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# PAKISTAN:
# SKILLS ASSESSMENT FOR ECONOMIC GROWTH

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EDUCATION GLOBAL PRACTICE

SOUTH ASIA

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# Acronyms and Abbreviations

| | |
|---|---|
| AEPAM | Academy of Educational Planning and Management |
| ASER | Annual Status of Education Report |
| BBSHRRDB | Benazir Bhutto Shaheed Human Resource Research & Development Board |
| BTE | Board of Technical Education |
| CBT&A | Competency Based Training and Assessment |
| CPEC | China Pakistan Economic Corridor |
| DAE | Diploma in Associate Engineering |
| ECD | Early Childhood Development |
| FLFP | Female Labor Force Participation |
| GCI | Global Competitiveness Index |
| GDP | Gross Domestic Product |
| GNI | Gross National Income |
| HCI | Human Capital Index |
| HEC | Higher Education Commission |
| HIES | Household Income and Expenditure Survey |
| ICI&SDD | Industries, Commerce, Investment & Skills Development Department |
| ICT | Information and Communication Technology |
| ISCO | International Standard Classification of Occupations |
| KP | Khyber Pakhtunkhwa |
| LFS | Labor Force Survey |
| NAVTTC | National Vocational Technical Training Commission |
| NEMIS | National Education Management Information Systems |
| NGO | Nongovernmental Organization |
| NSIS | National Skills Information System |
| NSS | National Skills Strategy |
| NVQF | National Vocational Qualifications Framework |
| PBTE | Punjab Board of Technical Education |
| PMYSDP | Prime Minister's Youth Skill Development Program |
| PPP | Public-Private Partnership |
| PSDA | Punjab Skills Development Authority |
| PSDF | Punjab Skill Development Fund |
| PSLM | Pakistan Social and Living Standards Measurement |
| PVTC | Punjab Vocational Training Council |
| RPL | Recognition of Prior Learning |
| SAR | South Asia Region |
| SLMIS | Skilled Labor Management Information System |
| STEP | Skills Toward Employment and Productivity |
| STEVTA | Sindh Technical Education and Vocational Training Authority |
| TEVTA | Technical Education and Vocational Training Authority |
| TTB | Trade Testing Board |
| TVET | Technical Vocational Education and Training |
| VTC | Vocational Training Council |
| WDI | World Development Indicators |

# Executive Summary

**In an era of globalization and rapidly changing technology, the nature of work and skills required is also rapidly changing, and it calls for an urgent need to redefine the types of skills considered in public policy.** Technology is reshaping the demand for skills by reducing the value of skills that can be substituted by technologies. Technology is particularly affecting the demand for three types of skills in the workplace. First, the demand for nonroutine cognitive and socio-behavioral skills appears to be rising in both advanced and emerging economies. Second, the demand for routine job-specific skills is declining, and third, the value of combinations of different skill types appears to be increasing (World Bank 2019a). In this context, skills—often used as a synonym for Technical and Vocational Education and Training (TVET) in public policy discussions—need to be redefined. The World Bank's Skills Toward Employment and Productivity (STEP) framework (World Bank 2010) defined three types of skills: (a) cognitive skills, (b) socio-behavioral skills, and (c) technical skills.

**This report discusses how Pakistan should plan its skills development agenda for competitive economic growth.** The report examines the current demand for skills, the profile of existing workers and future labor market entrants, and skills development opportunities. It also reviews models and policy options for new skills and human capital development systems in Pakistan.

**The productivity of Pakistan's industry sector has declined recently. Reversing this decline will require a stronger and wider human capital base with more productive workers and greater integration of women into the economy.** Despite the more than 5 percent economic growth rate of the past five years, an increase in labor force participation in low-productivity economic sectors has lowered the average productivity of the overall economy. The global wave of automation makes a model of export-led industrialization and employment a more challenging option for Pakistan because of the country's relatively poor human capital. Pakistan is ranked 134 out of 157 countries on the World Bank's Human Capital Index (HCI). There are also considerable disparities in human capital outcomes by gender, including access to education, school retention, labor force participation, and participation in quality work. The weak economic integration of women remains a constraint to economic growth.

**Development of education and skills is one of the national and provincial priorities in Pakistan and has been a big challenge.** The education system of Pakistan is large—with 50.3 million students—and growing by 5.7 percent per year during the last three years. The education and TVET sectors contribute to skills development. Out of 50.3 million students in the education system in Pakistan in the academic year 2016–17, 44.3 million (88 percent of the total student population) were between preprimary and higher secondary education. Higher education hosts some 1.5 million students, and the TVET sector also serves a small number of beneficiaries (0.4 million). When discussing skills development, the education and TVET sectors need to be discussed as one comprehensive system.

**The early childhood development (ECD) and general education systems play an important role in skills development, but their overall performance has not been satisfactory.** The ECD and general education system has a beneficiary size of 9.8 million in ECD and 34.4 million from grades 1 to 12. These levels build the foundational skills for the entire population, including literacy, numeracy, cognitive, and socio-behavioral skills, which are in high demand in the labor market. These skills are transferrable across economic sectors. Yet, the performance of the education system is not satisfactory given the current number of 22.6 million out-of-school students and the South Asia region's lowest learning-adjusted years of schooling (4.8 years). General education needs substantial improvement for uplifting the nation's skills base, especially with stronger foundational skills, including literacy, numeracy, cognitive, and socio-behavioral skills. TVET and higher education are built on the foundational skills provided by general education. Foundational skills are highly demanded at all levels of occupations in the globalizing and changing economic landscape.

**The TVET system in Pakistan is highly complex, but its overall supply-driven service delivery is the root cause for the country's suboptimal TVET quality and efficiency, although many TVET initiatives have started.** The TVET system consists of federal and provincial levels of administration, different skills' levels of training, many trade or technology areas, many types of service providers including public and private institutes and industries, and different methods and durations of training, which make the system complex and its landscape fragmented overall. The service delivery is supply driven. The weak industry link leads to the poor quality and relevance of training and the weak labor market outcomes. Labor market outcomes of TVET programs are relatively weak, and one of the causes is lack of job placement support. A number of TVET initiatives have emerged, including Competency Based Training and Assessment (CBT&A), industry partnership, and public-private partnership (PPP). However, coherence of policy reforms and sustainability is questionable as many initiatives are sporadic and reforms are still in pilot. Federal and provincial efforts have to be more harmonized, and the TVET system has to be more committed to the outcomes.

**Pakistan has a large and fast-growing labor force (70 million, with an annual growth of 2 million), but the majority of the workers are low skilled, and the country has not fully reaped economic productivity potential due to low female labor force participation (25 percent).** Defining the skills category as low-skilled (no education to primary education), middle-skilled (secondary level), or high-skilled (post-secondary level), the low-skilled category is the largest with 35 million workers (62 percent of the total labor force) according to the Labor Force Survey (LFS) 2014/15. The middle-skilled workforce, with lower to higher secondary education, is 16.5 million (29 percent of the labor force), and the number of high-skilled workers with a post-secondary–level education is 4.6 million (8 percent of the labor force). Education is an important factor for determining the engagement in the formal sector labor market and the selection of industries and occupations. A large segment of the labor force is in the informal sector (87 percent of the labor force) or are nonwage family workers in the informal economy (63 percent of the labor force). The proportion of workers who have professional-level occupations is 68 percent among workers with post-secondary education, 30 percent among workers with upper secondary education, and 10 percent with secondary education.

**However, widespread informal sector work and easy access to such work creates low incentives for education, even though the low level of education then becomes a lifelong constraint for individuals and reinforces economic disadvantages.** Returns to education are relatively low in Pakistan and particularly low for the lower levels of education (6.1 percent, lower than the South Asian average of 7.0 percent). In addition, the relatively easy entry to the informal sector economy provides work opportunities for low-skilled workers but with low returns. Today overall, the Pakistani labor market accepts low skills because the main driver of economic growth is price competitiveness with cheap labor. Generally, the skills practiced in the Pakistani labor market are low and basic. The abundant supply of low-skilled workers and existing demand for them keeps the labor market at a low-skill equilibrium, and there is a growing risk of a low-skills–low-productivity trap for the economy.

**There are skill gaps in the labor market in foundational skills including socio-behavioral skills and specific technical skills affected by technological advancement.** Skills gaps are perceived not only on technical skills but more so for the service industry, which requires interpersonal and socio-behavioral skills. An analysis of an online job portal assessed a real-time market skills demand and showed nonroutine skills (analytical, interactive) are demanded at over 70 percent of the jobs among university and post-secondary degree holders as opposed to around 30 percent requiring routine skills. Among technical skills, programming is most demanded (63 percent share)—especially software and app developing skills. As technology changes the skills demand, there is a growing demand for specific types of skills for the information and communication technology (ICT) sector, such as software developers, application programmers, or web and multimedia developers, while the demand for general database administrators or general ICT technical employees is relatively filled in the market. Skills gaps occur not only due to the lack of education or training, but also as the result of a poor matching mechanism due to a lack of effective job placement support or career guidance.

**This report proposes six policy areas and policy recommendations for the way forward.** Suggested actions under each of the six policy areas is summarized.

1. **Take the whole-of-education and skills system approach for lifelong learning**
    - Invest in early childhood education.
    - Consider skills development as lifelong learning, requiring a whole sector approach.
2. **Establish foundational skills for better life and economic opportunities**
    - Strengthen good-quality basic education.
    - Provide tailored support to out-of-school children for their skills development.
    - Rebuild foundational skills among the low-skilled labor force.
3. **Build market-driven skills for employability and globally competitive productivity**
    - Supply a well-balanced secondary education and TVET programs for the middle-skilled groups in the context of continuously changing technology and labor market structure.
    - Ensure industry-led and flexible TVET systems to respond to the changing demands in skills.
    - Consider multiskilling TVET for local labor market relevance and for a gig economy.
    - Provide entrepreneurship and digital training to promote entrepreneurship and participation in a gig economy.
4. **Accelerate high-skill–led economic growth through skills for innovation and excellence**
    - Update the higher-skills development system with technological advancement.
    - Ensure analytical, socio-behavioral, and management skills development for nonroutine work.
    - Build vertical links of institutions for sector-specific technical skills development.
5. **Strengthen opportunities within social and women's comfort zones in the short run and expand the horizon in the long run**
    - Expand society's comfort zones for diversified economic opportunities for women.
    - Create women-friendly ecosystems in the short run, including home-based enterprises.
6. **Commit to the labor market outcomes, not to the supply of training**
    - Enhance job placement and career guidance systems.
    - Link skills development policies with industry development policies and cross-sectoral approaches for skills building for economic development.
    - Ensure a more integrated federal and provincial TVET system.
    - Continuously monitor the labor demands and labor market outcomes of training.

# Introduction

**In an era of globalization and rapidly changing technology, the nature of work and skills required is also rapidly changing, and developing countries are not exceptions.** The World Development Report 2019—The Changing Nature of Work (World Bank 2019a) presented a few key features of the technological change which has affected the nature of work in developing countries. First, among these, digital technologies are creating global platform-based businesses where customers, producers, and providers are connected differently from the traditional production and consumption processes. Second, technology is reshaping the demand for skills by reducing the value of skills that can be substituted by technologies. There is a perceived emerging threat of robots taking over jobs, although the observed cases are limited to specific sectors. Yet, a large number of workers in developing countries remain in low-productive jobs, often in the informal sector where access to technology is poor.

**Technology changes the demand for skills and replaces routine task-oriented jobs, but it could have an impact on the net creation of jobs.** Introduction of automated production lines and adoption of robots may induce reduction of industrial sector jobs. This alludes to a potential impact on workers who engage in simple and routine work. It may also have impacts on service jobs, where work is routine, and tasks are 'codifiable', including roles like lawyers and finance officers who may be affected by the introduction of Artificial Intelligence (AI). On the other hand, evidence shows that technological progress leads to the direct and indirection creation of jobs in technology and online sectors. These not only include direct technology workers such as software programmers but also those who provide technology-facilitated services such as app-based car hiring services or online-based delivery services.

**Technology is particularly affecting the demand for three types of skills in the workplace.** First, the demand for nonroutine cognitive and socio-behavioral skills appears to be rising in both advanced and emerging economies. Second, the demand for routine job-specific skills is declining, and third, the value of combinations of different skill types appear to be increasing (World Bank 2019a). These changes are not only found in new types of jobs but also in existing jobs. In advanced economies, high-skill cognitive occupations are growing rapidly while middle-skilled workers, such as machine operators, might be facing falling wages. Studies from developing countries, including Botswana, Ethiopia, Mongolia, the Philippines, and Vietnam, also show that demand for nonroutine cognitive and interpersonal skills is rising much faster than for other skills (World Bank 2019a). In Pakistan, very large shares of jobs for the post-secondary level demand nonroutine interactive skills and nonroutine analytic skills.

**The rapidly changing skills requirement calls for an urgent need to redefine the types of skills considered in public policy.** Skills are often used as a synonym for Technical and Vocational Education and Training (TVET) in public policy discussions. Yet, the future discussions of 'skills' require a broadened definition, in which TVET is included as one aspect. The World Bank's Skills Toward Employment and Productivity (STEP) framework (World Bank 2010) defined three types of skills: (a) *cognitive skills*, which include the ability to understand complex ideas, adapt effectively to the environment, learn from experience, engage in various forms of reasoning, and overcome obstacles using reasoning (via literacy, numeracy, and other abilities) to solve abstract problems; (b) *socio-behavioral skills*,[1] which involve characteristics across multiple domains (including social, emotional, personality, behaviors, and attitudes) not included under cognitive skills—for example, work habits (effort, discipline, and determination), behavioral traits (self-confidence, sociability, and emotional stability), and physical characteristics (strength, dexterity, and endurance); and (c) *technical skills*, which are a combination of cognitive and noncognitive skills used to accomplish specific tasks (skills used at work and in daily life), including the mastery of materials, tools, or technologies, which is typically associated

[1] Originally this category of skills was labeled as *noncognitive skills*, but it is more commonly referred to as *socio-emotional skills* or *socio-behavioral skills,* as used by World Bank (2019a). Following the latest literature in World Bank (2019a), this report uses the term, *socio-behavioral skills.*

with TVET. This report uses this framework as the main categorization. In addition, this report uses other categories to describe the skills, depending on the level of skills (for example, foundational skills, low skills, high skills) and how skills are practiced in the workplace (for example, routine skills, nonroutine skills) to complement the skills classification in different contexts. Foundational skills refer to a skill set that is a basis for building other skills such as literacy, numeracy, and basic cognitive and socio-behavioral skills.

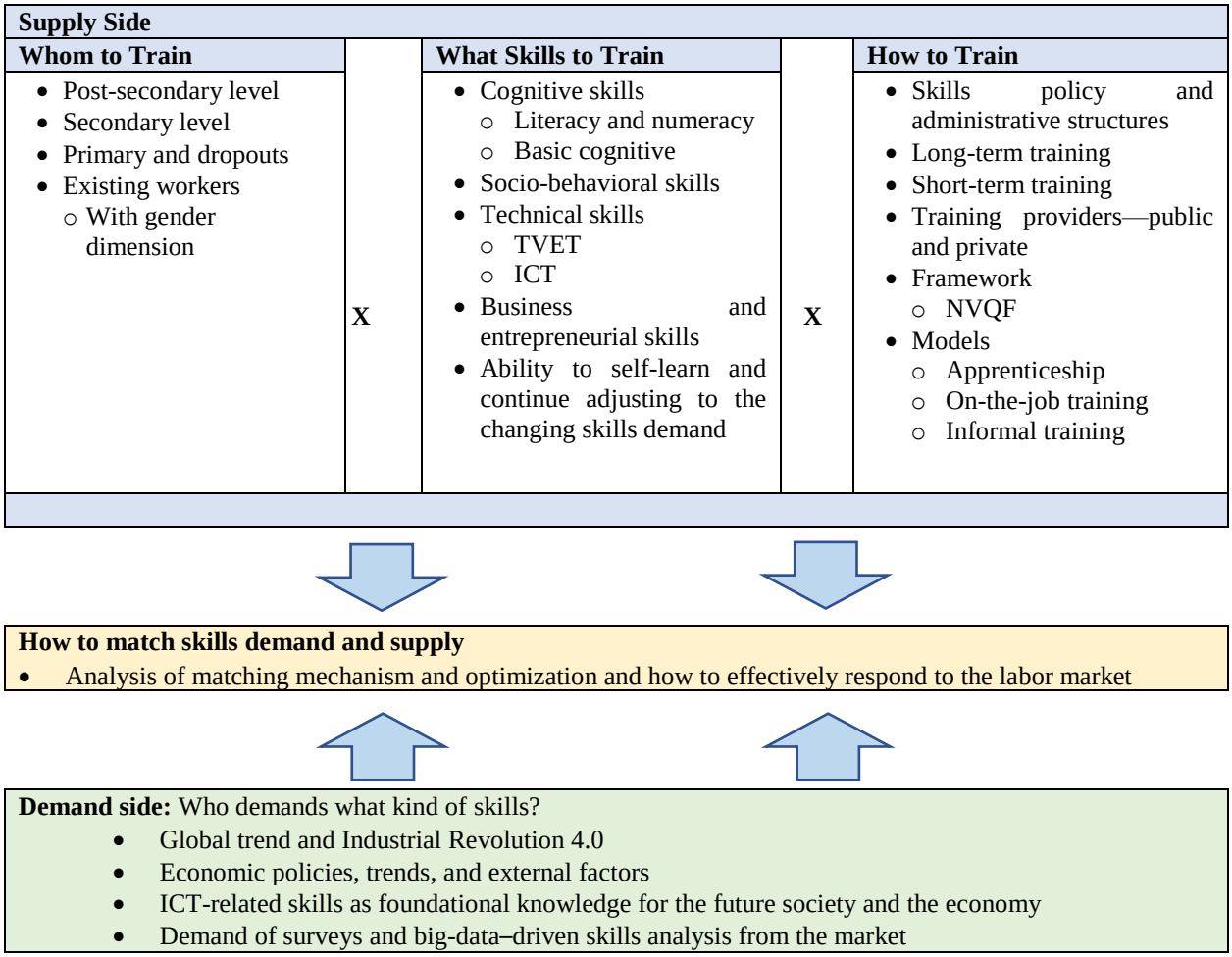
**In the context of rapidly changing technology and globalization, the aim of this report is to discuss how Pakistan should deal with the skills development agenda for competitive economic growth.** The report will assess the current skills demands, profiles of existing workers and future labor market entrants, and skills development opportunities in Pakistan. It will also discuss models and policy options for new skills and human capital development systems in Pakistan.

