic sectors is shown below.

Sample Size

Sector	No. of Units
Manufacturing	6,907
Construction	2,397
Services	754
Energy & Power	121
Total	10,179

Each field team has collected data from the assigned area. Data was collected from the following four main economic sectors of Punjab province:

1. Manufacturing Sector
2. Construction Sector
3. Services (Hospitality) Sector
4. Energy & Power Sector

Each team visited the industrial zone, hotels/restaurants, construction industries and site area of power generation and their offices. The independent monitoring staff was engaged for ensuring data quality and editing.

In first phase, the demand-side questionnaire was restricted up to three main indicators on the request of employers in Technical Working Group (TWG) meeting for trust building between employers and NSIS cell and in future, the revised questionnaire will be shared with TWG for approval. Following are the indicators against which data was collected.

- Existing technical staff (trade, level and gender wise)
- Existing skilled workforce deficiency (trade & level wise)
- Future skilled workforce requirements (trade and level wise).

Industries Department in Punjab provided approvals for the data collection and hired

as many as 60 experienced field staff. The nominations of these staff were provided by NAVTTC and the staff was involved on regional level.

Data Quality

The data quality was ensured through comprehensive training of field staff and random spot checking. Field level monitoring team and NSIS were directly involved in the data collection process to ensure data quality and data editing of all questionnaires before data entry.

Data Analysis

Data analysis was carried out at NSIS Cell with data analysis software STATA or SPSS-19, the main purpose the analysis was to identify the supply and demand of skilled workforce, through skills gap analysis.

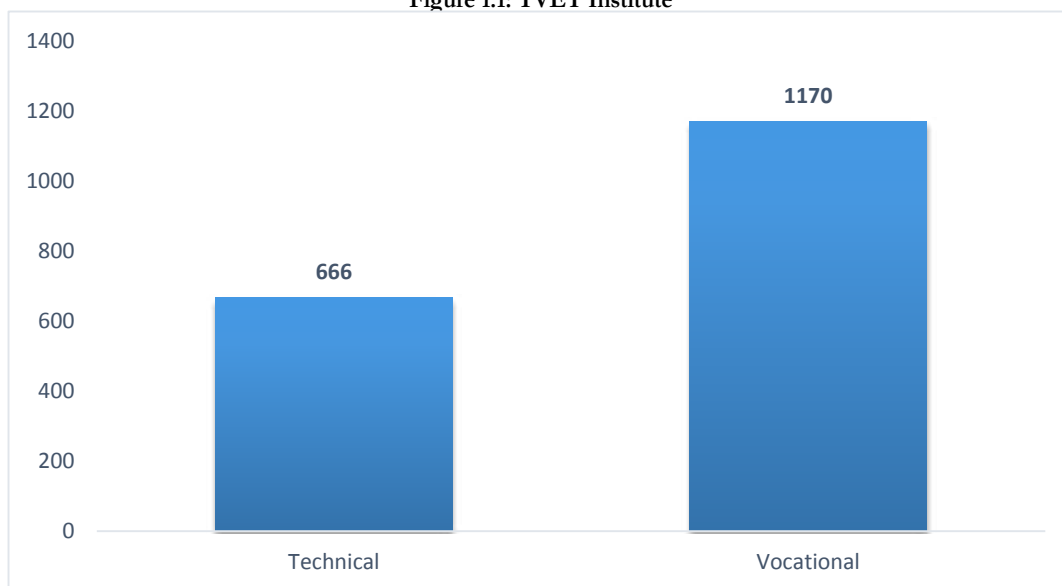
TYPE OF TVET INSTITUTES IN PUNJAB

Figure 1.1 below shows the availability of technical and vocational training institutes in Punjab. There are total of 1,836 institutions working in the province, with the majority of these 1,170 (64%) are involved in providing vocational education to both male and female. Remaining 666 (36%) of the institutions are engaged in providing technical education, both in private and public sectors. This implies that vocational institutes are the major provider of TVET sector in Punjab and indicates towards mismatch at the skill level that usually result in unem-

RESULTS AND INTERPRETATION

ployment. The data shows that vocational trades are more preferred by the public and private sector due to its twice presence than technical in Punjab province.

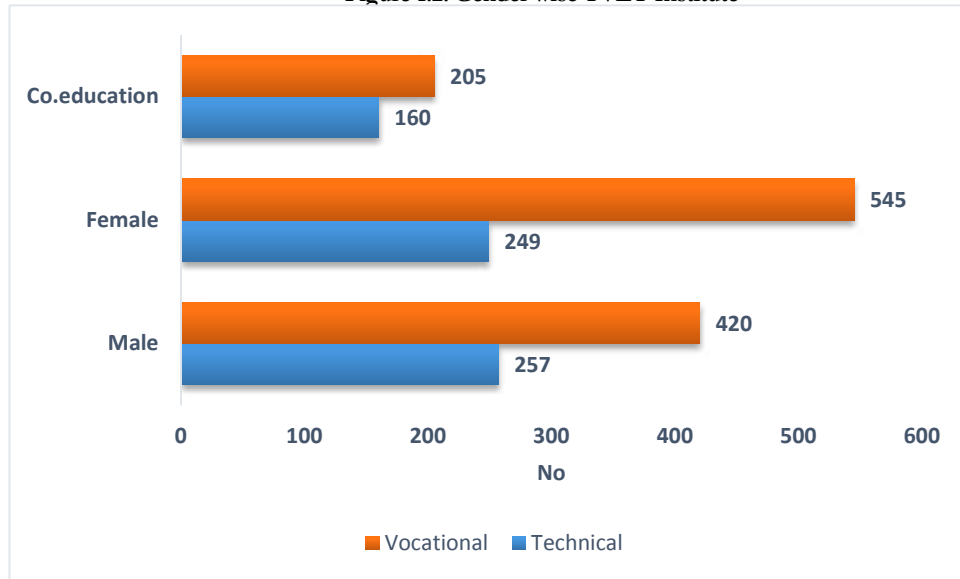
Figure 1.1: TVET Institute



GENDER AND TYPE WISE TVET INSTITUTES

Gender wise distribution of TVET institutes are given in figure 1.2, presents access to both gender to vocational and technical training. The data indicates that number of male students studying in technical institutes stands at 51% (257) with share of female students 51% (249). On the other hand, share of female enrolment in vocational institutes is 56% (545) against share of male enrolment 46% (420). Results indicates that there is only 2% gender gap in technical institutes, which shows an encouraging status. However, this gap widens in vocational institutes to 10% indicating higher gender disparity in the province.

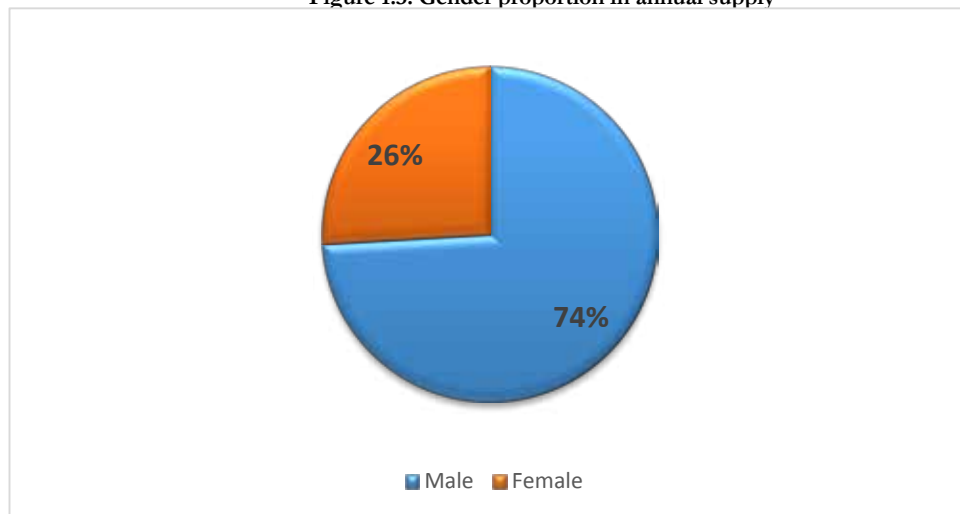
Figure 1.2: Gender wise TVET Institute



GENDER WISE ANNUL SUPPLY OF SKILLED WORKFORCE

The figure 1.3 indicates the gender composition of skilled workforce in various economic sectors. Data analysis reveals that male accounts for 74% while 26% are female. Gender gap evidently presents poor picture as fewer women are enrolled in the TVET institutes. As per new census statistics, almost half of the population comprises of women, who, if engaged in these economic sectors, can play very vital role in enhancing the provincial economy.