**The study will focus on the big-picture questions of skills demand and supply in Pakistan.** Today, there are many different stakeholders and approaches for skills development to cater to various groups of beneficiaries through various modalities. There is no single 'right' or 'best' approach to skills development, but it is important to be aware that there is a vast number and variety of potential beneficiaries who need skills development, and their skills requirements vary widely due to their personal backgrounds and variations in labor market needs. This study will assess whether the current flow and stock of skills in Pakistan is optimal for keeping the country's economic growth at a high equilibrium and what is required for the skills system to keep up with a competitive, relevant, and ever-changing skills demand. It will use the aforementioned STEP framework for the definition of skills. The report does not aim to give any prescriptions about skills development for any specific sectors. Rather, it argues that it is more important to ensure flexibility of the TVET system to respond to the continuously changing skills demand and that the entire Pakistani population, irrespective of educational level or age, has skills development needs.

**This study will give specific attention to the TVET sector.** The 18th Amendment to the Constitution of Pakistan devolved the educational responsibilities to provinces, and as a result, each province has a different skills development system. While skills development systems are more responsive to the province-specific needs, the overall picture for the Pakistan skills ecosystem is ambiguous. Although the report aims to cover skills and education holistically by adopting the definitions of skills from the STEP framework, it focuses on the TVET sector by diagnosing and discussing policy options, to contribute to the national dialogues on TVET and skills development.

The analytical framework used in the analysis is depicted in Figure 1. The key elements in skills-to-job matching are (a) skills demanded by the industries and the economy, (b) skills supplied by the training providers, and (c) matching the demand and supply. From the supply side, the key units of analysis will be focused on the skills applicability and relevance, comprising (a) whom to train, (b) what skills to train, and (c) how to train. The review of the supply side is important because the policy levers of skills development are usually more available for the supply side. The skills demand comes from the economy or industries, and it is changing with technological advancements and economic dynamics due to globalization. Skills matching is a bridge function between two sides. The report will emphasize technical skills, as TVET is one of the main policy levers for the skills development dialogues in Pakistan. However, due to data limitations, review of some training modalities (such as apprenticeship or on-the-job training) may not be as thorough as others.

**Figure 1: Analytical dimensions**




*Note:* ICT = Information and communication technology; NVQF = National Vocational Qualifications Framework; TVET = Technical Vocational Education and Training.

# Chapter 1: Country Context

## 1.1. Economic Context

**The economy of Pakistan has seen a strong trend in overall performance in the last five years, although the country has a history of on-average slow growth due to volatile economic growth patterns.** The average growth rate of gross domestic product (GDP) since 2013 was about 5 percent and in the most recent years has surpassed this number. This led to a faster growth of gross national income (GNI) per capita also, up from below 2 percent to above 3 percent in recent years (Table 1). However, Pakistan posted relatively low average GDP per capita growth for the past 40 years, with a declining trend from an average of 6.1 percent per year throughout the 1980s to 4.1 percent on average since 2011. The country saw repeated boom–bust cycles, as episodes of high growth were not sustained and reversed within a few years (World Bank 2019b). This pattern reinforces the idea that stability is important for Pakistan to continue its economic growth trend.

**Table 1: Key Macroeconomic and population indicators of Pakistan and SAR (2010–2017)**

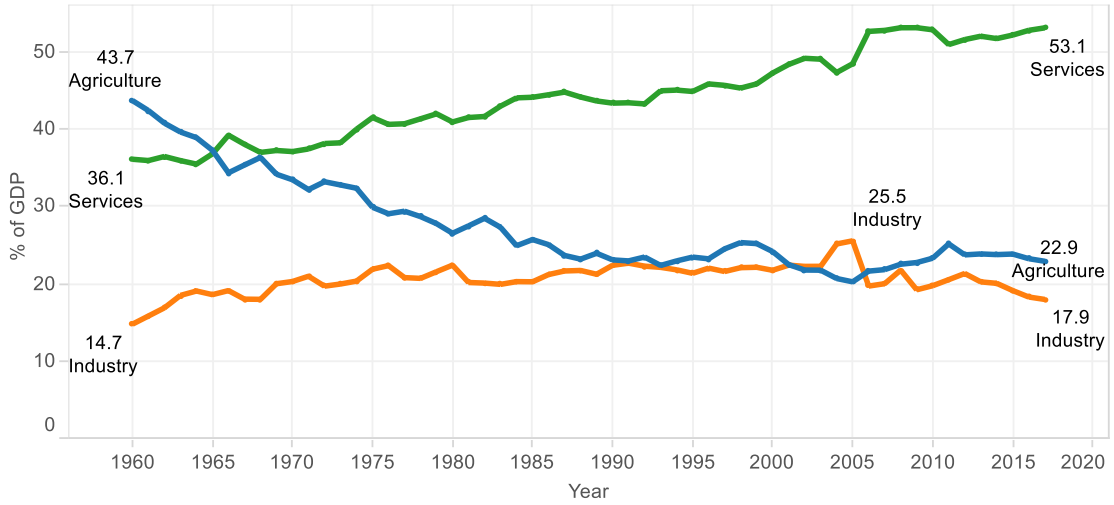
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | SAR |
|---|---|---|---|---|---|---|---|---|---|
| GDP growth (annual %) | 1.6 | 2.7 | 3.5 | 4.4 | 4.7 | 4.7 | 5.5 | 5.7 | 6.5 |
| GNI per capita, Atlas method (current US$) | 1,080 | 1,150 | 1,260 | 1,360 | 1,390 | 1,430 | 1,500 | 1,580 | 1,743 |
| GNI per capita growth (annual %) | 0.6 | 1.3 | 1.9 | 2.2 | 3.0 | 3.0 | 3.6 | 3.0 | 5.4 |
| Population growth (annual %) | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 1.2 |
| Personal remittances received (% of GDP) | 5.5 | 5.7 | 6.2 | 6.3 | 7.1 | 7.1 | 7.1 | 6.5 | 3.5 |
| Population (million) | 171 | 174 | 178 | 182 | 186 | 189 | 193 | 197 | 1,788 |

*Source:* World Development Indicators (WDI), retrieved in January 2019. [2]
*Note:* SAR = South Asia Region.
SAR data are for 2017 except for GNI per capital growth rate which referred to 2016.

**Economic growth was led by increasing contributions of the service sector, and this situation may lead to early deindustrialization of the Pakistani economy.** Up to the early 1990s, Pakistan had been following the same path as many countries with its agriculture sector declining and an increase in manufacturing, but this trend of an increasing share of manufacturing did not continue (World Bank 2019b). Today, Pakistan's industrial sector performance is weak, with widespread fears of early deindustrialization. The industrial sector currently contributes 17.9 percent of the GDP in Pakistan, of which 12.0 percent is contributed by manufacturing (Figure 2). This does not compare favorably with other countries—the South Asian average for industry value added is 25.4 percent going up to 39.5 percent for East Asia and the Pacific, excluding high-income countries (WDI 2019). Pakistan's services sector is relatively large compared with countries at similar income levels, and this divergence has increased substantially in recent years. However, most services growth has been in low-skills services (wholesale and retail trade) and public administration. Similar trends are reflected in the sectoral employment shares (World Bank 2019b). If labor-saving new technologies such as automation are brought in, Pakistan may not follow the same path of export-led industrialization as many industrialized countries have.

[2] WDI (World Development Indicators). 2019. Database. https://data.worldbank.org/

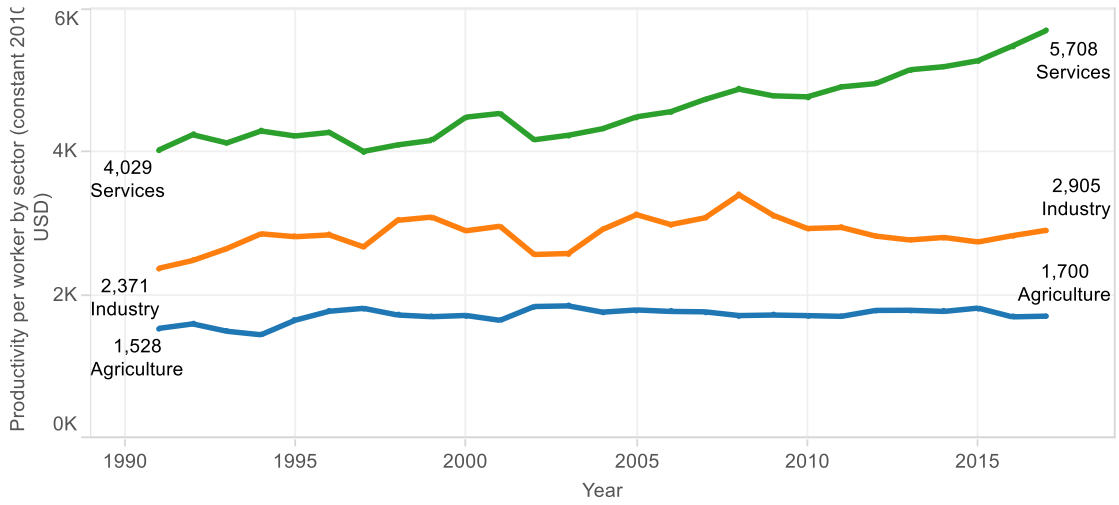
**Figure 2: Economic value added by sectors as percentage of GDP, Pakistan 1960–2017**




*Source:* WDI, retrieved in January 2019.

**Pakistan's industry-sector productivity has declined in recent years.** Between 2005 and 2017, the share of the industry-sector contribution to GDP declined by 7.6 percentage points, from 25.5 percent to 17.9 percent. Economic productivity can increase if productivity increases within a sector or when there is a labor shift from relatively low-productivity agriculture to relatively high-productivity services and manufacturing (the 'structural transformation'). In Pakistan, there has been an increase in productivity in the services sector in recent years (Figure 3), a very small contribution to productivity from inter-sectoral shifts, and an overwhelmingly negative contribution from declining industrial productivity (World Bank 2017a). The reason for such declining labor productivity is unknown. However, it is possible that the labor force increase was in low-productivity sectors, thereby lowering the average productivity of the whole economy.

**Figure 3: Economic productivity per worker by economic sector, Pakistan 1991–2017**




*Source:* WDI, retrieved in January 2019.

**Historically, Pakistan's manufacturing sector has not made the contribution to growth and employment that it has the potential to do.** Since independence, Pakistan has been saddled with an industrial structure that is concentrated in the production of relatively few items and is biased toward those that have low value addition. The structure of incentives has encouraged industry to remain predominantly in the production of items that

are either losing market share internationally or those that fetch low prices. The lack of incentives to innovate or to improve competitiveness has enabled industry to live with outdated production techniques and a labor force with low technical skills (Khan 2018). Pakistan's major export items in 2016 were largely textile and agricultural related. The top five export items (with a total of 42.3 percent share of the export) are textiles (14.0 percent), rice (8.1 percent), woven apparel (7.9 percent), knitted crocheted apparel (6.6 percent), and cotton fabric (5.7 percent) (Khan 2018).

**One of Pakistan's emerging economic hopes is the China Pakistan Economic Corridor (CPEC) which started in 2014.** CPEC is a US$46 billion initiative, which provides an important opportunity for the manufacturing sector, as it directly lifts several constraints through infrastructure improvements. Approximately 70 percent of the CPEC investment is for energy projects, 20 percent for infrastructure, and the remaining 10 percent for the development of the Gwadar port and nine industrial zones along the route. Infrastructure projects include roads, ports and airports, railways, mass transit, and information and communication connectivity. These are important contributions, as they address critical constraints faced by Pakistani businesses along with business regulatory and human capital constraints (Khan 2018).

**Pakistan has great potential for global competitiveness, which is not yet fully unlocked.** Pakistan's potential for global competitiveness is evident from its ranking in the World Economic Forum's Global Competitiveness Index (GCI) for 2018: market size (31), business dynamism (67), and innovation capacity (75) (Table 2; a description of GCI in Box 1). The market size, as evidenced by GDP size, is supported by the large and growing domestic population. While policy makers may think global competitiveness is only about export-led growth, there is a high potential for the country to grow by fully tapping the domestic market. On the other hand, the overall competitiveness score of Pakistan is low and it ranks 107 out of 140 countries. One of the critical factors is the low score on human capital. The health index is 109, and skills, which include educational outcomes, are ranked 125. The rankings for health and skills are below the average for the lower-middle-income countries and for South Asian countries.

**Table 2: Global ranking on GCI 2018, Pakistan and selected countries with similar market size ranking**

| | **Ranking (out of 140 countries)** | | | |
|---|---|---|---|---|
| | **Overall** | **Skills** | **Market size** | **Innovation capability** |
| South Asian countries | | | | |
| **Pakistan** | **107** | **125** | **31** | **75** |
| India | 58 | 96 | 3 | 31 |
| Sri Lanka | 85 | 70 | 59 | 80 |
| Bangladesh | 103 | 116 | 36 | 102 |
| Nepal | 109 | 106 | 84 | 110 |
| Selected countries with similar market size ranking to Pakistan | | | | |
| Vietnam | 77 | 97 | *29* | 82 |
| Argentina | 81 | 51 | *34* | 54 |
| Egypt | 94 | 99 | *24* | 64 |
| Nigeria | 115 | 124 | *30* | 93 |

*Source:* Schwab 2018.

*Note:* The smaller the number, the higher the international ranking. Rankings are not published for Afghanistan, Bhutan, and Maldives.

**Box 1: The Global Competitiveness Index 4.0**

The World Economic Forum's Global Competitiveness Report produces the Global Competitiveness Index (GCI) that measures a country's overall competitiveness. In 2018, GCI 4.0 was introduced, featuring a newly emerging set of factors critical for productivity in the Fourth Industrial Revolution 4.0 that provides a tool for assessing them. The index integrates well-established aspects with new and emerging levers that drive productivity and growth. It emphasizes the role of human capital, innovation, resilience, and agility, as not only drivers but also defining features of economic success in the Fourth Industrial Revolution. It calls for better use of technology for economic leapfrogging—but also cautions that this is only possible as part of a holistic approach with other factors of competitiveness. Finally, it offers an objective, data-driven analysis for dispassionate, future-oriented, and rational policy making. It consists of 12 pillars: (a) institutions, (b) infrastructure, (c) ICT adoption, (d) macroeconomic stability, (e) health, (f) skills, (g) product market, (h) labor market, (i) financial system, (j) market size, (k) business dynamism, and (l) innovation capacity.

*Source:* Schwab 2018.

**Pakistan's large population size is a big challenge, but it could be an economic potential if the human capital is built up.** Although Pakistan's large population size is a challenge (see the next section for more discussions), the large market size can be a potential source of competitiveness according to the GCI (Table 2). In fact, there are visible differences in economic activities between urban and rural areas today, and Pakistan has a rich regional diversification of economic activities. In mega cities such as Karachi and Lahore, with a population of 14.9 million and 11.1 million, respectively in 2017, the industry and service sectors are growing, whereas agriculture is the main economic activity for the vast rural areas in all provinces in Pakistan. Natural resources provide the main source of economic activities in Balochistan and certain areas such as Tharparkar District in Sindh.

**Across the board, the labor force is concentrated in low-productivity economic activities, and a large proportion of workers are found in the informal sector.** In 2015, 87 percent of the labor force was considered to be in informal employment, with a breakdown of 63 percent unpaid and own-account workers and 24 percent informal wage workers (Bossavie, Khadka, and Strokova 2018). Unpaid workers are typically family workers who contribute to the economic activity of the household in farm or nonfarm enterprises without gaining formal earnings. The level of informality is higher in rural areas than in urban settings, owing to the large share of agricultural work. There is a wide wage gap between formal and informal employment, with informal workers earning significantly below the statutory minimum wage. This is likely due to a lower entry barrier with respect to experience and network. Youth are more likely to be employed informally despite the higher levels of schooling among the youth compared to the older generation (Bossavie, Khadka, and Strokova 2018).

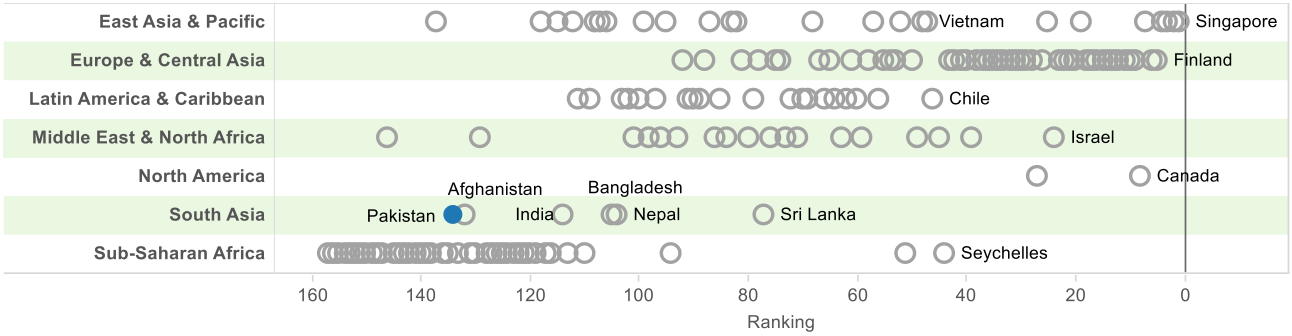
## 1.2. Demographic, Socioeconomic, and Political Contexts

**Pakistan's rapid population growth can be viewed as both a national asset and a challenge.** Pakistan is currently the world's fifth most populous country based on the results of the 2017 national census, which estimated its population size as 207.7 million. The large population is a potential engine for robust economic activities if human capital is built, but it can be a big challenge today. In 2017, 52.5 percent of Pakistan's population was under the age of 25. With this young population, the country has great potential to benefit from a demographic dividend, with a higher share of working-age population and a declining dependency ratio, per capita GNI growth is expected to accelerate. However, the country is missing out on the opportunity to capitalize on its demographic dividend and potential rapid economic growth because of its low level of human capital, low labor force participation, and low productivity. Job creation has not kept pace with the population growth rate of 1.4 percent.