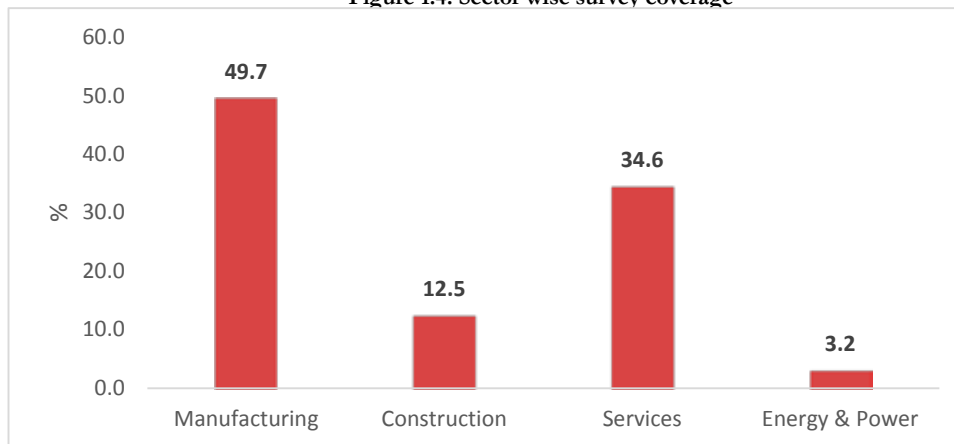
Figure 1.3: Gender proportion in annual supply



SECTOR WISE COVERAGE

The Figure 1.4 shows sector wise distribution of the establishment level survey to access demand for skilled workforce in the Punjab province. The analysis of data obtained through a survey indicates that the manufacturing sector leads the highest proportion 49.7% in coverage of survey. It is followed by other sectors such as services 34.6%, construction 12.5% and energy as well as power with lowest proportion of 3.2%. The rising demand of skilled workforce must be adjusted in those sectors that need their services through effective use of both technical and vocational institutes in the Punjab province.

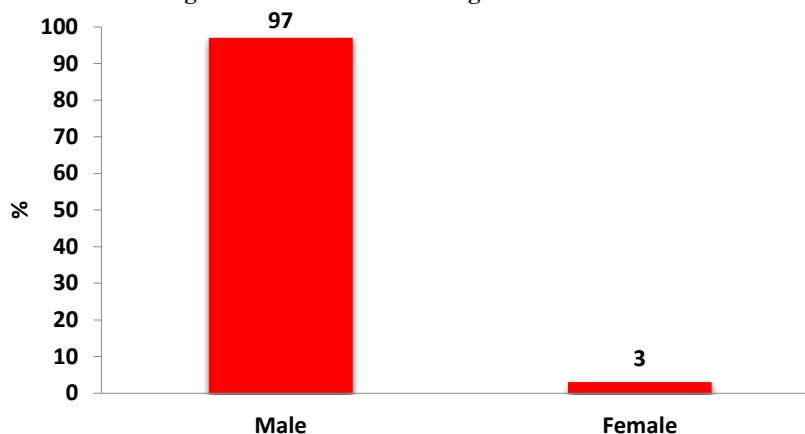
Figure 1.4: Sector wise survey coverage



GENDER WISE EXISTING SKILLED WORKFORCE

Figure 1.5 shows the supply of gender wise skilled workforce in the Punjab. The analysis of data indicates that 97% workforce is male while only 3% is female. This reveals a daring fact that females are not encouraged to enroll in non-traditional trades and apply on jobs which are primarily captured by males for decades. This is a policy lesson for the provincial government to step ahead and adopt courageous measures to encourage females in skilled workforce.

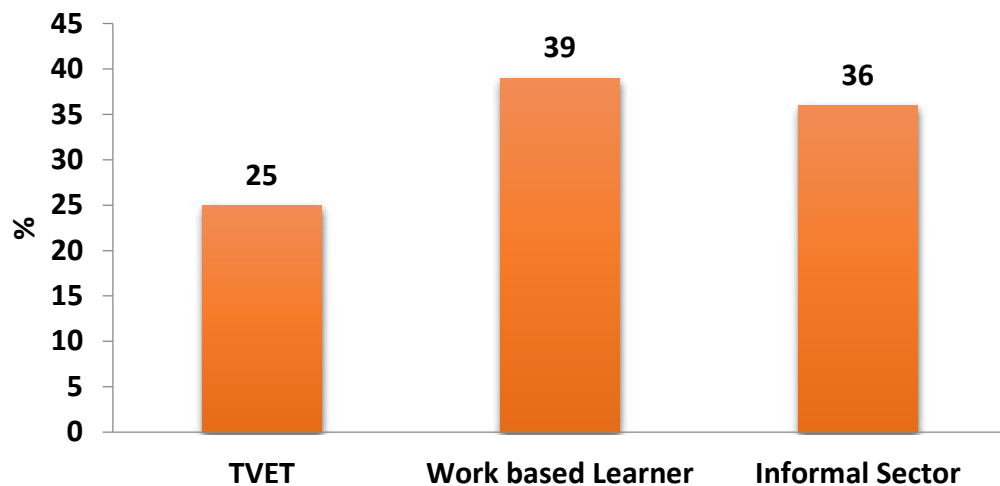
Figure 1.5: Gender wise existing skilled workforce



SOURCE OF EXISTING SKILLED WORKFORCE

The figure 1.6 presents data on the sources of existing skilled workforce working with employers of various sectors. The analysis shows that main source of skilled workforce in the surveyed establishment is “Work Based Learner” that records at 39% being the highest source of skilled workers. Another important provider is informal sector which stands at 36% while TVET with 25% as the least source. It clearly shows that the existing sources of skilled workforce are not fulfilling the demand of skilled workers for different sectors. This gives another dimension to the analysis as both the informal sector and work-based learners should be mainstreamed in the TVET sector for more recognition and accreditation.

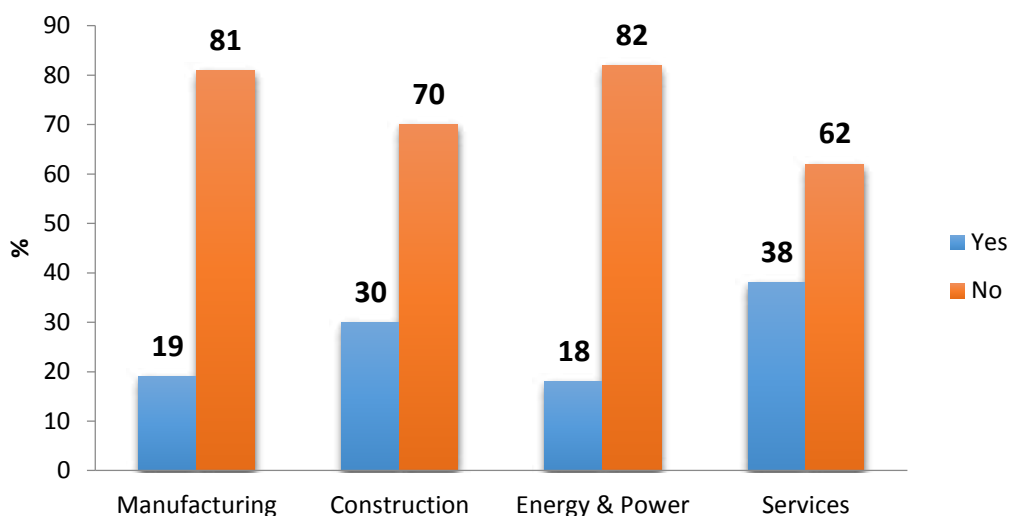
Figure 1.6: Existing skilled workforce by source



SKILLED WORKFORCE DEFICIENCY

The figure 1.7 below shows response of the employers regarding skilled workforce deficiency in different sectors. The highest skilled workforce deficiency has been reported in the services sector. It is followed by 30% of employers in construction, 19% in manufacturing and 18% in energy & power. Both manufacturing and energy & power sectors have the highest employment potential for skilled workforce. The higher supply of skilled workers in both the sectors can create additional employment opportunities for improving standards both in vocational and technical institutions.