**Despite improvement over time, the human capital constraint is one of the critical factors for the country's slow economic growth and low global competitiveness.** Pakistan is ranked 134 out of 157 countries in the world on the Human Capital Index (HCI), which is the lowest ranking among South Asian

countries (Figure 4). In the past, Pakistan has seen considerable reduction in poverty with the poverty rate decreasing from 64.3 percent in 2001 to 29.5 percent in 2013 (World Bank 2017b). Using the internationally comparable US$1.90 a day poverty line in purchasing power parity terms, the national poverty rate was 6.1 percent in 2013. However, despite a marked reduction in the poverty level, the progress of the human development sector has been slow and many challenges remain. Pakistan has the world's second highest out-of-school population (22 million), and it is estimated that around 25 percent of the Pakistani youth are illiterate. This presents a formidable human development challenge for the youth of the country, where access to education remains low and completion rates for primary education are among the lowest in the world. The needle on the critical human development indicators such as stunting (38 percent in 2018) has made progress but lags behind other countries in the region. Large disparities remain in development outcomes among its provinces and between urban and rural areas. High gender disparities are prevalent, and Pakistan has an abysmal female labor force participation (FLFP) with only one in four women being active in the labor force.

**Figure 4: Global HCI ranking by region, 2018**




*Source:* World Bank HCI, 2018.
*Note:* The smaller the number, the higher the international ranking. Rankings are available for 157 countries.

**Inequality of opportunities and outcomes persist across and within regions in Pakistan, and across different population groups.** Opportunities for the basic qualities of life, such as completing primary school on time or having clean water to drink, appear to be far from a universal and even distribution in Pakistan. Inequality of opportunities is the highest in Sindh and Balochistan. In Punjab and Sindh, the education of the household head is the most significant determinant of access to educational opportunities. In contrast, gender is by far the most important in Khyber Pakhtunkhwa (KP) and Balochistan, where social norms penalize girls' educations the most (World Bank 2019b). Inequality and intergenerational socioeconomic mobility are closely intertwined; Pakistan has one of the lowest rates of intergenerational mobility in the world. Persistent inequality among and between socioeconomic groups may increase social discontent and, eventually, the propensity of individuals and groups to engage in crime and political violence. Between 2001 and 2011, conflicts claimed the lives of 35,000 people in Pakistan. Persisting inequalities, which would lead to a weakening social contract between citizens and the state, could contribute to radicalization and militancy (Azam and Aftab 2009; Malik 2009; World Bank 2019b; Zaidi 2010).

**There are also considerable disparities in human capital outcomes by gender in Pakistan.** The primary school participation rate (age 6–10) is 80 percent among boys and 72 percent among girls—with a 10 percent point gap. The gap is larger (14 percentage points) at the lower-secondary level where boys' and girls' participation rates are 76 and 62 percent, respectively (World Bank 2017b). Given the importance of girls' education for women's employability, child health and nutrition outcomes, and poverty reduction, the limited educational development of girls contributes to low intergenerational human capital outcomes. The FLFP rate (ages 15–64) among women is only 25 percent compared to 82 percent among men. While female employment in rural areas is gradually increasing, most women engage in unpaid work. The weak economic integration of women remains a constraint to economic growth.

**Pakistan is a federal parliamentary republic with territories and four provinces.** The territories include the Islamabad Capital Territory and the provinces are Punjab, Sindh, KP, and Balochistan. Each province has its own government. The country spans 881,913 square kilometers with Balochistan being the largest province, followed by Punjab, Sindh, and KP.

**Pakistan's provincial governments have a high degree of autonomy following the 18th Constitutional Amendment in 2010.** This amendment extended constitutional rights to the provinces for better governance and control over their resources. Under the 18th Constitutional Amendment, 17 functions, including education and skills development, were devolved to the provinces, although tertiary education, including universities and affiliated colleges, is still under the responsibility of the federal government.

**Summary of Key Findings**

- Pakistan's industry sector productivity has declined in recent years. Pakistan has observed a very small contribution to productivity from inter-sectoral shifts and a negative contribution from declining industrial productivity. One of the reasons for this lowered average productivity of the whole economy could be the increase in the labor force in low-productivity economic sectors. Pakistan may face early deindustrialization. The global wave of automation presents an added challenge to the export-led industrialization and employment model of economic development.
- Pakistan's GCI is currently low (107 out of 140 countries) despite the country's great potential. One of the major advantages is its large market size (ranking 31), as evidenced by the GDP size and supported by the large and growing domestic population. While global competitiveness may be typically associated with export-led growth, there is a high potential for the country to grow by fully tapping the domestic market.
- Despite improvement over time, the human capital constraint is one of the critical factors for the country's slow economic growth today (ranking 125 on the GCI) and low global competitiveness. Pakistan's rapid population growth and young population (52.5 percent are under age 25) can be presented as a national asset which could yield demographic dividends, but this could be a persisting challenge for human capital development.

# Chapter 2: Education and Skills Development Sector—Background, Challenges, and Initiatives

## 2.1. Overall Landscape of Education and Training

**Development of education and skills is one of Pakistan's national and provincial priorities.** Pakistan's national education and skills policies evolved over time through a national vision, sector policies, and provincial policies. At the national level, *Vision 2025* is the strategic blueprint for the country to attain its economic goal of becoming an upper-middle-income country, which situates human capital and social development as the first of seven pillars. *National Education Policies of 2009 and 2017* are the national level education policies which also address the importance of TVET for Pakistan's economic development. The detailed policies for the TVET sector have also been developed and include the *National Skills Strategy of 2009–2013* and the *National TVET Policy 2015*, which lays out more operational directions for skills development. In 2018, the Government of Pakistan developed the *National "Skills for All" Strategy—A Roadmap for Skill Development in Pakistan* to lay out the action plans for their 'Skills for All' agenda (Government of Pakistan 2018). At the provincial level, there are provincial growth strategies and skill-specific policies. Punjab, for example, has the Punjab Growth Strategy 2015, which is in line with Pakistan's Vision 2025, and the Punjab Skills Development Sector Plan which sets a specific numerical target of training unskilled youth. Likewise, the provinces of KP and Sindh also have similar growth strategy and skills development policies.

**The education system of Pakistan is large—with 50 million students—and growing by 5.7 percent per year during the last three years.** The general education system in Pakistan is divided into five levels—preprimary, primary, middle, secondary, and higher secondary—and accommodates the majority of enrollment in Pakistan (Table 3). Out of 50.3 million students in the education system in the academic year 2016–17, 44.3 million (88 percent of the total student population) were between preprimary and higher secondary education. Higher education hosts some 1.5 million students, and post-secondary education, including TVET and teacher training, accommodates roughly 1.0 million students. Nonformal education and *deeni madaris* (religious education) are also supporting 3.5 million children. It is important to note that the accurate enrollment size in private schools is unknown to the public statistics system; private school enrollment is estimated based on past data.

**Table 3: Enrollment by level of education, in millions**

| Education Level | 2013–14 | 2014–15 | 2015–16 | 2016–17 | % Private |
|---|---|---|---|---|---|
| Preprimary education | 8.6 | 8.6 | 8.7 | 9.8 | 49 |
| Primary education (G1–5) | 17.9 | 18.4 | 20.3 | 22.1 | 46 |
| Middle school education (G6–8) | 6.3 | 6.4 | 6.4 | 6.5 | 38 |
| Secondary education (G9–10) | 3.0 | 3.4 | 3.4 | 3.3 | 32 |
| Higher secondary education (G11–12) | 1.9 | 2.8 | 2.6 | 2.5 | 12 |
| Universities | 1.6 | 1.3 | 1.4 | 1.5 | 19 |
| Non-formal education | 0.8 | 0.8 | 1.3 | 1.2 | 7 |
| **TVET** | **0.3** | **0.3** | **0.3** | **0.3** | **56** |
| Teacher training institutes | 0.7 | 0.7 | 0.7 | 0.7 | 1 |
| *Deeni madaris* | 1.8 | 1.7 | 2.3 | 2.3 | 97 |
| Total | 42.9 | 44.4 | 47.5 | 50.3 | 43 |

*Source:* Academy of Educational Planning and Management (AEPAM) Pakistan Education Statistics 2015–16, page 61; 2016–17, page 67. From the original data, Punjab Education Foundation enrollment is included in primary education. TVET data reported by the National Vocational Technical Training Commission (NAVTTC) are 0.43 million in 2017–18, and its statistics are quoted in Section 2.2.
*Note:* Statistics include estimated private school enrollment.

**There is a large out-of-school population in primary and secondary school–age cohorts, and the enrollment share is rapidly dropping at the post-secondary level.** Due to nonavailability of accurate enrollment statistics, it is difficult to estimate the number of out-of-school children. However, available statistics show that 77.4 percent of primary school–age children (ages between 6 to 10) are enrolled in schools, and 22 million children are out of school (Table 4). In the primary education age group, 82.3 percent of boys ages 6–10 attend school while only 72 percent of girls do so. By provinces, school participation is higher in KP and Punjab and comparatively lower in Balochistan and Sindh across all levels of general education.

**Table 4: School participation rates by age group, gender, and provinces**

| | Gender | | Provinces | | | | Overall |
|---|---|---|---|---|---|---|---|
| | Male | Female | Balochistan | KP | Punjab | Sindh | |
| Preprimary age group (ages 4–5) | 45.7 | 40.6 | 20.8 | 38.3 | 54.9 | 29.4 | 43.3 |
| Primary education age group (ages 6–0) | 82.3 | 72.0 | 63.9 | 79.8 | 82.9 | 68.0 | 77.4 |
| Secondary education age group (ages 11–15) | 76.0 | 61.9 | 59.1 | 74.2 | 72.0 | 61.9 | 69.3 |
| Higher education age group (ages 18–24)[a] | 9.7 | 8.5 | 3.0 | 8.1 | 9.4 | 9.3 | 9.1 |

*Source:* World Bank 2017b.

*Note:* a. Enrolled in higher education or skills institutes.

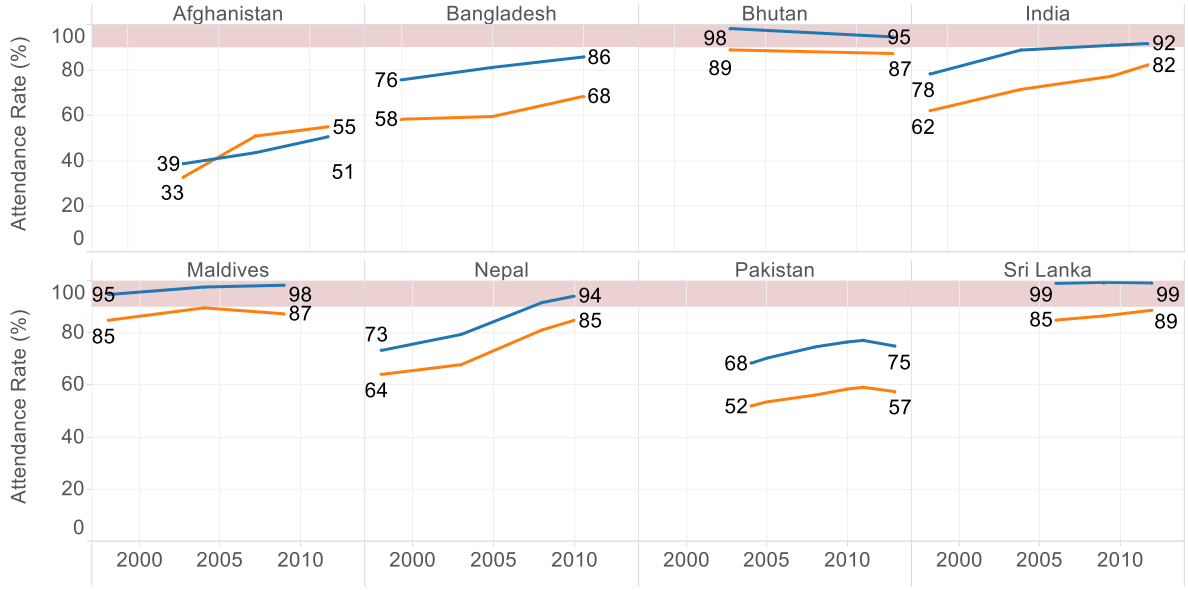
## 2.2. Skills Development Starts with Strong Foundational Skills

**The skills development policy of Pakistan treats general education and TVET separately and considers skills as a synonym for TVET, although the labor market expects skills to be holistic and a source of productivity.** Skills development is an incremental and lifelong process, acquired through formal and non-formal education (preprimary through higher education), networks, jobs, and other means. Skills are at the core of improving individuals' employment potentials and, together with jobs, contribute significantly to increasing countries' productivity and growth. The definition of a "skilled worker" in the practical labor market context is one who has good foundational skills, including interpersonal skills, and market-relevant technical skills. The labor market highly values cognitive skills, socio-behavioral skills, and technical skills, which are to be acquired through the whole of the education system.

**Skills development is a lifelong process with a strong emphasis on early foundations.** Skills formation is a cumulative life-cycle process, which starts early in an individual's life with early childhood education. Given that skills accumulated through investment in the child's health, nutrition, and adequate stimulation would be a basis for further skills accumulation through formal education, there is a global consensus regarding the importance of early childhood development (ECD) (World Bank 2019c). The current skills-related policy predominantly focuses on technical or vocational skills and it has not adequately addressed the labor market relevance of comprehensive skills sets of individuals.

**Despite an increase in the absolute number of students, enrollment rate progress is slow due to the fast-growing population, and the out-of-school population is still large.** Pakistan had made a concerted effort for educational development, and enrollment rates increased from 68 percent to 75 percent for the primary age group and 52 percent to 57 percent for the lower-secondary age group between 2004 and 2013. However, during this Millennium Development Goal period, other countries also have made improvements in enrollment, and some countries, for example, Bangladesh, Bhutan, India, Sri Lanka, Maldives, and Nepal have more or less solved the issue of providing universal access to primary education (Figure 5). In Pakistan, the National Education Management Information Systems (NEMIS) estimates that 22 million children were out of school in 2016–17, of which there were more than 5 million out-of-school children of primary ages 5–9, more than 11 million in ages 10–14, and 6.2 million within the age group 15–16. The recent stagnation in enrollment is also a concern. If this trend continues, the future labor force will continue to have a large number of uneducated and unskilled workers (*see more in Chapter 3 for the assessment of the current labor force*).

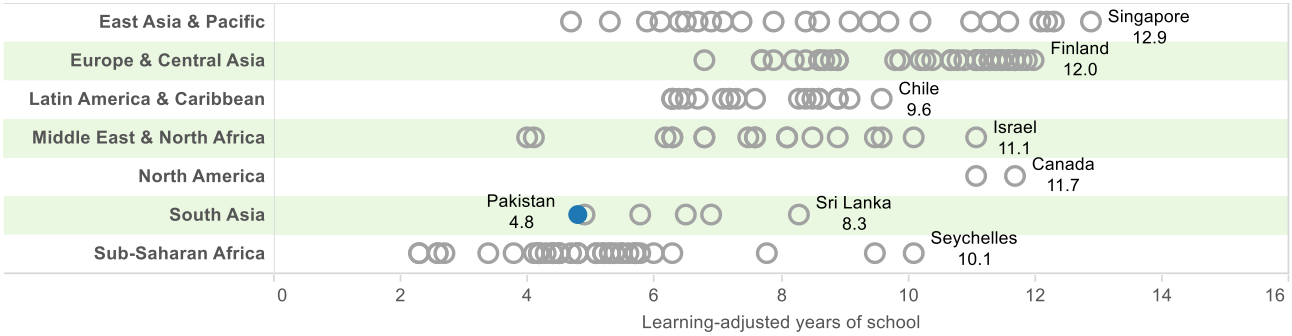
**Figure 5: Trends of school attendance rates by country, age group**




*Source:* World Bank 2019c.
*Note:* Enrollment rates for Pakistan were calculated using Pakistan Social and Living Standards Measurement (PSLM) Survey 2004–05, 2008–11, and 2013.
Blue line = ages 6–11; orange line = ages 12–17.

**The poor quality of learning leads to low human capital cumulation and contributes to a constraint for economic productivity.** The consequence of an inefficient education system, in terms of educational attainment and quality of learning, is insufficient human capital cumulation. The low level of learning shows that despite their school attendance, children do not acquire sufficient skills and knowledge. Figure 6 shows the learning adjusted years of schooling in 2018,[3] which combines the years of education and levels of learning outcomes. Pakistan's learning adjusted years of schooling is 4.8 years, which is less than the 5-year primary education cycle, implying that the average learning levels of Pakistani students, when they finish schooling, is less than the primary education completion level.