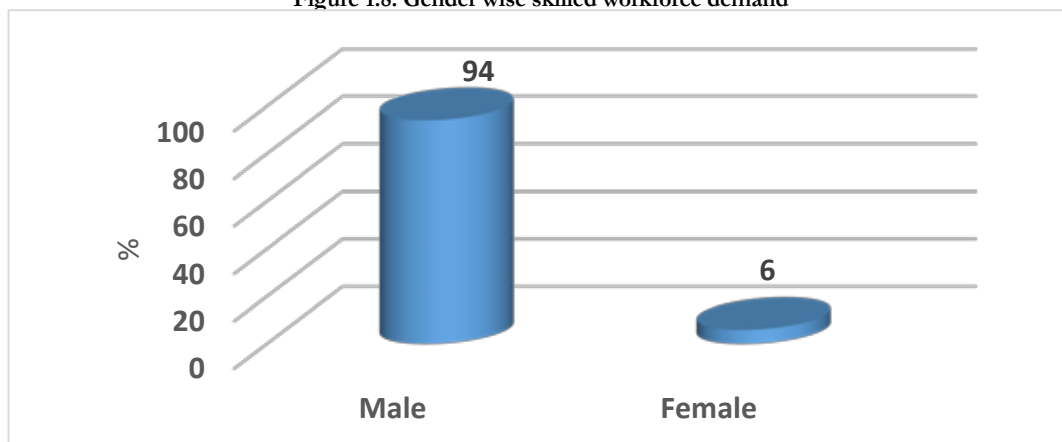
Figure 1.7: Sector wise Skilled workforce deficiency



GENDER WISE FUTURE SKILLED WORKFORCE DEMAND

The gender wise future demand of skill worked force is shown in figure 1.8 below. The demand of male skilled workforce across the sectors has been reported as 94% whereas only 6% demand of female skilled workforce has been recorded which is comparatively low to demand of male skilled workforce. The less demand of female skilled workforce indicates that more concrete policy measures and actions are needed to bring more women to the net of skilled workforce for enabling different sectors of economy to grow profusely.

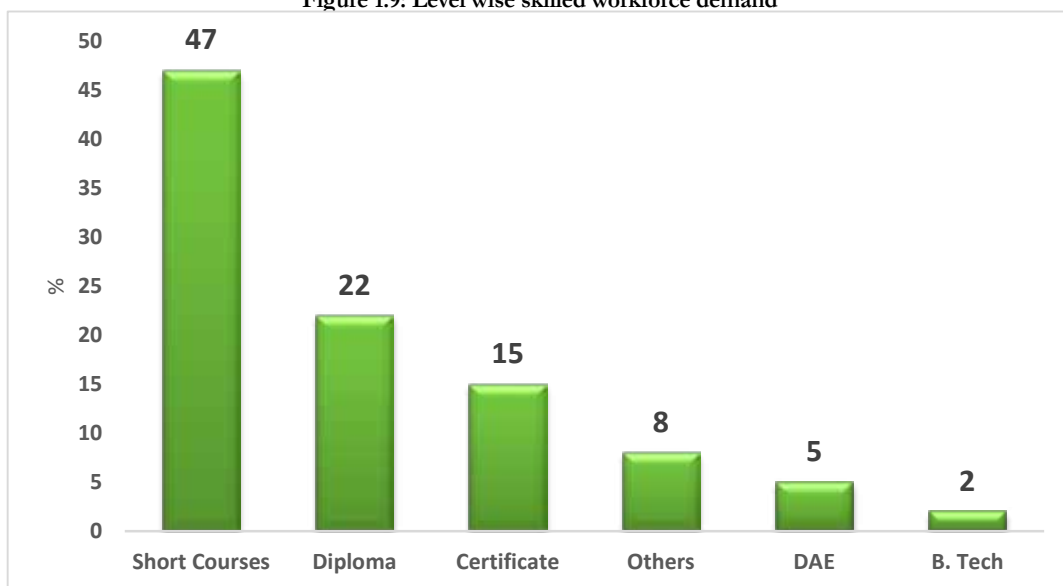
Figure 1.8: Gender wise skilled workforce demand



LEVEL WISE SKILLED WORKFORCE DEMAND

The figure 1.9 below presents details of skilled workforce demand in different sectors of economy by various levels of technical and vocational institutions. The highest proportion of demand of skilled workforce is for level of short courses, accounting for 47% of total demand of skilled workforce. It is followed by 22% demand in diploma level and 15% in certificate level respectively. The least demand of skilled workforce has been reported under category of others level with 8% followed by 5% in DAE level and 2% in B. Tech level respectively. This indicator is of high significance as industries working in various sectors prefer to recruit those individuals who tend to enroll in shorter version of the TVET courses which can further their skills to make them adaptive of current market dynamics.

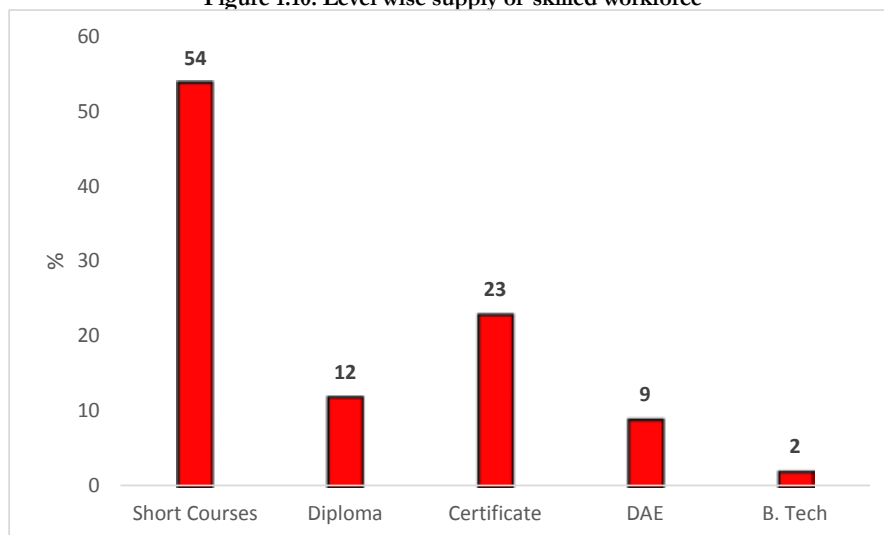
Figure 1.9: Level wise skilled workforce demand



LEVEL WISE SUPPLY OF SKILLED WORKFORCE

The skilled workforce supplied by various levels of vocational and technical institutes in the province has been shown in figure 1.10. The analysis of the data indicates that short course level provides the highest skilled workforce with 54% of total supply of skilled workers followed by certificate level with 23% and 12% certificate and diploma level respectively. The least level is B. Tech with 2% provision of skilled workforce followed by DAE with 9% respectively. The low percentage of skilled workforce provision in all levels except short courses lay emphasis on enhancing capacity of both vocational and technical institutes aimed at decreasing gap between supply and demand of skilled workforce in various sectors of economy.

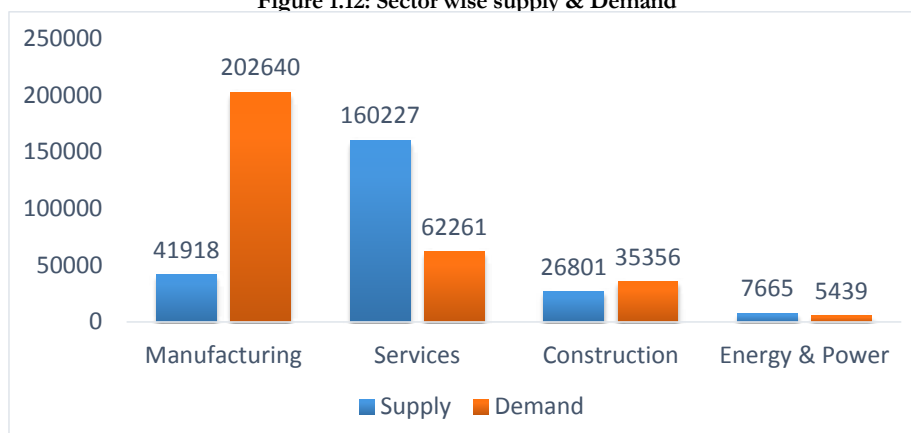
Figure 1.10: Level wise supply of skilled workforce



SECTOR WISE SUPPLY & DEMAND

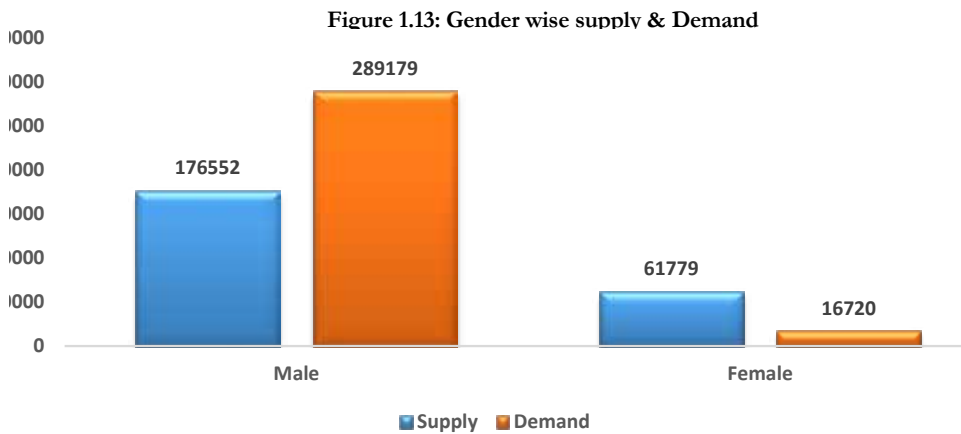
The supply and demand situation of skilled workforce in surveyed sectors of economy has been presented in figure 1.12. It is further elaborated that the manufacturing sector leads with demand of 81% (202,640) of total skilled persons against 17% (419,18) supply of total skilled workforce that means huge gap in terms of supply side has been appeared. The service sector leads with supply of 64% (160,227) of total skilled persons against limited demand of 24% (62,261) of total skilled persons which means gap on demand side has been cropped up. Less difference is found between demand and supply of skilled workforce in construction sector with demand of 14% (35,356) of total skilled persons against supply of 10% (26,801) of skilled workforce. The least demand and supply of skilled workforce has been recorded in energy & power sector that comprises of 4% (7,665) of skilled people against less demand of 2% (5,439) skilled workforce. There is an urgent need to bridge the gap between supply and demand of skilled workforce in these sectors for sustained supply against sustained demand for sustained production.

Figure 1.12: Sector wise supply & Demand



GENDER WISE SUPPLY & DEMAND

Figure 1.13 shows supply and demand of male and female skilled workforce in surveyed economic sectors. The analysis of data indicates that demand of male skilled workforce consists of 82% (289,179) males against supply of 22% (176,552) of total skilled workforce in the surveyed sectors. It means additional skilled workforce of 112,627 is required to meet deficiency found in the supply line to the sectors. Similarly, the supply of female skilled workforce comprises of 18% (61,779) females against demand of 5% (16,720) females. It means supply in the form of 45,059 skilled women is more than the demand. Policy makers must think strategically and find motivators to increase demand of females in the labor market. This situation is perturbing, as very low demand against supply indicates inefficient use of government resources which could have directed towards sectors which can easily accommodate females.



EMPLOYER LEVEL OF SATISFACTION

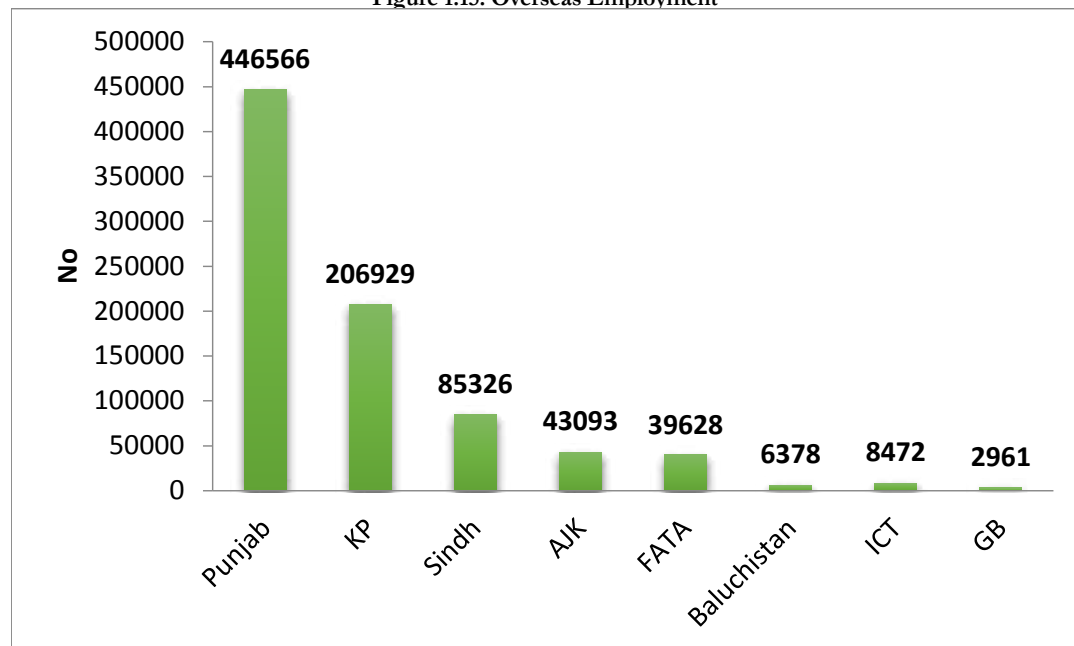
The data analyzed after taking interview of different employers have been shown in the figure 1.14. Out of interviewed employers, 47% have shown satisfaction towards supply of various TVET graduates while 18% are not satisfied. The remaining 35% don't give any response on the question.



PROVINCE WISE OVERSEAS EMPLOYMENT

The province wise information about the overseas employment trend is depicted in figure 1.15. Punjab has the highest proportion of the overseas workers which is around 53% (446,566) of the total surveyed workforce while KP is at second place with 25% (206,929) share in the overseas employment. The share of Sindh in workers going for overseas employment is very small at 85,326, representing for just 10% of all overseas workforce. GB has the lowest share in the overseas employment due to lack of awareness.

Figure 1.15: Overseas Employment



DISTRICT WISE EMPLOYMENT TRENDS

Table 1.1 shows employment trend of various districts of Punjab. The analysis indicates that people who desired for employment as skilled workforce are numbered as 4,909,349 in the province. The highest employment trend is found in Sialkot district with 8.8% (430,647) of total number of people covered in the survey. It was followed by Lahore with 7.7% (375,988), Rawalpindi with 7.5% (370,156), Gujranwala and Gujrat with each 6.8%, Faisalabad with 5.8% and DG Khan with 4.8% employment of trends in the skilled workforce. The least employment trend has been recorded in Chiniot with 0.1% followed by Pakpattan with 0.7% Nankana Shaib with 0.8 % and Khushab with 1 % respectively. Similarly, the employment trend is found in other districts in between highest and lowest employment trends recorded in the relevant districts.

Table 1.1: District wise employment Trends

District	Number	Percentage
Attock	152589	3.1
Bahawalnagar	69572	1.4
Bahawalpur	89749	1.8
Bakker	36578	0.7
Chakwal	137973	2.8
Chiniot	4045	0.1
D.G Khan	236284	4.8
Faisalabad	286423	5.8
Gujranwala	336287	6.8
Gujrat	334954	6.8
Hafizabad	50277	1.0
Jhang	79628	1.6
Jhelum	159237	3.2
Kasur	65403	1.3
Khanewal	79959	1.6
Khushab	49948	1.0
Lahore	375988	7.7
Layyah	56549	1.2
Lodhran	53898	1.1
Mandi Baha Uddin	118543	2.4
Mian Chanu	0	0.0
Mianwali	74775	1.5
Multan	158742	3.2
Muzaffargarh	87817	1.8
Nankana Sahib	40879	0.8
Narowal	104643	2.1
Okra	61689	1.3
Pakpattan	34443	0.7
Rahim Yar Khan	127314	2.6
Rajanpur	64113	1.3
Rawalpindi	370156	7.5
Sahiwal	98541	2.0
Sargodha	140078	2.9
Sheikhupura	128093	2.6
Sialkot	430647	8.8
Toba Tek Singh	124170	2.5
Vehari	89365	1.8
G. Total	4909349	100.0

DISTRICT LEVEL SKILLED WORKFORCE SUPPLY AND DEMAND

The district level skilled workforce in Punjab has been presented in table 1.2 below. The analysis indicates that there are some districts in which supply is less than demand of skilled workforce whereas, there are many districts where demand is less than supply of skilled workforce. The total number of districts having less supply than demand stands at 13th number which includes Sialkot (87%), Faisalabad (27%), Gujranwala (82%), Gujrat (76%), Rawalpindi (13%), Sargodha (37%), Chakwal (65%), Bahawalpur (33%), Jhelum (60%) and Lahore (40%). The districts including Sialkot, Gujranwala and Gujrat provide the highest demand of skilled workforce while Faisalabad and Rawalpindi supply the least demand under category of more demand and less supply of skilled workforce. More work is required to ensure consumption of more skilled workforce coming from these districts. Similarly, the remaining districts of the province have more supply than demand of skilled workforce which need to ensure increase in demand to bring it with supply. The emerging gaps between demand and supply of skilled workforce needs to be bridged for sustainable supply of skilled workforce to the different sectors of economy