**Figure 6: Learning adjusted years of schooling, 2018**

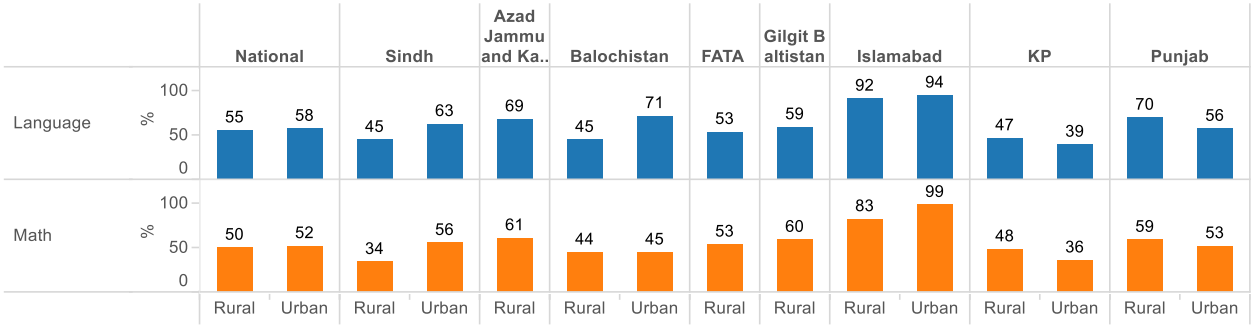



*Source:* World Bank HCI, 2018.
*Note:* Data are available for 157 countries.

[3] This indicator combines quantity and quality of schooling into a single easy-to-understand metric of progress (Filmer et al. 2018).

**Due to the low quality of learning, the children in Pakistan perform far below the curriculum standards at the respective grade levels.** According to the Annual Status of Education Report (ASER),[4] the competency level of children in Sindh is below the national average with especially low performance in rural areas. Only 63 percent of grade 5 students in urban areas can read a story compared to 45 percent in rural areas, and 56 percent of urban students can perform two-digit division as opposed to 34 percent of rural students (Figure 7). Provincial-level learning assessments also reveal, by and large, that children in Pakistan perform far below the curriculum standards, and poor performance may be contributing to the high dropout rates from schools.

**Figure 7: Proportion of students in grade 5 able to read a story (language) or do two-digit division (math)**




*Source:* ASER, 2014.
*Note:* The language test covers the competency level up to grade 2 and the math test covers the competency level up to grade 3.

**Technical and vocational skills should be considered as upper-level skills on top of the foundational skills.** Today, 60 percent of the labor force in Pakistan is low skilled or uneducated, and 87 percent of them engage in the informal sector economy. There is a clear tendency that the uneducated population engages in informal sector work due to lack of skills to perform economic activities with higher productivity. The importance of the foundational skills, such as basic literacy, numeracy, and basic cognitive and socio-behavioral skills, is the transferability of such skills across economic sectors and for adaptability to the changing skills demand. Foundational skills acquired through early age and basic education are a prerequisite for effective skills development, including TVET. Many skills development programs requiring basic education certificates are also an indication that such foundational skills are necessary for effective skills development. International studies have shown the vulnerabilities of TVET skills at the time of technological changes. As Pakistan rightly anticipates, technological changes will affect the labor market skills needs, and one of the critical skills is to adjust to the changing skills demand. Workers should know how to learn and relearn the technical skills in response to the changing labor market skills demands, and foundational skills acquired through basic education would allow workers to more easily adjust to the changing economy.

**The tertiary education sector in Pakistan is rapidly expanding, but the quality and relevance of research continues to be largely inadequate for the industries.** Tertiary education, consisting of universities and affiliated colleges, accommodates a total enrollment of approximately 2.5 million students, including distance-learning students. Tertiary education enrollments increased from less than 2.7 percent of the college-age population in 2002 to 10.1 percent in 2017. However, the research environment in Pakistan is still dominated by inadequate and irrelevant research activities with few links between universities and industry to encourage the commercialization of research. While the number of programs and institutions ranked internationally has gone up, the incentives for research and innovation need to continue to be improved.

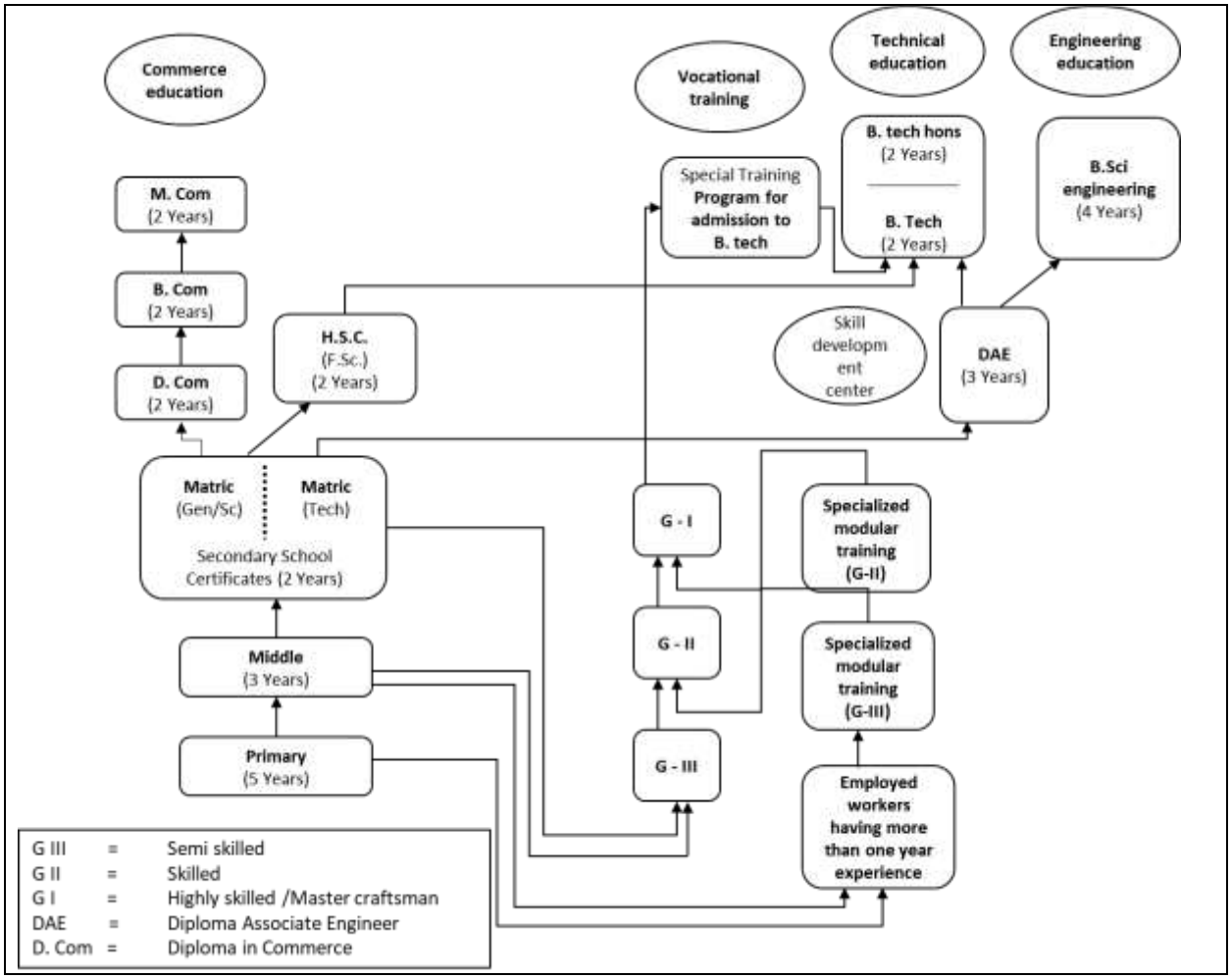
[4] ASER is an initiative led by civil society organizations. The tests are administered through household surveys.

**The Higher Education Vision 2025 of the Higher Education Commission (HEC) stipulates enhanced equitable access through different tiers of tertiary education.** The vision is to increase the number of tier-one research universities for offering innovative programs complying with international standards, set up new tier-two universities in underserved large districts, and strengthen tier-three affiliated college systems, in which about 3,600 affiliated colleges in the country provide educational opportunities to prepare students for taking the examinations of their affiliated universities (Higher Education Commission, n.d.). The government indicates it wants to nurture entrepreneurship and social impact, but instead it rewards impact factor journal publication. The HEC has supported the establishment of business incubation centers in public universities; however, they need to be strengthened so they can offer a full suite of support, ranging from access to seed funding to legal and financial advice and guidance. According to the Global Entrepreneurship Monitor report of 2012, Pakistan has the lowest rate of female entrepreneurship in the world—only 5 percent of entrepreneurs are women. Business incubation centers can serve as an excellent space for women entrepreneurs with start-up initiatives.

## 2.3. The TVET System in Pakistan and Governance Structure

**The TVET system in Pakistan is highly complex, with the presence of different skills levels of training and many trade or technology areas, various types of service providers including public and private institutes and industries, and different methods and durations of training.** Typically, the TVET system in Pakistan is examined by technical and vocational levels (Syed 2018; see Figure 8). Technical level corresponds to the post-secondary level of education, and vocational level corresponds to the secondary education level and below. At the tertiary level, there are courses for technical bachelor's degrees and diplomas and engineering education. At the vocational level, G-I, G-II, and G-III programs (with G-I being the highest) are long-term training programs with a minimum duration of one year that are provided at vocational training centers; entry requirements range from grades 8 through 12 depending on the level and course. Commerce education is also considered as part of TVET. Certificate and short-term training programs range from three to six months. There are over 1,000 trades and training providers, and entry requirements are highly diverse.

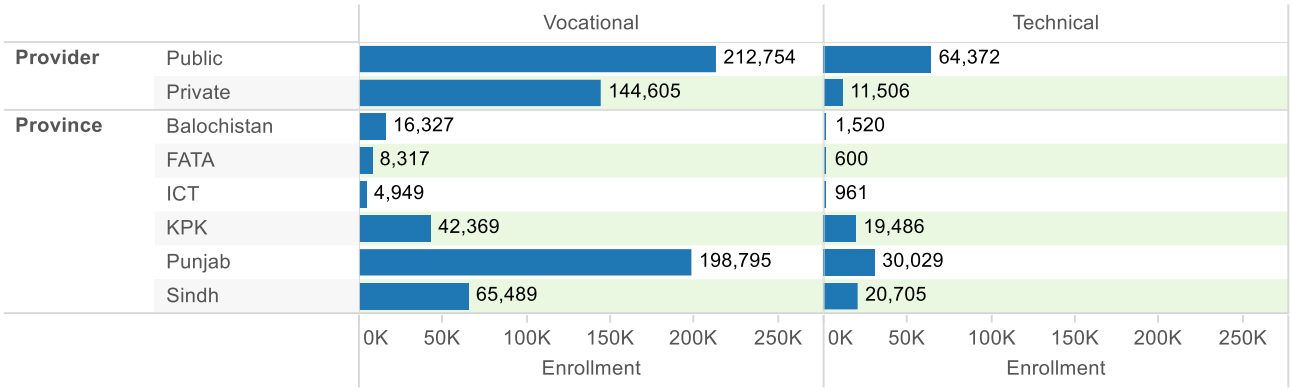
**Figure 8: Structure, qualifications, and pathways for the TVET system in Pakistan**




*Source:* Replicated from UNESCO-UNEVOC (2009).
*Note:* Shaded cells are in the TVET domain.

**The total enrollment in TVET institutes in academic year 2017–18 was approximately 433,000 including technical and vocational levels in public and private institutes, which is 0.9 percent of the total student population in Pakistan.** There are 1,627 public and 2,113 private TVET institutes in Pakistan. The largest number of training institutes is in Punjab (1,672), followed by Sindh (717), KP (697), Balochistan (151), and Islamabad (118). Around 71 percent of institutes are at the vocational level and 29 percent are at the technical level. Student enrollment in vocational courses is significantly higher than for technical courses. At the national level, 82 percent of TVET students are enrolled in vocational programs. Figure 9 shows that the overall public enrollment share is 64 percent, which is higher than the private enrollment share (36 percent) even though there are more private TVET institutions in the country. By provinces, Punjab has the highest enrollment, followed by Sindh, KP, and then Balochistan. By gender, female students are 34 percent of total TVET enrollment, with the proportion of female students widely varying between trades, for example, 0 percent in electrics, welding, and auto-mechanics; 24 percent in basic computer; 73 percent in tailoring; and 100 percent in beautician.

**Figure 9: Number of TVET students by level, providers, and province, 2017–18**




*Source:* Syed 2018, using National Skill Information System 2017–18.
*Note:* K = thousands. FATA=Federally Administered Tribal Areas. ICT=Islamabad Capital Territory. KPK=Khyber Pakhtunkhwa.

**With respect to the TVET sector, the federal responsibility is to formulate policies and to set standards, whereas the provinces are responsible for implementation.** To respond to the emerging skills development needs, the government developed a National Skills Strategy (NSS) 2009–2013, which aims to provide policy direction, support, and an enabling environment to the public and private sectors to implement training for skills development and enhance the social and economic profile. Overall, the federal government is responsible for standards, quality assurance, and review and assessment of national needs for TVET, whereas the provinces are responsible for implementation and management of the TVET systems (Table 5). Following NSS 2009–2013, the Ministry of Federal Education and Professional Training formulated the *Skills for Growth and Development: A Technical and Vocational Education and Training (TVET) Policy for Pakistan—2015* and *National Skills for All Strategy—2018.* Provincial strategies and policies related to skills include the Punjab Growth Strategy 2018, Punjab Skills Development Sector Plan 2018, Skills Development Plan for Khyber Pakhtunkhwa (2012), and Skill Development Plan—Sindh (2012) (Syed 2018).

**Table 5: Matrix of federal and provincial roles**

| | Federal role | Provincial role |
|---|---|---|
| Regulatory | • Set national curricula standards with input from all stakeholders<br>• Establish quality assurance standards for delivery<br>• Develop licensing and accreditation standards<br>• Ensure testing and certification standards | • Provide input into national standards and share authorization of those standards<br>• Apply standards in jurisdictions using institutions with delegated regulatory authority<br>• Collaborate with national body to audit compliance and performance in line with quality assurance standards |
| Policy | • Identify national priorities supporting the economic and social landscape of the country<br>• Ensure policy determination, guidance, and coordination with provinces to achieve national and provincial goals | • Be responsible for jurisdiction-based policy, plus application of national policy within the economic context and priorities of provinces |
| Funding | • Maintain skill development fund for meeting training needs<br>• Advocate for increased budgetary allocations<br>• Develop ways to raise nonpublic funding for skills<br>• Facilitate need-based channelizing of donor funding | • Determine budgetary requirements to meet national and provincial skills goals<br>• Fund regulatory bodies and publicly owned TVET organizations (for example, institutes) within provinces |

*Source:* Government of Pakistan 2018.

**NAVTTC is the apex body at the federal level that is responsible for TVET, and Technical Education and Vocational Training Authorities (TEVTAs) lead TVET implementation at the provincial level.** NAVTTC works under the Ministry of Federal Education and Professional Training and is governed by the NAVTTC Act of 2011,[5] which describes the entity as an autonomous organization for regulation, coordination, and policy direction for TVET. NAVTTC is leading the establishment and implementation of the NVQF across Pakistan, and it works with the provincial TVET organizations to develop Competency Based Training and Assessment (CBT&A) which is an important part of the NSS and lays the foundation for implementation of the NVQF. At the provincial level, while there are many provincial-level policy entities and implementing agencies, the main provincial-level players are the TEVTAs, which exist in all provinces (Table 6). In addition, Punjab, Sindh, and KP have the Board of Technical Education (BTE) and Trade Testing Board (TTB). In Punjab, the Vocational Training Council (VTC) is also a training provider, and Punjab and Sindh have skills fund-like programs that work with private sector training providers for short-term training.

[5] It was initially established as the National Vocational and Technical Education Commission (NAVTEC) through NAVTEC Ordinance 2006, as an autonomous apex national body to regulate the TVET sector in Pakistan. However, following the 18th Constitutional Amendment, which made education the sole responsibility of the provinces, a new act was established in 2011.

**Table 6: Comparison of provincial TVET stakeholders**

| Legislation for provincial body | Punjab | Sindh | KP | Balochistan |
|---|---|---|---|---|
| Technical Education and Vocational Training Authority (TEVTA) | Yes | Yes | Yes | Yes |
| Board of Technical Education (BTE) | Yes | Yes | Yes | No |
| Trade Testing Board (TTB) | Yes | Yes | Yes | No |
| Vocational Training Council (VTC) | Yes | Yes (not functional) | No | No |
| Short-term skill development programs | Yes (PSDF) | Yes (BBSHRRDB) | No | No |

*Source:* Syed 2018.
*Note:* PSDF = Punjab Skill Development Fund; BBSHRRDB = Benazir Bhutto Shaheed Human Resource Research & Development Board. BBSHRRDB used to be called as Benazir Bhutto Shaheed Youth Development Project (BBSYDP).