Table 1.2: District wise skilled workforce supply & demand

District wise Supply & Demand			
District	Supply	Demand	Gaps
Sialkot	7,022	80,183	(73,161)
Lahore	17366	47209	(29,843)
Faisalabad	19043	32966	(13,923)
Gujranwala	4545	22738	(18,193)
Gujrat	5522	21592	(16,070)
Rawalpindi	17626	20284	(2,658)
Sargodha	9980	15434	(5,454)
Chakwal	3966	11407	(7,441)
Bahawalpur	7128	10721	(3,593)
Jhelum	3708	10024	(6,316)
Jhang	3090	9404	(6,314)
Sheikhupura	9202	4757	4,445
Khanewal	1973	4365	(2,392)
Bahawalnagar	5528	4012	1,516
Mian Channu	540	3981	(3,441)
Attock	5250	1372	3,878
Multan	11631	654	10,977
Vehari	4992	606	4,386

Toba Tek Singh	7984	512	7,472
Chinot	1368	405	963
Okra	8012	402	7,610
Rahim Yar Khan	10120	386	9,734
Pakpattan	4291	329	3,962
Kasur	3593	304	3,289
Lodhran	4140	260	3,880
Rajanpur	4435	235	4,200
Narowal	3774	218	3,556
Mianwali	6755	211	6,544
Mandi Baha Uddin	7439	174	7,265
Bhakker	2958	168	2,790
Khushab	3562	148	3,414
D.G Khan	2703	145	2,558
Hafizabad	1946	120	1,826
Nankana Sahib	4098	97	4,001
Layyah	5648	49	5,599
Sahiwal	10794	39	10,755
Muzaffargarh	7139	24	7,115

SKILLED WORKFORCE SUPPLY AND DEMAND GAP ANALYSIS

The data presented in the table 1.3 (Annex-A) gives information about skills gap analysis in different trades of Punjab. The gap between supply (2,338,331) and demand (305,736) of all trades is 67,405 (around 24% less supply against the demand of labor market) skilled workforce that means demand of skilled workforce is more than the supply of skilled workforce. Basic computer is the only trade in which skills gap between supply and demand is recorded as the highest with 29,930 (97%) that means supply of skilled workforce is more than demand. It is followed by the computer application and official professional trade with 17,837 (99%) and Repair & Maintenance of home Appliances with 16,039 (99%) which indicate that supply is more than demand in these trades.

Similarly, the trades such as DAE mechanical (17%), DAE electrical (45%), DAE chemical (38%), general electrician (72%), auto electrician (77%), auto CAD (92%), electronic technician (33%), DIT(94%), heavy vehicle operator (36%), computer hardware (100%), professional cooking (68%), fabric printing (38%), embroidery (100%), Food Cooking and Kitchen Organization (86%), leather work (31%), industrial stitching (100%), hair and skin care (67%), dress designing and making (99%), Web & Graphics Designing (99%), draftsman civil, clinical assistant (98%), fruit processing (45%), professional IT (95%), veterinary assistant (95%) etc. are the trades where supply of skilled workforce is more than demand of skilled workforce.

These trades show more efficiency than those having more demand than supply. Such trades need to maintain the existing demand side gap for productivity. The gap between demand and supply of stitchery is highest with 19,142 (99%) skilled workers which indicates higher demand than supply in this trade. It is followed by the trades like mechanical operator with 18,945 (100%), helper with 15,678 (100%), welder and electrician with 9,167 (48%) and 5,262 (38%) respectively. Similarly, there are many other trades which have more demand than supply of skilled workforce. These trades include fitter (100%), cutter (100%), cook (80%), waiter (100%), driver (99%), accountant (94%), quality control (100%), carpenter (71%), woodwork (95%), chef (98%) and mechanical (100%) etc. Though supply of skilled workforce has been started in such trades, but rising demand of skilled workforce requires to be abridged through decreasing demand and increasing supply by reducing the skill gaps.

RECOMMENDATIONS

1. A controlling authority needs to be established for monitoring the performance of the private TVET institutes to ensure the reporting line between the provincial TVETA's for the provision of skilled workforce based on rising demand
2. All the Boards of Technical Education (BTE) and Trade Testing boards (TTB), should be linked with the national data base for the purpose of planning, research and employability of the TVET graduates.
3. The Web based linkage of the National database and provincial TVETA's database is essential to reduce skilled workforce supply and demand gaps.
4. All the TVET stakeholders, policy makers, training providing institutes, employers, immigration bureau, job seekers should use the platform to reduce the gaps between skilled supply and demand gaps.
5. The performance of the high proportion private TVET institutes can be improved through imparting training to produce the skilled workforce on sustainable basis.
6. TVET stakeholders and the policy makers in the short term should collect and analyze data about labor market needs; set the vision, goals and targets for the TVET system; initiate design of occupational standards, curricula, and student qualification requirements, with involvement of employers and other social partners.
7. Sector wise digital classification would be addressed in order to prepare uniform list of vocational and technical education to reduce the variations.
8. All the provincial TEVTA's need to establish job placement offices in each industrial zone to link the job seekers, training providers with employment and need to address the labor market demand.
9. The economic transactions' effects should be addressed prior to its negative impact on labor market, for this purpose each TEVTA, should establish a research cell.

ANNEX 1: SKILLS GAP ANALYSIS MATRIX

SKILLS GAP ANALYSIS PUNJAB

Table 1.3: Skills Gap Analysis

Trade	Supply	Demand	Gaps
Stitcher	240	19382	(19,142)
Machine Operator	11	18956	(18,945)
Helper	0	15678	(15,678)
Welder	4864	14021	(9,157)
Electrician	4219	9481	(5,262)
Fitter	111	8360	(8,249)
Cutter	0	8215	(8,215)
Cook	770	6948	(6,178)
Machinist	1073	6773	(5,700)
Waiter	0	6549	(6,549)
Lab Technician	46	6519	(6,473)
Polisher	0	6310	(6,310)
Driver	26	5895	(5,869)
Accountant	55	4780	(4,725)
Garments Designer	0	4556	(4,556)
Designer	0	4335	(4,335)
Mixer Machine Operator	0	4309	(4,309)
Computer Operator	6468	3716	2,752
Security Guard	0	3597	(3,597)
Quality Control	0	3516	(3,516)
Packing Machine Operator	0	3371	(3,371)
DAE Mechanical	4555	3208	1,347
Carpenter	478	2819	(2,341)
Wood work	99	2729	(2,630)
Mason & Tile fixer, Plaster	821	2663	(1,842)
Laser Operator	0	2632	(2,632)
Steel Fabricator	0	2605	(2,605)
Leather Garment Stitching	202	2515	(2,313)
Plant Operator	0	2412	(2,412)
Press Machine Operator	0	2221	(2,221)
Computer Application	5535	2065	3,470

Trade	Supply	Demand	Gaps
Bakery & Pastry	236	2006	(1,770)
Sales & Marketing	129	1984	(1,855)
Web Developer	1488	1962	(474)
Chef	34	1887	(1,853)
Mechanical	0	1861	(1,861)
DAE Electrical	4893	1847	3,046
Design & Patternmaker	0	1807	(1,807)
Oil Man	0	1777	(1,777)
Painter	118	1756	(1,638)
Manager Production	0	1721	(1,721)
Fabricator	0	1709	(1,709)
Nursing	0	1696	(1,696)
Paint & Polish	12	1621	(1,609)
Marketing & Sales	0	1527	(1,527)
Surgical Instrument Fitter	0	1485	(1,485)
Pattern Making	0	1437	(1,437)
Data Entry Operator	0	1420	(1,420)
Solar System for Power Generation	1057	1365	(308)
Cleaner	0	1294	(1,294)
Winder	29	1268	(1,239)
Finishing and Polishing	0	1264	(1,264)
Loader Machine Operator	0	1260	(1,260)
Printing Machine Operator	0	1250	(1,250)
Plumber	5110	1239	3,871
General Mechanic	0	1183	(1,183)
Mechanical Technician	49	1180	(1,131)
Production Manager	0	1148	(1,148)
Die Fitter	0	1144	(1,144)
House Keeper	23	1125	(1,102)
Receptionist	0	1114	(1,114)
Filling Incharge	0	1048	(1,048)
Injection Mold Operator	0	1035	(1,035)
Wood Cutter	0	1035	(1,035)
Leather Cutter	0	985	(985)
Supervisor	0	967	(967)
DAE Civil	4322	958	3,364
Laser Planting	0	932	(932)
DAE Textile Weaving Technology	180	905	(725)
Turner	183	882	(699)
Die Maker	0	857	(857)
IT Expert	251	824	(573)
Miller	0	819	(819)