## 2.4. Issues and Challenges of the TVET System in Pakistan

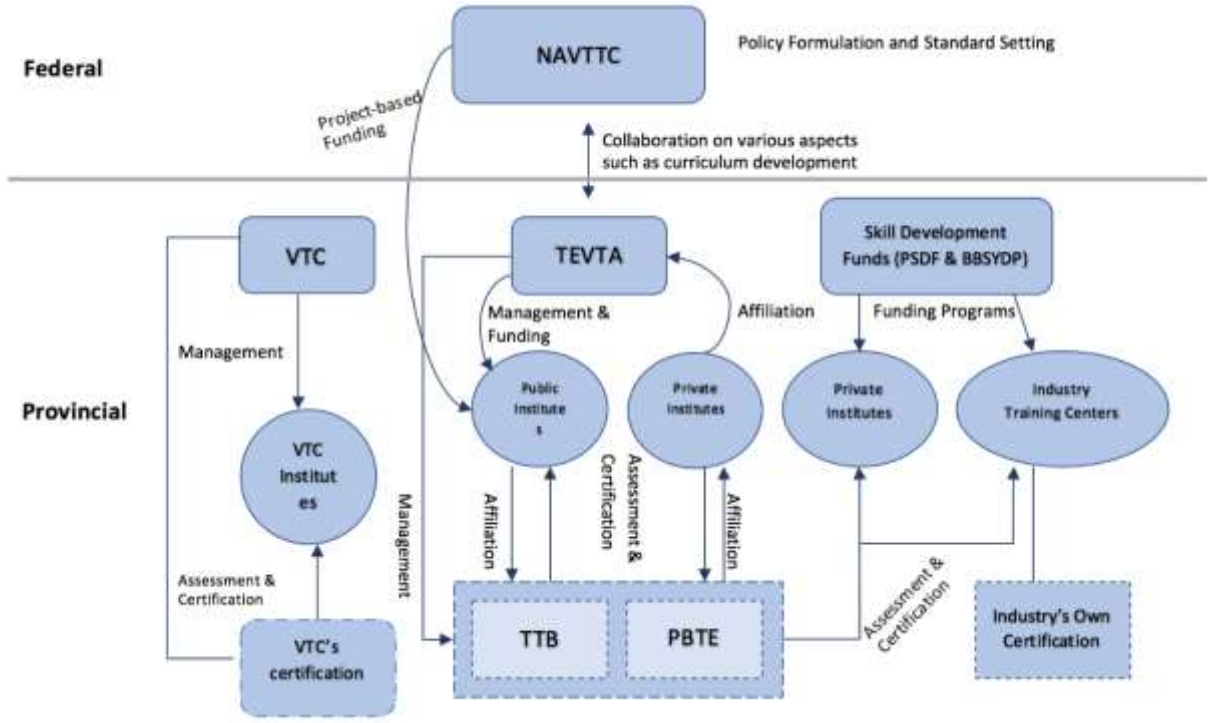
### 2.4.1. Governance issues

**The skills development landscape is complex, with some degree of fragmentation.** The landscape of the Pakistani TVET system is characterized by (a) multiple layers of stakeholders, especially federal and provincial governments; (b) multiple service providers including provincial TEVTA institutes, institutes by vocational councils, training institutes by different line ministries and departments, private training providers, and industry trainers; (c) a vast spectrum of target audiences, including secondary and post-secondary students, unskilled youth and vulnerable populations, people with previous work experience, and currently employed workers; (d) a wide range of training modalities, including long and short courses, informal training, and on-the-job training; and (d) varied skills sets (a vast array of industry-specific technical skills, socio-behavioral skills, and basic numeracy and literacy skills).

**Coordination across different stakeholders is a key governance issue in the TVET sector in Pakistan.** The coordination and management structure of federal and provincial TVET bodies and their mechanism of collaboration and coordination with each other are reflected in Figure 10. Although the policies are written at federal and provincial levels to clarify the roles of different stakeholders, there are de facto overlaps of various roles and responsibilities. The provincial TEVTAs also perform regulatory, training provision, and certification roles, but these roles often overlap among the multiple agencies involved in the skills sector at the provincial level. For example, both the Punjab Board of Technical Education (PBTE) and TTB provide certificates for the same level of programs, and it sometimes creates confusion within the industries because they are more familiar with the names of certifying bodies than the programs. In Punjab, TEVTA and the Punjab Vocational Training Council (PVTC) provided training programs by targeting the same group of beneficiaries.[6] There are also some overlaps in the practices of federal and provincial entities. For example, while NAVTTC is mainly responsible for regulations and quality assurance, it also implements national training schemes by directly funding training providers using the funds from the federal government or any donor agency,[7] which sometimes creates a situation of provincial and national schemes competing for different amounts of incentives for beneficiaries.

[6] PVTC was under the administration of the Zakat Department, but its administrative ministry was changed to the Industries, Commerce, Investment & Skills Development Department (ICI&SDD) in 2019.
[7] These programs include the Prime Minister Youth Skill Development Program (PMYSDP), Prime Minister Hunarmand Pakistan Program (PMHP), President Funni Maharat Program (PFMP), United Nations High Commissioner for Refugees (UNHCR) Project for Afghan Refugees, Training under CSR-Pakistan Tobacco Company, and so on.

**Figure 10: Coordination and management structure of national and provincial TVET organizations[8]**




*Source:* Syed 2018.

**Accreditation and quality assurance are weak, and responsibility is unclear.** In case of Punjab, many training providers are affiliated with Punjab TEVTA or PVTC, and the trainees are assessed by the PBTE, TTB, or the examination function of PVTC. Since Punjab TEVTA, the largest public training provider in the province and the regulatory authority, is also the controlling authority of PBTE, the body responsible for conducting skills certification at the provincial level, this relationship of agencies indicates that testing and certification is not an independent function, reducing the credibility and reliability of quality assurance mechanisms. The Punjab government is moving forward with the establishment of an apex regulatory body, Punjab Skills Development Authority (PSDA), which accredits and conducts quality assurance of training programs. However, in the long run, there is a risk that the relationship of NAVTTC and the provincial-level apex regulatory agency also complicates the entire skills landscape.

**Due to the presence of many players, the funding mechanism for TVET is also complex and often difficult to align.** There are broadly six types of funding heads for TVET: (a) government regular budget (for institutes and office specific budgets—including staff salaries and operational expenses); (b) single-line grant (government's flexible grants for promotion of TVET delivery operations; (c) government annual development budget (infrastructure development, upgrade); (d) government fund for public-private partnerships (funds for public-private partnerships which can support upgrading, operations, and so on); (e) NAVTTC and donor supported funding (which supports capacity building, trainings, infrastructure development, curricula, training of trainers, and so on); and (f) self-generated fund (for institute-specific operations and infrastructure development) (Syed 2018). The total annual public funding for the TVET sector, including both federal and provincial, is roughly PKR 20 billion (equivalent of US$142 million) (Government of Pakistan 2018). The presence of different schemes, decision makers, and funding sources makes it difficult to align the resources to focus on the national agenda or priorities.

[8] Only Punjab has a functional Vocational Technical Council called the Punjab Vocational Technical Council (PVTC). In Sindh, the VTC exists but it is not active.

### 2.4.2. Quality and relevance issues

**TVET in Pakistan is mostly driven by the public sector, and the supply-driven system is the root cause for the country's suboptimal TVET quality and efficiency.** Around 64 percent of TVET students are enrolled in public institutes, but most public training institutes continue to provide obsolete training programs using outdated equipment and curriculum practices. Instructors at public TVET institutes are not familiar with the latest technology and do not have strong industry links; they have little exposure to industry specific skills and knowledge at the workplace. Trades offered are mostly supply driven due to a constraint in the availability of equipment and instructors. This supply-driven training provision may also cause a mismatch in demand and lead to inefficient resource use. While massive training programs have been launched, there is little evidence about the relevance of the trained skills and the effectiveness of job placement.

**The TVET sector overall suffers from low relevance of skills due to weak industrial links.** There are a number of pilot-based initiatives, such as establishment of public-private partnership (PPP) in Punjab and Sindh in long-term training, and outsourcing of short-term training to private sectors. However, most public institutions are still not open to the idea of demand-driven training programs. Current initiatives for industry links are largely project or pilot based, and the programs typically rely on specific funding for the pilot. The TVET sector will need to change from a supply-driven approach to a demand-driven and industry-linked approach to make these initiatives sustainable and effective.

**It is commendable that Pakistan's TVET system has introduced a number of reform initiatives over the past several years.** The Government of Pakistan recognizes in the policy documents that the traditional TVET system in Pakistan was outdated, not aligned with industry needs, and of low quality. It also recognizes weak integration between the general and TVET tracks in the traditional system, as there is no system of credit transfer within the system and no official link between the informal and nonformal training system and national qualifications. In this regard, NAVTTC created the NVQF and CBT&A (Box 2). Under this NVQF and CBT&A regime, the focus is on what a person can do in the workplace. It gives more emphasis to students' mastery of specific competencies and skills rather than the type of certification or length of training. CBT&A is an important element of the NVQF. CBT&A focuses on demonstrable skills and assesses trainees after they complete their programs; thus, it also provides a path for people from informal and nonformal trainings to obtain their certificates through the Recognition of Prior Learning (RPL) approach. PPP and industry partnership initiatives are also important for improving the quality and relevance of training.

**Box 2: NVQF and CBT&A**

Each level of the NVQF relates to a set of approved descriptors that outline broad outcomes expected of the graduates at that specific level. The outcomes are divided into three categories: knowledge and understanding, skills, and responsibilities. The descriptors for each level of the NVQF serve as guidelines for benchmarking competency standards and developing assessment guides and curricula. Table 7 describes the equivalence between the traditional TVET and the NVQF. Levels 1 to 5 will be regulated, tested, and certified by the TVET regulatory and certifying bodies, whereas levels 6 to 8 will be assessed and certified by the affiliating universities, and the degrees will be accredited by the Federal HEC. The HEC has recently delegated the National Technology Council to accredit and regulate tertiary-level technology degrees.

As of June 2018, there are 175 institutes offering competency-based trainings in 25 different trades, including construction, hospitality, services, and energy, and to date there have been approximately 16,000 graduates of competency-based trainings. According to the National Education Policy 2017, NAVTTC will work closely with provincial TEVTAs, TTBs, and BTEs to continue the implementation of CBT&A along with the NVQF. As of June 2018, 114 CBT qualifications have been evolved and placed at Levels 1, 2, 3, 4, and 5 (based on the intensity/hardship of skills/knowledge and so on).

The NVQF qualifications are being managed through provincial TEVTAs and qualification awarding bodies (BTE and TTBs). Some of the programs are assisted/funded by NAVTTC under the PMYSDP. All of the NVQF qualifications, training institutes, registered trainees, graduates, and issuance of certificates are being managed centrally by the National Skills Information System (NSIS) Cell—NAVTTC headquarters in the NVQF Registry website. So far two phases of 6–12 month trainings and the piloting of NVQF qualifications have taken place, and the third one is in progress. The province-wise summary of trainees trained under the NVQF-CBT qualifications (as of June 4, 2018) are shown in Table 7.

**Table 7: Traditional vs NVQF ladder of qualifications**

| **Traditional TVET qualifications** | **Description** | **NVQF qualifications** |
|---|---|---|
| Diploma in Associate Engineer (DAE) | • 3-year course, with entry point normally after school matriculation (year 10) | • Diploma Level 5<br>• Most advanced of the TVET qualifications offered under the NVQF<br>• Pathway to technical higher education |
| G-I | • 3-year master craftsman course | • Diploma Level 5 |
| G-II | • 2-year technical education course | • Certificate Level 4<br>• Comprehensive range of mental, technical, and practical skills |
| G-III | • 1-year course which may lead on to Grade-II | • Certificate Level 3<br>• Broad range of well-developed mental and practical skills |
| G-IV | • Most basic level of certification used to recognize the RPL of experienced workers | • Certificate Level 2<br>• Basic practical skills |
| Short courses | • 3 to 6 month courses set up<br>• Certificates awarded by the TTB following examination by the teachers of the course | • Certificate Level 1<br>• Limited practical skills |
| Prevocational certificate caters to people without much formal schooling. | | |

*Source:* Syed 2018.

**However, coherence of policy reforms and sustainability is questionable, and the supply-driven reforms need to be adjusted to be more demand-driven ones.** Despite the government's interest in shifting from a traditional approach to the CBT&A approach, development of the CBT&A system and its implementation is slow and sporadic. The conceptual map of the NVQF is available. However, the implementation road map to convert training programs to CBT&A is unknown because developing new curricula, converting the learning environment with new equipment, and training instructors with new training and assessment methods are costly to implement, and there is a lack of capacity to implement such reforms. Developing many job roles for a CBT&A program will take time and funds if Pakistan wants to develop such a program on its own. As it is rolled out now, sporadic implementation of CBT&A results in coexistence of traditional and CBT&A courses even in the same trade and in the same institute (primarily because CBT&A courses are offered only at lower levels of the same trade). Availability of trades and levels are random and students who are trained with the CBT&A approach are often unable to continue with CBT&A programs of the same trade due to nonavailability of higher-level programs. The current reform measures for CBT&A are by and large supply driven. It is important that the reforms are supported by the demand side, including the labor market and beneficiaries.

**There is an increasing effort for industry linking and private sector engagement.** As identified by national and provincial TVET policies, training institutes are increasingly aware of the importance of private sector engagement and working with industries to provide demand-driven training. The PSDF of Punjab and the BBSHRRDB of Sindh engage private sector training providers and industry training providers through performance-based contracts. Under these programs, training providers are incentivized to offer labor market relevant training and to ensure employability of the graduates. While labor market–driven short-term training programs have been instituted, long-term training provided by TEVTA still have limited engagement with industries. Efforts in Sindh and Punjab are to establish Institute Management Committees by inviting the private sector to the institute management. However, there are no models of continued industry engagement in the training activities. Overall, industry links are weak for most institutes and they are insufficient in training students with skills that industries demand, including technical and socio-behavioral skills (*more discussions about skills demand in Chapter 4*). One of the demonstrated industry link models is established by the PVTC. The PVTC's training programs are focused on employment of the poor youth, and training is provided through various industry linking activities. The observed types of industry linking activities at PVTC institutes include the following: (a) input-focused engagement such as private sector provision of teacher training, guest lecturers, and provision of equipment and infrastructure to a training provider; (b) advisory engagements, including advice on the curriculum and training contents; and (c) output-focused engagement, including apprenticeship and on-the-job training, and job placement support.

**The system of apprenticeship exists but is not effectively implemented, and systematic information is lacking.** At the federal level, the Apprenticeship Rules of 1966, and in Punjab, the Apprenticeship Ordinance 1962 and its recent update, Apprenticeship Act 2018, govern the system of apprenticeship. The recent update eased the requirements for the industries to promote a take-up rate of the program. While there are many good international examples of apprenticeship systems, the systems are not fully operational in Pakistan, and there is little information on implementation. Some of the key issues identified are the following: (a) employers viewing the apprenticeships as a burden; (b) poor social status associated with apprenticeships as only the poor apply, often to avail the stipend; (c) limited awareness about the apprenticeship scheme; and (d) poor quality of graduates and lack of standardization of tests and apprenticeship certifications.

### 2.4.3. Transition to work

**Weak industry links and low relevance of training to the labor market result in continued weak labor market outcomes from the training.** Partly due to low industry linking and lack of demand-side engagement, labor market outcomes of the TVET programs in Pakistan are weak overall. Table 8 shows the results of available tracer studies of TVET graduates from Punjab and Sindh. Each study was conducted for different programs at different times; but graduates from both short-term and long-term training programs generally

recorded relatively low employment rates in wage- and self-employment sectors. Except for PVTC short-term training programs, employment rates of other programs range between 27 and 39 percent. The PSDF's training outcomes have shown some difference between the study in 2014 and 2016, with an improvement in the second study to a 52 percent employment rate.

**Table 8: Labor market outcomes of TVET programs from available studies in Pakistan**

| Province | Training programs | Type of training and beneficiaries | Study year | Outcomes (% in employment) | Sample size, source |
|---|---|---|---|---|---|
| Punjab | PTEVTA | Long course (DAE and diploma courses) | 2012 | 28% | N = 932, Khan and Blom 2012 |
| | PVTC | Short course | 2017 | 82% (40% wage, 42% self) | N = 811, Munir et al. 2017 |
| | PSDF | Short course (2–12 months) | 2012 | 43% | N = 1,500, PSDF 2014 |
| | | Short course (3–6 months) | 2016 | 52% | N = 3,457, Semiotics Consultants Pvt. Limited 2016 |
| Sindh | BBSHRRDB | Short course (97% of beneficiaries have above secondary-level education before short course) | 2010 | 27% | N = 3,395, Siddiqui and Shaikh 2010 |
| | STEVTA | Short course and long course (29% are short courses of less than 6 months; 53% are 3-year courses) | 2018 | 29% (24% wage, 5% self) | N = 2,000, Grand Thornton 2018 |

*Note:* All surveys were conducted in different contexts and for different objectives. These results are not for direct comparison. Some surveys were conducted with different modules, but this table extracts respondents for graduates with post-graduation information only. Accordingly, N = sample size with effective responses of graduates.

**Labor market outcomes of TVET programs vary widely by programs and trades** (Table 9). In case of STEVTA DAE courses (three years), the percentage of graduates in mechanic courses finding wage employment was 38 percent, whereas it was 29 percent among electric trades and 22 percent among civil engineering. Sewing/garments, which is likely a more women-focused trade, shows a wage employment rate of 11 percent. The proportion of homemakers and unpaid family workers after the training is 58 percent for sewing/garments. These outcomes are not very different from findings from neighboring countries, but there are some good examples also from the region (Box 3).

**Table 9: Labor market status of STEVTA DAE (three-year program) course graduates**

| Labor market status | Civil engineering | Mechanic | Electric | Sewing/ garment | ICT | Others |
|---|---|---|---|---|---|---|
| Paid employees | 22 | 38 | 29 | 11 | 31 | 28 |
| Self-employed | 7 | 4 | 6 | 5 | 0 | 6 |
| Unemployed | 13 | 10 | 7 | 0 | 6 | 7 |
| Study | 45 | 33 | 48 | 26 | 35 | 37 |
| Homemakers/unpaid family workers | 13 | 15 | 9 | 58 | 29 | 22 |

*Source:* Authors' analysis using STEVTA Tracer Study.
*Note:* Tracer Study Sindh 2018. Sample = ages 15 to 40.

**Box 3: Tracer studies of other countries in SAR**

South Asian countries have conducted tracer studies of different training programs to measure the labor market outcomes. All the training programs are unique and the results are not comparable, but it is important to know what these tracer studies find. Table 10 shows the labor market outcomes of short-term training. Graduates were traced at different times after completion of the programs, but overall, results are concentrated around 20–30 percent in Bangladesh and India, 40–50 percent in Sri Lanka, and almost 90 percent in the case of a program in Nepal. Again, beneficiaries and entry requirements are different, but there are lessons to learn from these results.

**Table 10: Employment outcomes of short-term training programs in selected countries: Results of tracer studies (percent), latest available data**

| Country and program | In wage or self-employment | Program characteristics |
|---|---|---|
| **Bangladesh, 2013** | | National program; 6 months of training; sample drawn from students enrolled in 36 institutions and 93 trades |
| 6 months after | 33 | |
| 12 months after | 29 | |
| **India, 2012** | | National programs with different target groups: Poor rural youth (RSETI and ASDP); poor urban youth (STEP-UP); urban and rural youth with no socioeconomic distinction (NSDC and SDIS) |
| All 1–2 years after | | |
| NSDC | 32 | |
| SDIS | 26 | |
| STEP-UP | 29 | |
| ASDP | 25 | |
| RSETI | 23 | |
| **Nepal, 2016** | | Programs in pre-approved public and private providers in selected districts and urban centers; beneficiaries selected after interviews; two modes of financing (vouchers or result-based) |
| Training conducted by pre-approved public and private training providers | 89 | |
| **Sri Lanka, 2014–15** | | National programs: |
| VTA | 56 | VTA targets rural population (86 percent of courses < 1 year) |
| NAITA | 56 | NAITA (apprenticeship; 6 months–3 years) |
| DTET | 47 | DTET (1 year or less) |
| NYSC | 39 | NYSC targets rural youth (courses 3 months–1 year) |
| Ocean University | 56 | Ocean University (courses 10 days–1 year) |

*Source:* World Bank 2019c.

*Note:* Bangladesh data are from a multi-cohort tracer study of 2,000 graduates who completed training 6 months ($n$ = 994) or 12 months ($n$ = 928) before the fieldwork in December 2013–February 2014. For India, a survey was conducted in late 2013 of 2,620 trainees who graduated in 2012 from five government programs. For Nepal, data are from a 2015 survey of 3,832 graduates and aspirants (eligible but not selected for training) under the EVENT project. For both graduates and aspirants, the sample size for the two financing modalities (vouchers or result-based) are approximately equal. For Sri Lanka, data are from a survey of 1,991 graduates who completed their training between October 2014 and end-September 2015.

**One of the identified factors contributing to low job placement rates is insufficient career guidance and job placement support.** Career guidance to students and job placement support are identified weaknesses of many training institutes. From the institutional perspectives, Punjab TEVTA established District Boards of Management in each district to support job placement,[9] but they are not very effective due to lack of clarity on their administrative or executive roles. There is no structured process within TEVTA to solicit the boards' input for curriculum updating, course selection for the districts, or annual planning process, and there is no performance accountability system for these boards (Nawaz 2017). Tracer studies of Sindh also reported that only 30 percent of students said that employment counseling or job placement support provided by the institutes was sufficient, and only 3 percent of them found jobs through the school's network. While many graduates used an online job search or public and private employment services, 46 percent of STEVTA graduates found jobs through their own personal networks. The only exception is graduates of PVTC. Nearly 36 percent of graduates reported that they found jobs through PVTC's recommendations from the PVTC job placement cells (Munir et al. 2017). It should be noted that there are emerging initiatives to strengthen job placement support. At the federal level, the NSIS has been established to provide information to potential employers and job seekers. Punjab has also established a job portal called the Skilled Labor Management Information System (SLMIS). However, the question is to what level employers are engaged in these services

[9] The boards are meant to serve as a link with local industry, assist TEVTA institutions in access to practical training at factory floors, mobilize local resources in support of training institutions, monitor institutions' performance, and support TEVTA students in job placement.

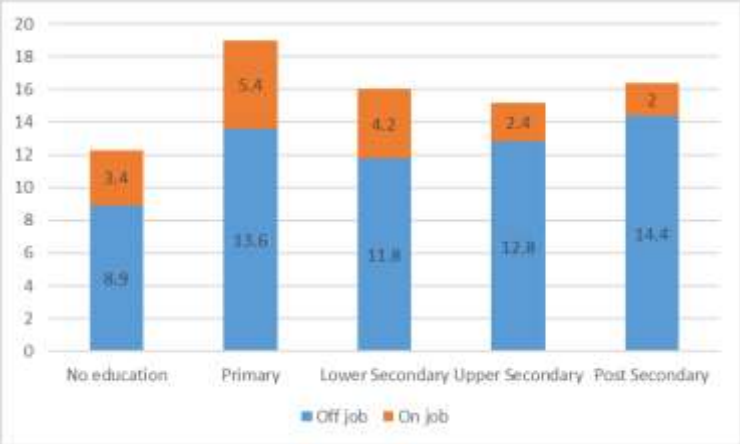
and how they actually use them. There are private online job portals, so the comparative advantages of such public services may be to link closely with the training institutes, which would be the main actors for connecting trainees and graduates with employment opportunities, and to use such services to facilitate institutional-level job placement support.

**Self-employment is a significant job opportunity in which many TVET graduates engage, but the support for this is relatively limited.** Given the low entry barrier, self-employment activities start rather informally in Pakistan. Studies show that women are more likely to engage in self-employment after training—especially if they learn cutting and sewing, stitching, beautician, and TVET skills that can be practiced at home. While starting a business informally is an important step for many people, they typically lack business skills. Successful self-employment also requires business skills such as customer relations, inventory, marketing, financial skills, good cognitive and critical thinking skills, and interpersonal or socio-behavioral skills, in addition to vocational skills. Among the scarce evidence, a rigorous study by Giné and Mansuri (2014) showed the positive impacts of training on self-employed jobs from Pakistan. They evaluated short business training for rural microfinance clients, most of whom ran businesses, and found that the training improved business knowledge, practices, and operation, and increased household expenditures, although these impacts were mainly observed among male clients. They also found the net benefit per client (benefits to clients and the microcredit lender minus training costs) substantially positive. This study suggests that short training for self-employed people may be an important area of focus in the TVET sector. Access to credit is also an important constraint for start-ups. PTEVTA has a partnership with *Akhuwat*, a micro-financing organization, and provides interest-free loans to TEVTA graduates. Systematic provision of self-employment training would be important for all TVET graduates to know about possible career options. Institutes can also provide self-employment support by aligning with necessary organizations, like *Akhuwat*, to provide accessibility to credits and further business training.

### 2.4.4. Access issues

**Training opportunities are more available for those who have at least primary education.** An analysis of the Labor Force Survey (LFS) 2014–15 shows the incidence of training experience is different across workers with different levels of education (Figure 11). Those who have completed primary schooling have shown the highest training participation rate at 19.0 percent, including both off-the-job and on-the-job training. Since many TVET programs require at least grade 5, 8, or 10 completion, depending on the program, accessibility to programs is linked with educational backgrounds of beneficiaries. The incidence of off-the-job training at between 11.8 percent and 14.4 percent is relatively similar across all levels of education, except for workers with no education (8.9 percent). Workers with no education are least likely to complete any training program, suggesting that they are often not covered by the available training programs and are left out of skills development opportunities (Tanaka 2018).

**Figure 11: Percentage of individuals undergoing training by education level**




*Source:* Tanaka 2018.

**Training opportunities for women are currently supply driven but are an important push factor for increasing women's labor force participation.** While 67 percent of male workers received training from employers or private training providers, 66 percent of female workers received training from public training providers or other training institutions such as NGOs (Figure 12). Given that the FLFP is higher among those who received training, provision of training is an important push factor for women to join the labor force. To improve women's access to training, recent studies find that family support and mobility are important (Borker 2017; World Bank 2019d).

**Figure 12: Composition of training provider by gender**

*Source:* Tanaka 2018.

**In a nutshell, the Pakistani skills development system has a lot of new ideas and initiatives (as also supported by World Bank – see Box 4), but there are numerous disconnects in the skills ecosystem which have resulted in fragmented and ad hoc architecture of the TVET system and ineffective implementation.** Pakistan's skills system does have examples of various new initiatives and good experiences. However, the issue is that those initiatives are not well integrated and take place on an ad hoc basis. Although public and private training institutes, short-term training providers, and employers share a common interest of enhancing the skill pool in Pakistan, their efforts are not well consolidated, and few synergies are generated. Unmet skill demand, such as soft skills, and lack of job placement support during the transition from institutions to the labor market are also commonly identified gaps. While decentralized decision making is not an issue by itself, sporadic and uncoordinated approaches across provinces, for example, implementation of CBT&A, make the entire skills system a patchwork and leave the reform measures fragile and incomplete. These disconnects existing among subsectors within the entire skills ecosystem of the country will need to be addressed.

**Box 4: World Bank Projects on Skills Development**

The World Bank has supported development of the TVET sector with specific engagements in Punjab and Sindh provinces through the Sindh Skills Development Project (2011–2018) and the Punjab Skills Development Project (2015–2020, expected). These projects overall have supported improving the quality, labor market relevance of, and access to skill training programs through strengthening training programs. They supported improvement of training programs by supporting development of CBT&A packages and industry links. They also supported market-relevant training to the disadvantaged population through private training partners engaged by the PSDF and BBSHRRDB. Both projects have worked closely with TEVTA in respective provinces and also ensure coordination with NAVTTC. The Sindh Skills Development Project supported more than 100,000 trainees during the project period, and the Punjab Skills Development Project aims to support more than 50,000 trainees through various training programs by the end of the project. In Punjab, institutional development of TEVTA and reforming of the testing and certification system are also major activities.

**Summary of Key Findings**

- The education and TVET sectors contribute to skills development. Compared to the whole education system with 50 million students, the TVET sector is small (0.4 million). When discussing skills development, the education and TVET sectors need to be discussed as one comprehensive system.
- The ECD and general education system play an important role in skills development because of the large beneficiary size (9.8 million in early childhood education, 34.4 million in grades 1 to 12). These levels build the foundational skills for the entire population, including literacy, numeracy, cognitive, and non-cognitive skills. These skills are in high demand in the labor market and transferrable across economic sectors.
- The education system still has a big challenge with the current number of 22.6 million out-of-school children and the region's lowest learning adjusted years of schooling (4.8 years).
- The TVET system in Pakistan is highly complex, with the presence of different skills' levels of training, various trade or technology areas, many types of service providers which include public and private institutes and industries, and different methods and durations of training. Its landscape is fragmented overall. Federal and provincial TVET systems are not harmonized as a unified system in the country.
- The supply-driven TVET service delivery is the root cause for the country's suboptimal TVET quality and efficiency. Although many pilot activities have started, the weak industry link leads to the poor quality and relevance of training and, subsequently, weak labor market outcomes.
- A number of TVET initiatives have emerged, including CBT&A, industry partnership, and PPP. However, coherence of policy reforms and sustainability is questionable, as many initiatives are sporadic and reforms are still at the pilot stage.
- Labor market outcomes of TVET programs are relatively weak, and one of the causes is lack of job placement support.

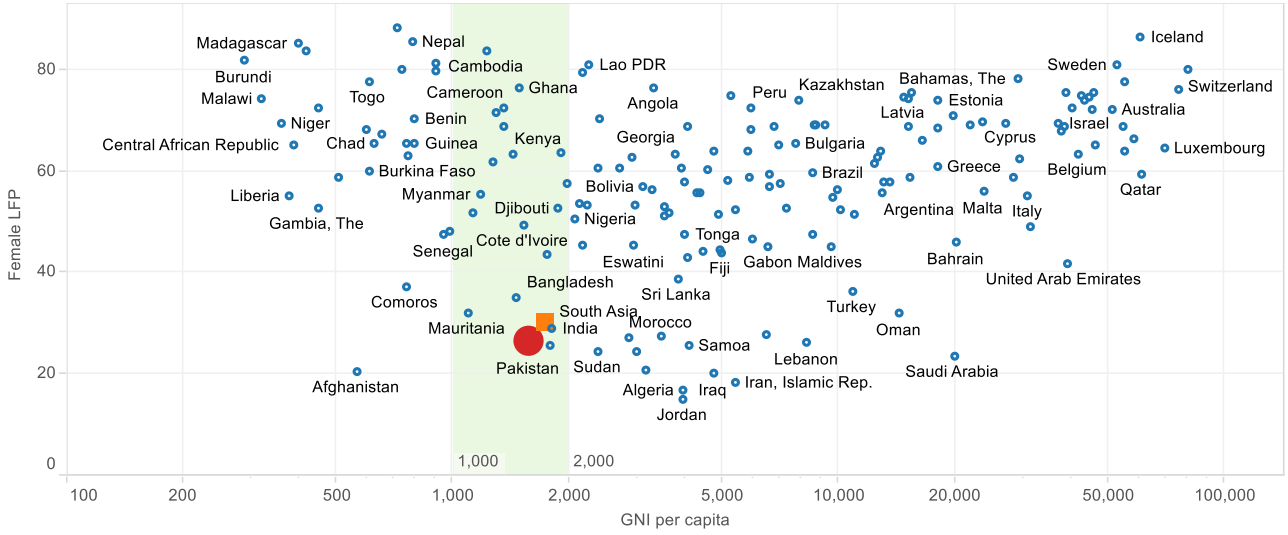
# Chapter 3: Labor Market Context and Skills Demand

## 3.1. Overview of Labor Force and Employment Structures and Quality

**Pakistan has a large and fast-growing labor force, but the majority of the workers are low-skilled.** The total number of workers in Pakistan was 70.0 million[10] in 2017, according to the World Bank's WDI, which makes it the seventh-largest labor force in the world. The labor force grew by an average of 2.0 million per year, from 56.1 million in 2010 (WDI 2019). This annual growth of the labor force is much larger than some of the world's largest economies such as Indonesia (1.5 million per year) or Bangladesh (1.1 million per year) for the same period.

**Although the Pakistani labor force is large, the country has not yet reaped the full potential of the economic productivity due to low FLFP.** The female rate (ages 15–64) is only 25 percent as opposed to a male labor rate of 82 percent. The FLFP rate of 25 percent is one of the lowest in the world (Figure 13). The GCI also shows that Pakistan's international ranking on the FLFP indicator is 138 among 140 countries (Schwab 2018). Labor force participation rates vary across provinces and by educational levels. FLFP is particularly low in Sindh. By education, participation is the lowest among middle to secondary school graduates (68–72 percent for male and 14–16 percent for female) (Figure 14).

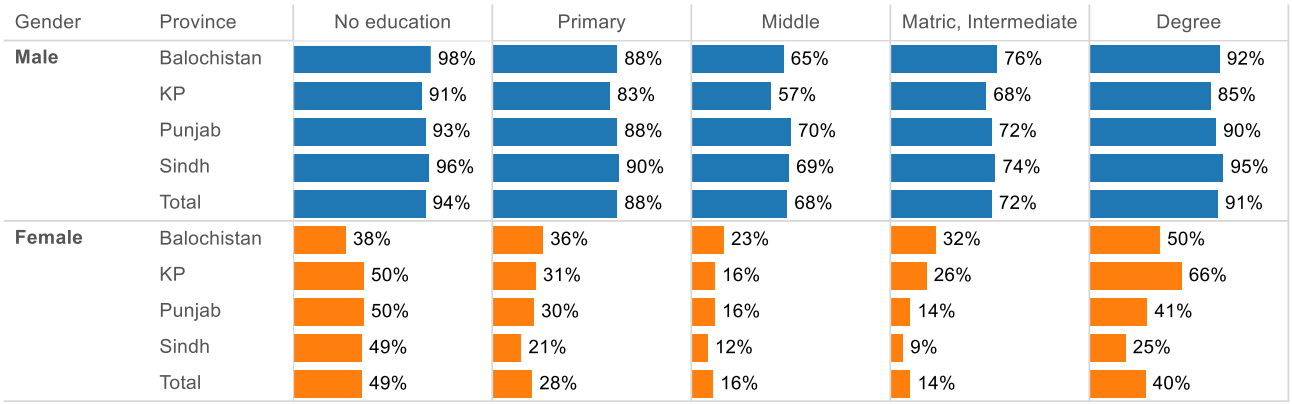
**Figure 13: FLFP and GNI per capita, international comparison**




*Source:* WDI 2019.

[10] This report recognizes discrepancies of the data regarding the labor force size. WDI 2019 shows 70.0 million for 2017 and 65.4 million for 2015. However, LFS 2014/15 reported the labor force size of 52.2 million (ages 15–64). This report uses the LFS for the domestic sector analysis such as the educational composition and locations while presenting the WDI for international comparison.

**Figure 14: Labor force participation rate by gender, education level, and province**




*Source:* Authors' analysis using LFS 2014/15.