Trade	Supply	Demand	Gaps
Admin	0	818	(818)
DAE Chemical	1791	814	977
Gloves Stitcher	0	811	(811)
Press Hydraulic	0	784	(784)
B. Tech Chemical	35	773	(738)
Melter	0	762	(762)
Polish Maker	0	748	(748)
DAE Food Technology	280	747	(467)
Drilling Machine Operator	0	742	(742)
Graphic Designer	397	729	(332)
Grinder Operator	0	725	(725)
Garments Stitcher	290	699	(409)
Auto Mechanic	3723	653	3,070
CNC Machine Operator	126	615	(489)
Boiler Operator	0	613	(613)
Cutter Machine Operator	0	592	(592)
Bending Operator	0	591	(591)
Crane Operator	0	586	(586)
Molding	0	551	(551)
Lather Machine Operator	0	544	(544)
AC Technician	0	534	(534)
Certificate Computer Application	0	525	(525)
Assembler	0	520	(520)
Mold Maker	0	509	(509)
DAE Electronics	1559	504	1,055
Joining Techniques in Ceramics	0	504	(504)
Dispenser	56	492	(436)
Washer	0	492	(492)
DAE IT	67	483	(416)
Basic Computer	30400	470	29,930
Frame Maker	0	462	(462)
Rolling Machine Operator	0	460	(460)
Loading Helper	0	446	(446)
Thread Cutter	0	445	(445)
Jig & Tool Maker	0	441	(441)
Steel Fixer	0	441	(441)
Office Assistant	0	431	(431)
Electrical	358	428	(70)
Blacksmith	0	420	(420)
Machine Mechanic	0	420	(420)
PU Machine Operator	0	416	(416)
Kashigari	100	403	(303)

Trade	Supply	Demand	Gaps
Caster	0	391	(391)
Store Keeper	0	385	(385)
Forman	0	381	(381)
Sewerage Pipe Maker	0	377	(377)
Laser Cutter	0	357	(357)
Civil Surveyor	1494	356	1,138
HVAC Technician	141	356	(215)
Motor Winding	604	354	250
Pharmacist	0	348	(348)
Crush Plant Operator	0	346	(346)
Silk Machine Operator	0	337	(337)
Motor Cycle Mechanic	5929	336	5,593
Press Fitter	0	336	(336)
PCU Machine Operator	0	329	(329)
Rigger	0	326	(326)
Hamber Operator	0	324	(324)
BBQ Expert	0	317	(317)
Molding	0	316	(316)
Power House Operator	0	316	(316)
CCTV Camera Technician	0	308	(308)
Die Cutter	0	308	(308)
Embroidery Machine Operator	34	304	(270)
Refrigeration & Air Conditioning	8132	300	7,832
Leather Polishing	0	292	(292)
Lathe Machine Operator	0	285	(285)
Cal Center Agent	0	281	(281)
Edge Cutter	0	280	(280)
Supervisor (Spinning)	0	279	(279)
Fitter General	237	273	(36)
Generator Operator	0	272	(272)
Soil Mixer	0	272	(272)
X-Ray Technician	0	272	(272)
Crash Machine Operator	0	269	(269)
Printer	0	264	(264)
Marble Cutter	0	257	(257)
Textile Weaving Technology (G-II)	235	253	(18)
Surface Grinder	0	248	(248)
Forging Operator	0	247	(247)
Mould & Caster	0	247	(247)
Pattern Designer	0	247	(247)
Weaving Machine Operator	0	241	(241)
Beautician	14099	235	13,864

Trade	Supply	Demand	Gaps
Shoes Making	55	235	(180)
Tailoring	2860	228	2,632
Software Developer	0	225	(225)
Dental Technician	4	222	(218)
Fashion Designing/ Dress Making	1434	221	1,213
PVC Machine Operator	0	220	(220)
Export/ Import	0	212	(212)
Laith Machine Operator	0	212	(212)
Spray Painter	0	212	(212)
Confectioner	0	209	(209)
Rider	0	209	(209)
DAE Textile Spinning	346	203	143
Production In charge	0	203	(203)
Metal Cutter	0	202	(202)
Operation Theater Technician	0	195	(195)
Delivery	0	193	(193)
Dryer Operator	0	193	(193)
Tractor Driver	0	193	(193)
Temperature Controller	0	190	(190)
General Electrician	1182	189	993
Kiln Operator	0	181	(181)
Die Machine Operator	0	174	(174)
Auto Electrician	1325	173	1,152
Turbine Operator	0	172	(172)
Overlock master	0	171	(171)
Customer Sales & Support	0	170	(170)
Hotel Management	85	170	(85)
Medical Technician	0	169	(169)
Auto CAD	4107	168	3,939
Die Molding Machine Operator	0	168	(168)
Machine Fitter	0	167	(167)
Football Making/ Stitching	19	166	(147)
Office Management	38	166	(128)
Livestock	0	159	(159)
Cold Storage Plant Operator	0	156	(156)
Shift In charge	0	153	(153)
Electro Platter	0	150	(150)
Sand Machine Operator	0	145	(145)
Computer Operator	922	144	778
Architecture	21	143	(122)
Hydraulic Control	0	143	(143)
Furniture Designer	104	137	(33)

Trade	Supply	Demand	Gaps
Marketing	0	137	(137)
Aluminum Fabricator	0	135	(135)
Lift Operator	0	135	(135)
Shaper Operator	0	135	(135)
3D & 4D operator	0	134	(134)
Gas Welder	0	131	(131)
Tractor Mechanic	76	131	(55)
Scaffolder	25	129	(104)
Stainless Steel Fabrication	0	129	(129)
Steam Machine Operator	0	129	(129)
Warm Machine Operator	0	128	(128)
Electronics Technician	252	127	125
DAE Hardware	0	124	(124)
Laser Polish	0	124	(124)
Excavator Operator	0	123	(123)
Regional Sales Manager	0	122	(122)
Machine Helper	0	121	(121)
Shuttering Carpenter	0	120	(120)
Denter	0	119	(119)
Hammer Operator	0	119	(119)
Interior Designer	0	119	(119)
Financial Accounting	0	118	(118)
B. Tech Mechanical	80	115	(35)
Plastic Molding	0	112	(112)
Time Keeper	0	112	(112)
DIT	3740	110	3,630
Glass Glazing	0	110	(110)
Network Technician	0	110	(110)
Production Manager	0	110	(110)
Pipe Cutter	0	109	(109)
Spindale Machine operator	0	107	(107)
Wireman	391	107	284
Steel Cutter	0	106	(106)
Kitchen Helper	0	105	(105)
Textile Spinning	60	105	(45)
Tile Fixer	0	103	(103)
Dump Truck Driver	0	102	(102)
Furnace Operator	0	101	(101)
Wheel Operator	0	101	(101)
Computer Technician	37	100	(63)
Field Supervisor	0	100	(100)
Chiller Operator	0	99	(99)

Trade	Supply	Demand	Gaps
Computer Application & Office Professional	17935	98	17,837
Tank man	0	98	(98)
DAE Boiler	0	95	(95)
Heavy Vehicle Operator	201	95	106
Gas Cutter	0	94	(94)
Knitting Machine Operator	0	94	(94)
Stenographer	0	94	(94)
DAE Textile Designer	27	92	(65)
Dry Cleaner	0	92	(92)
Skin Care	97	90	7
Chef Chines	0	89	(89)
Steel Fitter	0	89	(89)
Electrical Appliances	206	87	119
Colour Machine Operator	0	86	(86)
Flex Machine Operator	0	83	(83)
Mobil Repairing	1076	81	995
Fire & Safety	0	80	(80)
Foreman	0	80	(80)
Chackram Operator	0	79	(79)
Generator Technician	0	79	(79)
Rubber Molder	0	79	(79)
Molding Machine Operator	0	78	(78)
Filling Operator	0	77	(77)
Food and Beverages	40	77	(37)
Lift Machine Operator	0	77	(77)
Wood Polisher	0	77	(77)
Anodiser	0	76	(76)
Purchaser	0	76	(76)
Distributor	0	75	(75)
Slippers	0	75	(75)
Supply Manager	0	75	(75)
Twisting machine Operator	0	74	(74)
Computer Hardware	794	72	722
Leather Machine Operator	0	72	(72)
Wood machine Operator	5	72	(67)
Chef Fast Food	0	71	(71)
Lubricator	0	70	(70)
Milling Machin Operator	0	69	(69)
Soap Maker	0	69	(69)
Glass Fitter	0	66	(66)
Gardner	0	65	(65)
LED Technician	0	65	(65)