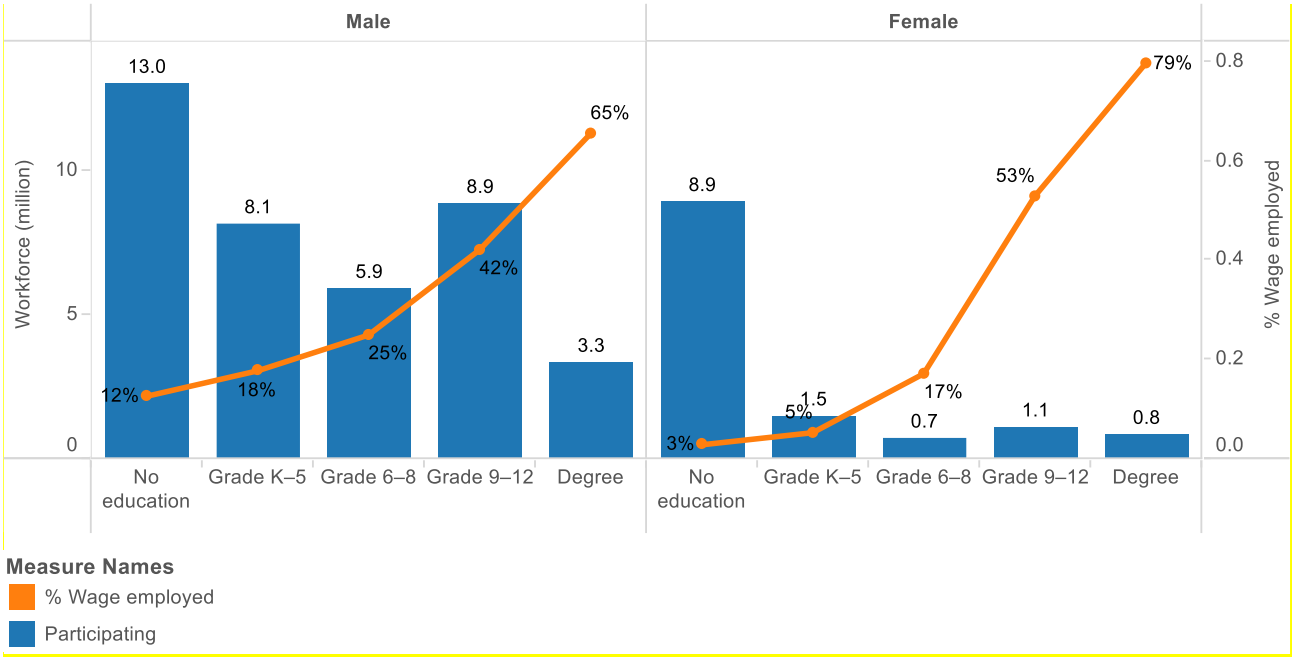
**The issue of low labor force participation of women in Pakistan results from various factors and hence requires a holistic approach.** It is important to recognize that, despite the reality of low FLFP, many women are willing to and interested in working. Yet, they feel that society and families do not allow them to work despite their interests (World Bank 2019d). This reinforces the common perceptions that FLFP is low due to constraints to a large extent rather than the interests of women themselves. Such constraints include, among others, (a) social and personal beliefs, (b) within household task allocation and women's roles, (c) availability of female-friendly work environment and safe social setup for women's work, and (d) women's skills and educational levels. These factors are interconnected and reinforce each other among different stakeholders, including the labor market and society, firms, households, and women themselves. Women are also more likely to face life-cycle–related constraints for joining and remaining in the labor force, such as marriage, child rearing, and family support. Women who aspire to work typically have to overcome multiple barriers depending on the different life stages, and solving one problem may not be sufficient for women to start working. Economic empowerment of women is a joint effort of various economic and social actors in Pakistan (World Bank 2019c).

**From the labor market perspectives, there seems to be a systemic labor market issue related to genders; there are more male-preferred jobs available in the labor market, and wage discrimination against women may exist.** A regression analysis of job advertisement data from an online job portal found that gender targeting by jobs and differential wage offers may exist in the formal sector labor market in Pakistan. Generally, jobs requiring lower levels of education signal more explicit gender preference. While jobs that require higher levels of education (these are typically white-collar sectors such as finance and ICT) are less likely to have gender preference, male preference is signaled for positions that require longer professional experience and managerial jobs (Matsuda et al. 2018). Job postings with gender preference are associated with lower wages—with 17 percent lower salaries than those without any gender preference on average after controlling for other factors. In addition, female-preferred jobs are more likely to be paid less than male-preferred jobs. There could be multiple explanations for this. One explanation is the tendency to exercise female preference for lower-paying, low-skilled jobs. For example, preference for female workers in assistant jobs than in a professional job may fit such an explanation. Firms report that they have several constraints to hiring women, such as disruption in work environment, family commitments, and government regulations like maternity leave (Amir et al. 2018), and such perceptions may influence wage offers for female-preferred jobs. Consequently, large gender wage gaps exist, except in the public sector in the Pakistani labor market. Female workers earn on average 36 percent less than male workers with similar characteristics (Bossavie, Khadka, and Strokova 2018).

**The majority of the labor force is uneducated in Pakistan, but the proportions of formal sector workers progressively increases with levels of education.** The labor market consists of a large number of uneducated

workers, both male and female. Defining the skills category as low-skilled (no education to primary education), middle-skilled (secondary level), and high-skilled (post-secondary level), the low-skilled category is the largest, with 35 million workers (62 percent of the total labor force) according to LFS 2014/15. The middle-skilled workforce, with lower to higher secondary education, is 16.5 million (29 percent of the labor force), and the number of high-skilled workers with a post-secondary education level is 4.6 million (8 percent of the labor force). On the other hand, engagement in the wage employment increases as the level of education becomes higher. While only 12 percent of male uneducated workers get wage employment, 65 percent of post-secondary degree holders are in wage employment. The difference is even larger for women. Among the employed female workers, those who engage in wage employment is 3 percent among the uneducated, whereas 79 percent of female workers who have post-secondary education engage in wage employment (Figure 15).

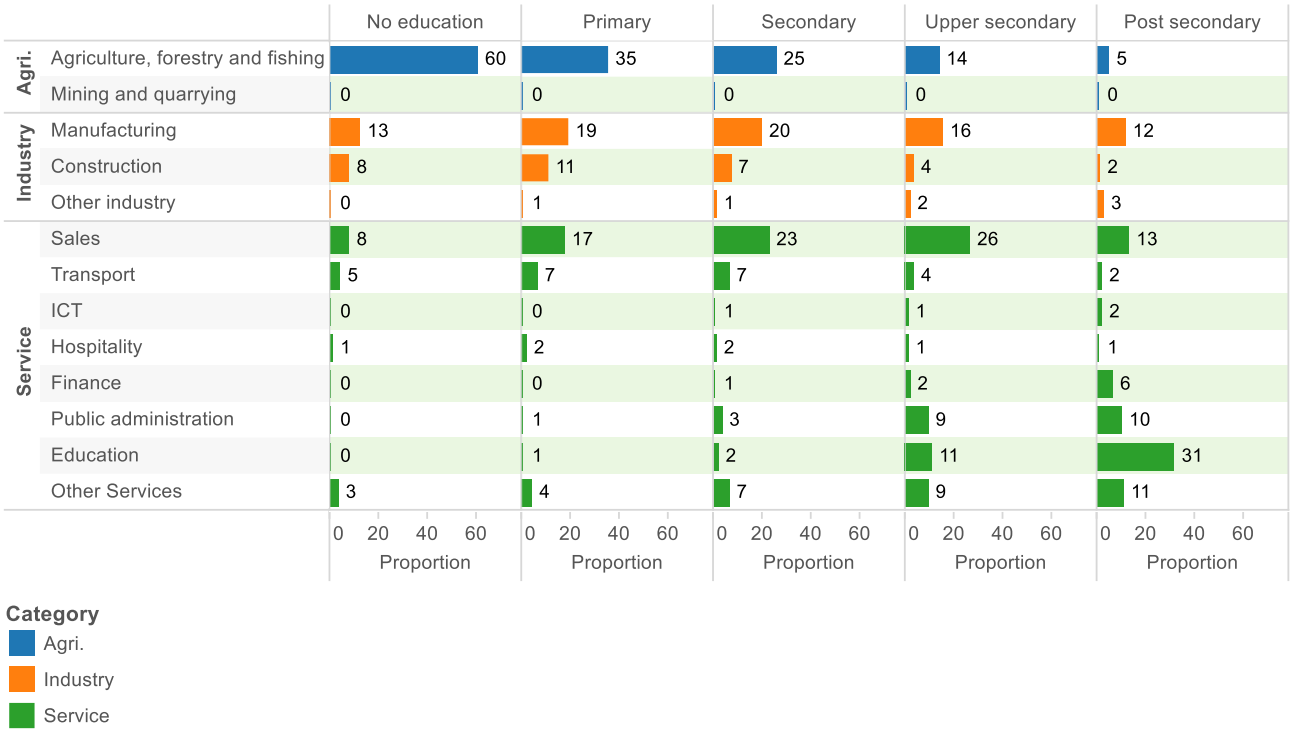
**Figure 15: The number of workers by gender and level of education and share of wage employment (%)**




*Source:* Authors' analysis using LFS 2014/15.
*Note:* The data use LFS 2014/15, and the total number of workers does not match exactly with the WDI estimate.

**Workers' industrial engagement is closely related to their educational levels.** As per the common norms, there is a general tendency that the workers' economic engagement is shifting from the agricultural sector to the industry sector, and further to the service sector as their educational levels become higher. Among the non-educated workers, 60 percent are found in the agriculture sector (Figure 16). The proportion decreases to 35 percent among those who have up to a primary education and to 26 percent among workers who have up to a secondary education. Engagement in manufacturing is higher among primary and secondary graduates—among 20 percent each of their total employed are found in manufacturing. Service sectors are split to high-skill and low-skill services. Sales (wholesale and retail) and transport tend to have more of low- to middle-skilled workers, whereas the public administration, education, and finance sectors are predominantly taken by upper secondary or post-secondary education holders.

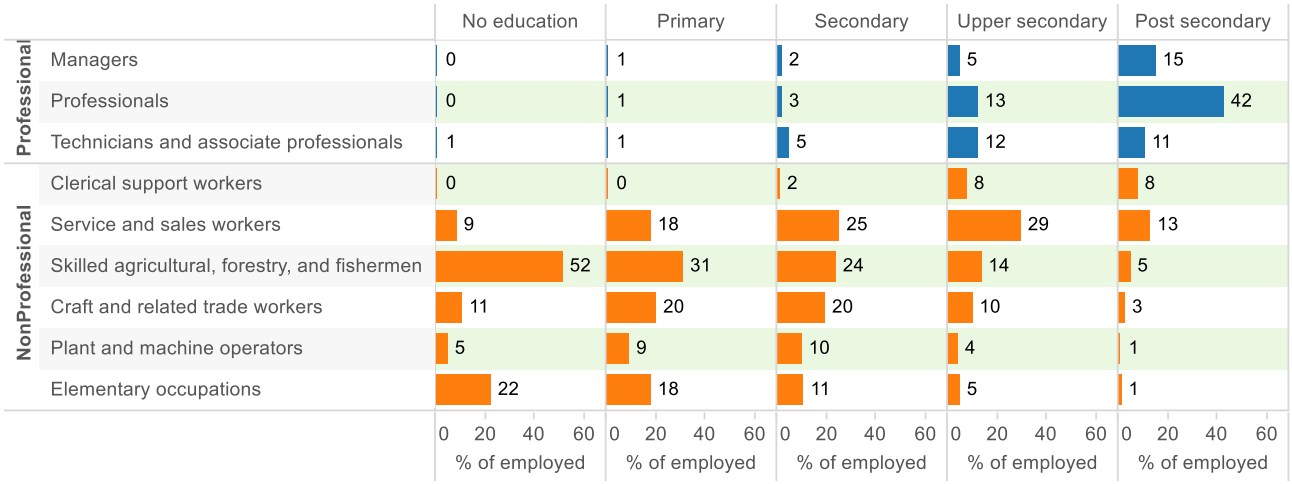
**Figure 16: Proportion of workers, by industrial classification for educational level**




*Source:* Authors' analysis using LFS2014/15.
*Note:* The sum of all numbers adds up to 100 percent for each education level.

**Occupational differences are also determined by education.** Like the industry category, worker's occupations are also largely determined by the education level of workers. The proportion of workers who have professional-level occupations are 68 percent among workers with post-secondary education, 30 percent among workers with upper secondary education, and 10 percent for secondary (Figure 17). For those who have no education or education up to primary education, close to 100 percent of workers are found in nonprofessional occupations.

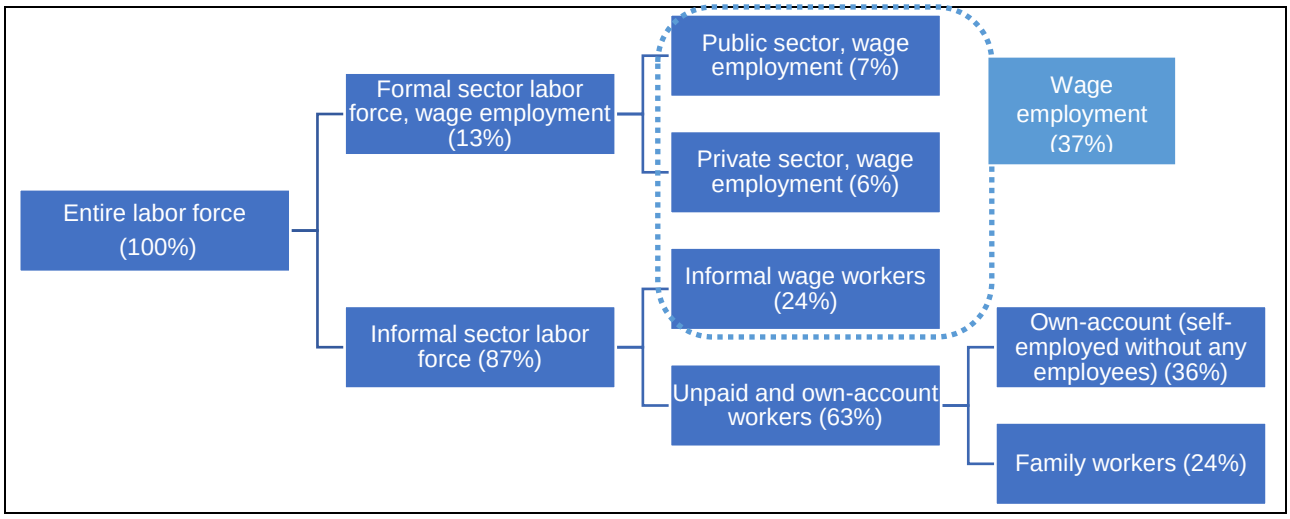
**Figure 17: Proportion of workers, by occupation for educational level**




*Source:* Authors' analysis using LFS2014/15.
*Note:* The sum of all numbers adds up to 100 percent for each education level.

**Nonwage employment is an important economic segment and created sizable employment opportunities in Pakistan.** In 2015, 87 percent of the labor force was considered to be in informal employment, with a breakdown of 63 percent being unpaid and own-account workers, and 24 percent informal wage workers (Bossavie, Khadka, and Strokova 2018). Among the formal sector employment, 7 percent were in the public sector and 6 percent in the private sector. The total share of wage employment, including both formal sector and informal sector is 37 percent (Figure 18) (Bossavie, Khadka, and Strokova 2018). Within unpaid and own-account workers, 36 percent were own-account workers and 24 percent are self-employed. From this labor force composition, it is clear that the informal sector and nonwage employment is large. Taking households as a unit, a detailed study of household enterprises in Pakistan shows that 45 percent of households engage in some kind of household enterprises, of which 24 percent are agricultural and 21 percent are nonagricultural. The study argued that around 5.5 million jobs were additionally created by household enterprise owners in Pakistan, and they are a substantial size of the employment in Pakistan (Weber and Langbein 2018).

**Figure 18: Composition of labor force by types of employment (percent)**




*Source:* Constructed by authors from Pakistan Bureau of Statistics (2015) and Bossavie, Khadka, and Strokova (2018).

**Historically, 42 percent of overseas migrant workers are categorized as unskilled workers.** Between 2011 and 2018, an average of 642,000 Pakistani workers travelled overseas with a peak of 947,000 in 2015 (Bureau of Emigration and Overseas Employment).[11] The most common destinations are the Gulf countries, with 55 percent of them going to the United Arab Emirates in 2018. However, the majority of overseas migrant workers engage in low-skilled work. Between 1971 and 2018, 10.5 million workers went overseas—38 percent as laborers and 3 percent as agricultural workers (total of 42 percent), which are considered as unskilled workers. Drivers (11 percent), masons (7 percent), and carpenters (5 percent) are the next common categories of occupations in the semiskilled category. Studies have reported that there are growing opportunities for diversified jobs—such as retail, hospitality and tourism, and health care, which would be potential opportunities for Pakistani workers if they are properly skilled (PSDF 2018).

[11] Bureau of Emigration and Overseas Employment. Website: https://beoe.gov.pk/reports-and-statistics. Accessed on April 7, 2019.

## 3.2 Contributions of Education and TVET to the Labor Force Productivity

**Returns to education are relatively low in Pakistan and particularly low for the lower levels of education.** The return to an additional year of schooling in Pakistan is 6.1 percent, and it is lower than the average of South Asian countries (7.0 percent) and the average of middle-income countries (8.9 percent). This low return to education may reflect a low quality of education and the lack of adequate employment opportunities (Bossavie, Khadka, and Strokova 2018). Returns to complete education are different across levels of education. Returns to completing primary education are 14.9 percent, whereas returns to post-secondary education are 42.7 percent as against no education. This low return to education, especially at the lower levels, may result in the high rate of out-of-school children because parents are unmotivated to invest in their children's education. Households aware of such low returns to primary education, may see more costs than benefits of sending children to primary schools.

**Low unemployment may indicate easy access to jobs, but also may be a sign of high underemployment and low quality of jobs.** Unemployment is low overall with only 3.4 percent of the active population looking for a job. Unemployment is higher in urban areas where close to 5 percent of the economically active population are looking for jobs, compared to less than 3 percent in rural areas. One likely explanation is that individuals in rural households cannot afford to remain unemployed and settle with employment in low-paying informal or agricultural jobs. Individuals in urban areas, on the other hand, are likely to have higher reservation wages and typically come from wealthier households, where they can afford to wait to take up better employment. There is an increasing number of graduates from tertiary education, but they seem to suffer from a lack of job opportunities and tend to queue for public sector jobs (Bossavie, Khadka, and Strokova 2018). The combination of low market demand and higher reservation wages can help explain why unemployment rates sharply increase with an increased level of education. While unemployment is virtually nonexistent among individuals with low education, the unemployment rate reaches 16 percent among those with post-secondary educations. (Bossavie, Khadka, and Strokova 2018).