Trade	Supply	Demand	Gaps
Banking & Accounting	0	63	(63)
Information Technology	1258	63	1,195
Stem Machine Operator	0	63	(63)
Supervisor (Weaving)	0	62	(62)
Laser Mechanic	0	61	(61)
Pasting Machine Operator	0	61	(61)
Photographer	0	61	(61)
Wood Designer	0	61	(61)
Garment Leather	0	59	(59)
Heating Ventilation, Refrigeration & Air Conditioning (HVACR)	1863	59	1,804
Screen Printer	0	59	(59)
Foundry Operator	0	58	(58)
Hydraulic operator	0	58	(58)
Professional Cooking	311	58	253
Rubber Pressing Machine Operator	0	58	(58)
Fabric Printing	118	56	62
Press Cutter	0	56	(56)
Tablet Machine operator	0	54	(54)
Tourist Guide	0	52	(52)
Adobe Photoshop	0	50	(50)
Butcher	119	50	69
Mill Operator (Electrical)	0	50	(50)
Telephone Operator	0	50	(50)
Wax Specialist	0	50	(50)
Cashier	0	49	(49)
DAE Mechatronics	0	48	(48)
Gas Fitter	0	48	(48)
Tolls machine Operator	0	47	(47)
Varma Machine Operator	0	47	(47)
Embroidery	432	46	386
HTV Mechanic	0	46	(46)
Shovel Operator	0	46	(46)
Steel Rigger	0	45	(45)
Drawing & Painting	0	44	(44)
Steel Making Machine	0	44	(44)
Twist Mechanic	0	44	(44)
Front Desk Officer	0	43	(43)
Auto & Farm Machinery	686	42	644
Casent Making	0	42	(42)
Repair & maintenance of home Appliances	16081	42	16,039
Laundry	0	41	(41)
Daintier/Painter	0	40	(40)

Trade	Supply	Demand	Gaps
Glass Cutter	0	40	(40)
Pottery Decoration	0	40	(40)
Textile Winder	0	40	(40)
Draftsman	38	39	(1)
Food Cooking and Kitchen Organization	513	39	474
Leather Work	75	39	36
Industrial Stitching (IDD)	56	38	18
Import / Export Procedure & Documentation	446	37	409
Weight Machine Operator	0	37	(37)
Glass Fixer	0	36	(36)
Hand Embroidery	0	36	(36)
Laundry	0	36	(36)
Marble Polish	0	36	(36)
Skelton Maker	0	36	(36)
Hair and skin Care (G-III)	179	35	144
Hydraulic Machine	0	35	(35)
Ruler Mechanic	0	35	(35)
Syrup Operator	0	35	(35)
Dress Designing & Making	14507	34	14,473
Fine Art (Painting)	129	34	95
Thread Fitter	0	34	(34)
Composer	0	33	(33)
Finishing Technology (G-II)	0	33	(33)
Fixer	0	33	(33)
Building Electrician	100	32	68
Civil Draftsman	0	32	(32)
DAE Petro Chemical	62	32	30
Dress Making	5504	32	5,472
Industrial Electrician	4141	32	4,109
Marble Designer	0	32	(32)
CNG KIT Operator	0	31	(31)
Coral Draw	0	31	(31)
Garments Cutter	0	29	(29)
PCU Plant Operator	0	29	(29)
Computer Designer	0	28	(28)
Draftsman Civil (G-II)	351	28	323
Technician Mechanical	0	28	(28)
Wander Machine Operator	0	28	(28)
Bulldozer Operator	0	27	(27)
Web & Graphics Designing	1263	27	1,236
Android Mobile Repair	0	26	(26)
Concrete Machine Operator	0	26	(26)

Trade	Supply	Demand	Gaps
Pipe Fitter	0	26	(26)
Rota Operator	0	26	(26)
Reeling Machine Operator	0	25	(25)
B. Tech Electrical	28	24	4
CAD/CAM	0	24	(24)
Surgical Instrument (Polishing)	0	24	(24)
Clinical Assistant	6695	23	6,672
Field Officer	0	23	(23)
Vasal Operator	0	23	(23)
Wood Painter & Polisher	0	23	(23)
LTV Driver (Car, Jeep, etc)	354	22	332
Surgical Cutter	0	22	(22)
English Speaking	248	21	227
Hydraulic Mechanic	0	21	(21)
Lamination	0	21	(21)
Business Development	0	20	(20)
Collar Salt operator	0	20	(20)
Entrepreneurship	0	20	(20)
Fruit Processing	53	20	33
Garments Quality Control	0	20	(20)
Industrial Garments	97	20	77
LED Electrician	0	20	(20)
Professional IT	727	20	707
Battery Mechanic	0	19	(19)
Die Casting	0	19	(19)
ECG Technician	0	18	(18)
IT Hardware	0	18	(18)
Quantity Surveyor	416	18	398
Veterinary Assistant	1020	18	1,002
Air Ticketing	0	17	(17)
Die Sinker	0	17	(17)
EFI Mechanic	0	17	(17)
Ceiling Technician	0	16	(16)
Electrician LED	0	16	(16)
Gola Bender	0	16	(16)
Kaline Machine Operator	0	16	(16)
Wrapping Machine Operator	0	16	(16)
Bio-Technician	0	15	(15)
DAE Polymer	0	15	(15)
Mechanic	0	15	(15)
Textile Designer	0	15	(15)

Trade	Supply	Demand	Gaps
Elementary Food Preservation	11	14	(3)
Hand Craft Specialist	0	14	(14)
Lather Machine Mechanic	0	14	(14)
Tile Fitter	0	14	(14)
Warehouse Technician	0	14	(14)
Adobe Premier	0	13	(13)
Alarm Making	0	13	(13)
Glazing	0	13	(13)
B. Tech IT	0	12	(12)
Domestic Electrician	186	12	174
Marble Setter	0	12	(12)
Pining Machine Operator	0	12	(12)
UPS Repair	128	12	116
Leather Machine Mechanic	0	11	(11)
LED Mechanic	0	11	(11)
Phone Operator	0	11	(11)
Wireless Operator	0	11	(11)
Advanced Machinery	0	10	(10)
Agriculture Field Assistant	468	10	458
Call Center Executive	0	10	(10)
Cement Mill Operator	0	10	(10)
Communication Officer	0	10	(10)
General Security	0	10	(10)
Livestock Extension worker for Animal breeding services	100	10	90
Logistic	0	10	(10)
Machine Man (ATs)	51	10	41
Merchandiser	0	10	(10)
MRI Technician	0	10	(10)
Supply Chain Executive	0	10	(10)
Technical Maintenance Staff	0	10	(10)
Technician (X-Ray, CT, Echo, Ultrasound, Physiotherapy, Dialysis)	18	10	8
Tile Making	0	10	(10)
Bulldozer Operator	12	8	4
Chef Italian	0	8	(8)
Computer Programing	352	8	344
Dispatch Rider	0	8	(8)
Home Appliance Repair & Maintenance	231	8	223
ICU technician	0	8	(8)
Micro Biologist	0	8	(8)
Plant Mechanic	0	8	(8)
Textile Designer	87	8	79
Workshop operator	0	8	(8)

Trade	Supply	Demand	Gaps
Glass Bender	0	7	(7)
Hardware & network Technician	52	7	45
Aerobics Instructor	0	6	(6)
Cabinet Maker	32	6	26
Cardiac Technician	0	6	(6)
Doubling Machine Operator	0	6	(6)
Gym Technician	0	6	(6)
Information Technology + Office Automation	989	6	983
Montessori Teaching	0	6	(6)
Safety Officer	1214	6	1,208
Tele Marketing Executive	0	6	(6)
B. Tech H.V.A.C	0	5	(5)
Driller	0	5	(5)
Electrician TV	0	5	(5)
Graphic Designing (Print Media)	101	5	96
Health & Safety	0	5	(5)
Home Appliances Specialist	0	5	(5)
HVACR (CBT) CM	35	5	30
Industrial Mechanic	0	5	(5)
Kaline Operator	0	5	(5)
Procurement	0	5	(5)
Research Assistant	0	5	(5)
Splicer	0	5	(5)
Technician Radiology	0	5	(5)
Tunnel Farming	30	5	25
Auto Parts Molding	0	4	(4)
Chemist	0	4	(4)
Computer Application for Business	184	4	180
Electronics Application (Radio & TV)	392	4	388
Embroidery	3036	4	3,032
Store In-charge	0	4	(4)
Tractor Operator	169	4	165
DAE Petroleum	84	3	81
General Fitter	120	3	117
Handicrafts	206	3	203
Industrial Electronics	72	3	69
Iron Molding	0	3	(3)
Aluminum / Steel Fabricator	102	2	100
Capsule Filling Machine Operator	0	2	(2)
Commercial Manager	0	2	(2)
Draftsman Mechanical (G-II)	119	2	117
Electronic Application	174	2	172

Trade	Supply	Demand	Gaps
Information Officer	0	2	(2)
Machine & Hand Embroidery	278	2	276
Manual EMB	0	2	(2)
Marble Fixer	0	2	(2)
Record Keeper	0	2	(2)
Tele Sales Representative	0	2	(2)
B. Tech Civil	45	1	44
Computer Hardware Repair & Network Professional	2203	1	2,202
DAE Agriculture	138	1	137
DAE Auto & Diesel	105	1	104
Diploma in Refrigeration and Air Conditioning	30	1	29
Draftsman Civil	119	1	118
Field Coordinator	0	1	(1)
Horticulture	0	1	(1)
IT Network Administrator	0	1	(1)
Materials Engineer	0	1	(1)
Advance Dress and Designing Making	23	0	23
Agriculture Farm Manager	51	0	51
Auto & Farm	144	0	144
B. Tech Auto & Farm Machinery	44	0	44
Basic Safety Precaution for Wood & Welding	103	0	103
Building Electrician Cum Solar Heater Technician	436	0	436
Building Painter	26	0	26
C H & N P	124	0	124
Ceramics	80	0	80
Certificate in Ceramics Manufacturing	47	0	47
Chinese Language	323	0	323
Citrus Production	26	0	26
CNC Lathe	25	0	25
CNC Operating (Machining Centre, EDM Wire cut, EDM Spark Erosion)	3	0	3
Commercial Arts/Graphics (G-II)	14	0	14
Computer Applications & Office Manager	50	0	50
Computer Applications for Business	127	0	127
Computer Language	19	0	19
Computer Networking for Home & Office (ATs)	129	0	129
Computer Pattern Designing	206	0	206
Computer Textile Designing	180	0	180
Computerized Accounting	26	0	26
Control PLC	28	0	28
DAE Auto and Farm	735	0	735
DAE Refrigeration & Air Conditioning	254	0	254
DAE Telecom	195	0	195

Trade	Supply	Demand	Gaps
Digital & Fashion Photography	61	0	61
Diploma in Business Management	170	0	170
Diploma in Office Management	17	0	17
Diploma in Refrigeration and Air Conditioning (City & Guilds) (6161-16)	666	0	666
Diploma in Vocational Teacher Training	46	0	46
Documentary/ Short Film Making	57	0	57
Domestic Tailoring	2097	0	2,097
Domestic Skilled Worker	60	0	60
Domestic Tailoring	958	0	958
Draftsman (Mechanical) (ATs)	18	0	18
Dress Making & Hand Embroidery	25	0	25
Dynamic Web Development	119	0	119
E-commerce	27	0	27
Electrician (G-III)	85	0	85
Electronics Applications	191	0	191
Farm Manager/Tunnel Farming	48	0	48
Fitter (Textile) (ATs)	63	0	63
Floriculture	119	0	119
Food & Beverage	347	0	347
Food Technology (Processing & Preservation)	27	0	27
Front Office / Receptionist	42	0	42
Front Office/ Restaurant Manager	146	0	146
Garment pattern maker	25	0	25
Garments Manufacturing	48	0	48
Glazing & Decoration	12	0	12
Graphic Designer (ATs)	21	0	21
Halal Butcher	65	0	65
Hardware & Network Technician (Networking)	79	0	79
Hardware (Networking)	190	0	190
Hi-Tech Fitter (Pipe fitter & Fabrication)	51	0	51
Home Appliances & Repair	19	0	19
Home Appliances Technician (CBT)	28	0	28
House Keeping/Daycare	26	0	26
HVACR (CBT)	296	0	296
Industrial Stitching Machine Operator (Garments, Sportswear)	169	0	169
Instrument Technician (ATs)	360	0	360
Knife Making	30	0	30
Livestock manager	51	0	51
Machinist	11	0	11
Machine Shop (G-III)	12	0	12
Matric Vocational	141	0	141
Matric Vocational	1168	0	1,168

Trade	Supply	Demand	Gaps
Millwright (Industrial Mechanic)	52	0	52
Mold Maker (Cast Iron) (ATs)	56	0	56
OMS + CIT Specialization in Secretarial Duties	42	0	42
Pattern Drafting & Cutting	25	0	25
Plastic Blow & Injection Molding	99	0	99
Plastics Processing Machine Operator	26	0	26
Professional IT	29	0	29
Poultry Farming	79	0	79
Professional Photography (Fashion)	19	0	19
Programmable Logical Controller (PLC)	105	0	105
Rescue & Emergency Services	49	0	49
Restaurant Manager	60	0	60
Rural Poultry	97	0	97
Sales Person	25	0	25
Screen Printing & Computer Designing	140	0	140
Sheet Metal Worker (ATs)	64	0	64
Shorthand	23	0	23
Social Media Marketing Specialist	69	0	69
Solar, Wind & UPS System Assembly	22	0	22
Sous chef level 3	8	0	8
Spoken English	266	0	266
Sports Wear Stitching	25	0	25
Spray Painting (6 Month)	10	0	10
Textile Dyeing and Printing	124	0	124
Textile Fitter	174	0	174
Turner Machinist	26	0	26
Turner Outfitter (Lathe Machine Operator)	25	0	25
Vehicle Driving	27	0	27
Veneer Inlay	29	0	29
Yarn Manufacturing (Spinning)	50	0	50
Grand Total	238331	305736	(67,405)

ANNEX 2: QUESTIONNAIRE

Skills Workforce Demand Side Questionnaires

This information supplied on this format will kept strictly confidential and will be used for research & Planning of National Skills Information System, NAVTTC, Government of Pakistan

Name of organization: _____
 Dated: _____ for the Year: _____ Organization Contact No: _____
 Email: _____ Address of the establishment _____
 Name of focal person: _____ Contact no: _____
 Sector: _____ Sub-Sector: _____

1. Existing Skilled Workers (Only skilled workers)

S.N	Trade Name	No. of workers		Source Codes										
				Male					Female					
		Male	Female	1	2	3	77	Specify in case of other	1	2	3	77	Specify in case of other	
1														
2														
3														
4														
5														
6														
7														
8														

9													
10													
11													
12													

Code: 1- TVET Graduate, 2- Work based learner, 3- Informal sector, 77- Others (Specify)

2. Skills deficiencies

2.1: Do you face local skilled workforce deficiencies? 1= Yes 2= No (Go to Q.3)

2.2: In case of Yes (Trade and level wise Number)

S. No.	Trade name	Level (use codes)							Specify in case of other	Number
		1	2	3	4	5	77			
1										
2										
3										
4										
5										
6										
7										
8										
9										

10														
----	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Codes:1: B.Tech, 2: DAE, 3= Diploma, 4= Certificate, 5= short course, 6= others (Specify)

3. Future Skills requirement

S.N	Trade Name	Source Codes														Number/Annum	
		Male							Female							Male	Female
		1	2	3	4	5	77	1	2	3	4	5	77				
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	

9																
10																
11																
12																

Codes:1: B. Tech, 2: DAE, 3= Diploma, 4= Certificate, 5= short course, 6= others (Specify)

3.1: What is your level of satisfaction from the TVET graduate? 1= Satisfied, 2= Not Satisfied, 3=Don't Know

Q3.2: Are you agree with the statement that Skilled Workforce Supply meet your requirement?

1 = Yes 2 = No

Q3.3: If "No", what are the reasons? _____

Q3.4: Do you know about TVET (Technical education & Vocational Training)?

1 = Yes 2 = No

Q3.5: Do you know about TEVTA/PVTC?

1 = Yes 2 = No

Q3.6: What is your Suggestion improvement? _____

Name of Enumerator: _____ Signature: _____

Name of Data entry operator: _____ Status: _____ (Enter/Rejected)

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