**Low incentives to education and widespread availability of low-quality jobs are structural issues of the Pakistani labor market.** The low unemployment rate may make the Pakistani employment conditions look good, but looking into the quality of employment provides a completely opposite picture. Most of the employed people are unpaid family workers (29 percent) or self-employed (34 percent), so the entry barrier to any kind of work is low, but returns are also low. There are also a lot of formal sector jobs that require no education or low levels of education. The Labor Skills Measurement Survey Wave 2 in 2014 asking employers education requirements for their jobs reported one-third of paid jobs do not have any educational requirement and 14 percent have a requirement of only primary education (a total of 48 percent of paid jobs required primary or less levels of education).[12] Perceived and actually low returns to lower levels of education and easy entry to low-quality bread-earning activities would be main culprits for the systemic low investment in education and skills development in Pakistan.

**Low levels of education at the entry to the labor market could be a lifelong constraint for the career development of individuals and reinforce economic disadvantages for the uneducated.** While the entry barrier is low, entering into the labor market with low education and skills often comes with a large and lifelong cost for career development. About 47 percent of the Pakistani labor force (ages 25–55) are illiterate, and this hampers their possibilities of doing jobs, changing jobs, opening up own businesses, or getting promotions in the workplace. Basic education is the foundation for technical and digital skills, which have increasingly become a new basic knowledge in people's life. A survey captured that illiterate workers perceived many disadvantages of being illiterate in the labor market. The proportion of illiterate workers who reported the lack

[12] Author's analysis using Labor Skills Measurement Survey Wave 2. Sample = those employed ages 25–40.

of knowledge in Urdu, English, and computers had ever become a hindrance to labor market activities were 15 percent, 22 percent, and 7 percent, respectively.[13]

**Even in the informal sector, education is one of the important factors for labor productivity and success for household enterprises.** Econometric analyses using the Household Income and Expenditure Survey (HIES) 2015–16 shows that education of the household owner is one of the most important factors for nonagricultural household enterprises. Measured by revenue per worker (labor productivity), one additional year of schooling is associated with a 3 percent higher productivity for self-employment and a 6 percent higher productivity for self-employment with family workers. One more year of schooling by the enterprise owner, defined as someone who is non-poor and employs workers outside the household, also increases the likelihood for the enterprise to be successful by 2 percent. These findings show that education is important for successfully managing a household enterprise (Weber and Langbein 2018).

**Lack of basic education is a constraint for acquiring TVET skills, as many of the training programs require basic literacy and numeracy.** Many of the workers today need lifelong learning opportunities and training, and opportunities exist for workers who are already in the labor market. Uneducated youth will have many more years to work in the labor market, and it is never too late to start refurbishing their skills through literacy education and skills training. However, most TVET programs require basic education, and lack of basic literacy and numeracy is a constraint. To bridge such constraints, adult literacy programs and RPL would be necessary. Uneducated workers are not without skills. It is important to formally recognize the skills they have acquired through their work life and provide further skills-enhancing and skills-enabling opportunities through RPL.

**TVET is associated with a higher probability of being in formal sector employment.** The result of an econometric analysis using LFS 2014/15 indicated that training participation was also associated with a 4.7 percentage point higher probability of being in paid employment when compared to a person with the same level of education who did not take any training. This shows an important link between TVET and employment outcomes. However, there were no statistically significant different wage premiums for TVET graduates.

**The proportion of workers who received training seems related more to occupations and industries rather than educational levels.** Overall, workers with primary and secondary education received the highest frequency of training, standing at 26 percent of workers in both of the groups, whereas workers with no education received the least opportunities—at 16 percent. The frequency of training seems to be related to the employment patterns of different educational levels. Looking at industry groups, manufacturing and transport industry sectors show a high frequency of worker training (50–64 percent), which contributed to a higher frequency of training take-up among primary and secondary graduates. By occupation, these groups (that is, primary to secondary level, manufacturing and transport sector) are likely to correspond to craft and related trade workers or plant and machine operators. About 60 percent of workers in these occupations receive training. On the other hand, service sectors are generally less likely to receive training—specifically so for sales (wholesale, retail) and hospitality (restaurant, hotels). Among the occupation categories, clerical support workers, service and sales workers, skilled agricultural workers, and elementary occupations are least likely to receive training.

[13] Author's analysis using Labor Skills Measurement Survey Wave 2. Sample = those employed ages 25–40. The question was "Has a lack of computer, English, and Urdu skills ever kept you from getting a job, a promotion, or a pay raise, or from advancing your own business?"

**Summary of Key Findings**

- Pakistan has a large and fast-growing labor force (70 million, with annual growth of 2.0 million), but the majority of the workers are low-skilled.
- The Pakistani labor force is large, but the country has not yet reaped the full potential of the economic productivity due to low FLFP (25 percent).
- Education is an important factor for determining the engagement in the formal sector labor market and the selection of industries and occupations.
- A large segment of the labor force is in the informal sector (87 percent of the entire labor force) and are nonwage family workers in the informal economy (63 percent of the entire labor force).
    - Returns to education are relatively low in Pakistan and particularly low for lower levels of education (6.1 percent, which is lower than South Asian countries' average of 7.0 percent).
    - Widespread informal sector work and easy access to such work creates low incentives for education, even though low levels of education become a lifelong constraint for individuals and reinforce economic disadvantages.

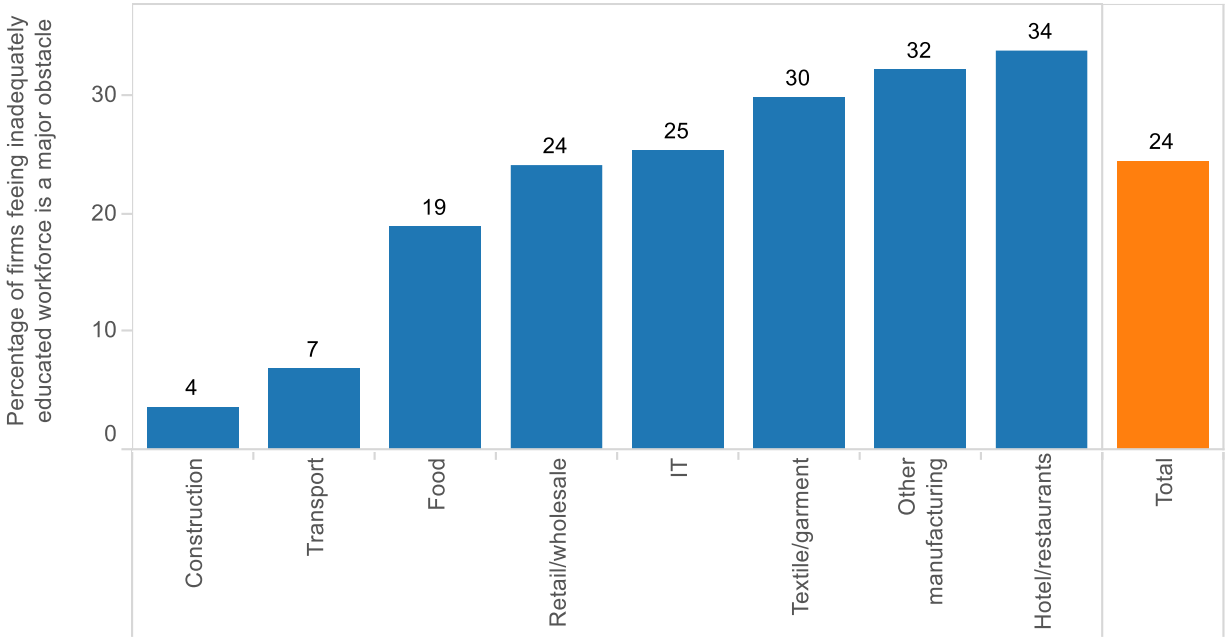
# Chapter 4: Demands for Skills in the Formal Sector

## 4.1. Are There Skills Gaps in the Pakistani Labor Market?

**The current economic structure of Pakistan allows for a large proportion of low-skilled workers because the main engine of economic growth is price competitiveness.** Ironically, the overall Pakistani labor market and economic structure accepts the low level of skills and sometimes prefers a low level of education because the comparative advantage of the economy is more on the cheap labor force and less on the high productivity or technical value added. This situation sometimes provides opportunities for uneducated workers to find jobs in the formal sector labor market. However, from the macroeconomic perspectives, there is no alternative to engaging low-skilled workers in the labor force because the vast majority of the population is low-skilled.

**The formal sector enterprises in Pakistan have numerous urgent issues and consider human capital constraints as less of a priority.** The Enterprise Survey of 2013[14] shows quite different patterns of answers from other countries. Only 24 percent of Pakistani firms reported human capital as the major obstacle for their business (Figure 19; Table 11). The perception of the seriousness of human capital constraints is different across economic sectors. The hotel/restaurant sector seems to face higher human capital constraints—with 34 percent of firms reporting education as a major constraint, implying that service-related skills that can be classified in socio-behavioral skills may be relatively scarce. On the other hand, construction and transportation, which do not necessarily require any higher skills on average than retail/wholesale and hotel/restaurant seem to feel fewer constraints with education and skills—with less than 10 percent of firms facing skills constraints.

**Figure 19: Percentage of formal sector firms who feel inadequately educated workforce is a major obstacle**




*Source:* Authors' analysis using Enterprise Survey 2013.

[14] The Pakistan 2013 Enterprise Survey data are nationally representative of nonagricultural sectors. The Implementation Report of Enterprise Survey 2013 mentions issues related to survey implementation, including item nonresponse, selection bias, and faulty sampling frames. However, these are not unique to Pakistan, and all enterprise surveys suffer from these shortcomings. (https://microdata.worldbank.org/index.php/catalog/2363/download/35149).

**Table 11: Biggest obstacle for firms, 2013**

| | Economic sectors | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Textile/ garment/ leather | Food | Other manu-facturing | Const-ruction | Retail/ wholesale | Hotel/ restaurant | Transport | ICT | |
| Access to finance | 1 | 3.6 | 6.8 | 0 | 3.7 | 0.6 | 0 | 1.2 | 2.8 |
| Access to land | 0.3 | 0 | 0 | 0 | 3.5 | 0 | 1.3 | 0 | 0.6 |
| Business licensing and permits | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.2 |
| Corruption | 19.8 | 16.2 | 14.7 | 22.8 | 20.4 | 17.5 | 5.8 | 20.8 | 17.2 |
| Courts | 0.4 | 0.2 | 0.2 | 0 | 0 | 0 | 0 | 1.2 | 0.2 |
| Crime, theft, and disorder | 9.2 | 4.2 | 5.9 | 18 | 4 | 1.6 | 11.5 | 0 | 6.3 |
| Customs and trade regulations | 1.1 | 1.8 | 1 | 0 | 3.2 | 0 | 16.8 | 0 | 2.4 |
| Electricity | 49.7 | 60.1 | 54.7 | 2.9 | 43.8 | 49.8 | 25.9 | 22.1 | 45.3 |
| Inadequately educated workforce | 0.9 | 0.7 | 2.2 | 0 | 0 | 9.2 | 0 | 22.2 | 3.1 |
| Labor regulations | 1.3 | 0.1 | 0.9 | 0 | 0 | 0.2 | 0 | 0 | 0.5 |
| Political instability | 8.9 | 10.4 | 7 | 18.9 | 4 | 1.6 | 1.9 | 31.4 | 8.5 |
| Practices of competitors | 2.4 | 0 | 0 | 0 | 0.6 | 0 | 0 | 1.2 | 0.6 |
| Tax administration | 2.3 | 1.9 | 1.6 | 17.9 | 7.6 | 19 | 18.1 | 0 | 6.9 |
| Tax rates | 2.1 | 0.6 | 2.4 | 19.5 | 8.8 | 0.5 | 1.9 | 0 | 3.6 |
| Transport | 0.5 | 0.3 | 1.7 | 0 | 0.5 | 0 | 16.8 | 0 | 1.8 |

*Source:* Enterprise Survey 2013.
*Note:* Sample = All firms.

**Human capital and skills constraints are indeed issues for firms, but they are dealing with the current situation.** Although many firms think issues other than human capital constraints are more acute constraints to them because such issues are detrimental to their business, it does not mean firms are satisfied with the education and skill levels of workers. There are two additional explanations for firms not considering human capital constraints as major issues. First, firms maintain their competitiveness by their price and not by quality. Firms prefer to hire low-educated workers with lower wages to maintain their market competitiveness, especially when production activities are relatively simple and do not require high technical expertise. This may be clear from Table 12 which shows that the ICT industry, which requires relatively higher skills than other industries, perceives skills constraints. Second, firms provide post-employment training after hiring workers. The Enterprise Survey 2013 shows that 32 percent of firms provide formal training for full-time employees. Among the firms that provide training, the occurrence of training is high, particularly in the sectors of ICT (59 percent), transportation (47 percent), and hotels and restaurants (46 percent). This prevalence of employer-provided post-employment training reflects firms' high demands for skills and training.

**According to the Enterprise Survey 2013, a primary focus of employer training is technical skills (52 percent of cases).** Construction and transportation sectors show more than 90 percent of training is on technical skills (Table 12). On the other hand, some categories of socio-behavioral skills, including sales and customer relationship, teamwork, and leadership, are also popular, especially among retail/wholesale, hotel/restaurant, and information technology (IT) sectors. Training providers are usually the company themselves in 91 percent of training. Only management training is most commonly outsourced to private providers or chambers of commerce, according to the Enterprise Survey 2013. On the other hand, there are firms that did *not* provide training. Of those which did not provide training, 62 percent reported no need for training (which may imply they do not need off-the-job training) but the other 38 percent have training needs. The lack of external training programs or providers is one of the common reasons for not training reported by employers, but this answer indicates that industries do not find good partner institutes for training their own employees despite the

presence of a large number of training providers in the country. This also shows that there is huge room for the Pakistani TVET sector supporting skills development for providing post-employment training through PPP if they can ensure demand-driven good-quality training.

**Table 12: Subjects of firm-provided training by industries**

| | Economic sectors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Textile/ garment/ leather | Food | Other manufacturing | Const-ruction | Retail/ wholesale | Hotel/ restaurant | Transport | ICT | Total |
| Managerial training | 1.7 | 12.2 | 3.8 | 0 | 1.1 | 0 | 0.6 | 2.5 | 3.5 |
| Sales and customer relations | 4.2 | 30 | 23.2 | 0 | 88.8 | 44.1 | 2.1 | 0 | 24 |
| Teamwork and leadership skills | 6.5 | 11.2 | 29.7 | 0 | 0 | 3.2 | 2.9 | 46.9 | 14.1 |
| Technical skills | 59.4 | 46.3 | 40.2 | 100 | 3.8 | 48.9 | 94.4 | 47.8 | 52.3 |
| Other training | 28.3 | 0.4 | 3.2 | 0 | 6.3 | 3.8 | 0 | 2.8 | 6 |

*Source:* Enterprise Survey 2013.
*Note:* Sample = firms that provide formal training.

**Yet the skills that workers demonstrate in workplaces are overall low and basic.** An analysis of the Labor Skills Measurement Survey 2014 shows less than 20 percent of the sample reported that they "read," "write," or "fill out bills/forms" at their work or in their daily life, suggesting that their work rarely required those skills. Occasions to use their technical skills were also limited. Only 12–15 percent of workers demonstrated skills such as driving a car or repairing electronic equipment at their workplace. In contrast, 36 percent of self-employed workers expressed that they operated or worked with heavy machines or industrial equipment, suggesting that some of the enterprises were capital intensive and required certain skills to deal with those machines. The use of computers was less common: only 2.8 percent of workers used a computer at their workplace (Tanaka 2018).

**Self-employment requires skills that are simple but practical.** Simple practical skills were needed at work. More than 60 percent of workers reported that they used skills such as measuring or estimating size, weight, or distance, and calculating prices and costs at their work. Those skills were particularly required among workers in self-employment and unpaid family workers. Interacting and meeting with customers and clients also accounted for certain parts of their work. Among those who read some materials at their work, reading bills or financial statements was particularly high among self-employed workers—with more than 90 percent of them demonstrating such skills (Tanaka 2018).

**The situation of an abundant supply of low-skilled workers and existing demand for them keeps the labor market at a low-skill equilibrium, but there is a growing risk of a low-skills–low-productivity trap for the economy.** The continued existence of demand for low skills benefits uneducated workers. However, this situation keeps providing incentives for the youth and future workforce to remain less educated. Unemployment is low in the Pakistani labor market although underemployment is high. This alludes to a situation where it is not difficult to find a job if workers accept relatively low-paying jobs. Failure to move up the value-added ladder causes a trap of low productivity and low skills (World Bank 2012). Such traps arise when skills are insufficient to spur innovation and the demand for skills is too low to encourage their acquisition. In those cases, more relevant schooling and skill building at the basic, secondary, technical, and likely higher levels are needed as a prerequisite for the creation of good jobs for development.

**The quality of jobs matter—and Pakistan needs to jump from a low-skill–low-productivity equilibrium to a high-skill–high-productivity equilibrium.** While the economy as a whole still relies on cheap labor by accepting their low productivity, there is a segment of the labor market that requires higher skills. As the next

section discusses, there is a growing number of jobs in the formal sector labor market which require a higher level of skills. Continuous inflow of investment through CPEC also has the potential to change the skills demand to a higher one. If the country wants to change the mode of production from a labor-abundant price competitive one to a skills- and innovation-based higher productivity one, the labor supply and demand has to change.

**From the future labor market viewpoint, Pakistan is certainly facing a skill gap, and in fact, the country needs a big push of more skilled workers with more skill-demanding jobs.** In the current labor market, only 8 percent of the labor force has a post-secondary level education. Although the current labor market does not necessarily signal higher skills, as its comparative advantage is on price, from a viewpoint of what Pakistan wants its labor market to be, there are certainly skills gaps—in terms of both quantity and quality. Pakistan therefore requires an increase of both the skills supply and demand to push up the skills and productivity equilibrium.

## 4.2. Efforts to Understand the Skills Demand in the Pakistani Labor Market

**NAVTTC is establishing a labor market information system called the National Skills Information System (NSIS) to regularly monitor the skills demand and supply in the Pakistani labor market.** The NSIS mainly collects data of skills demand and supply in the manufacturing, construction, mining, and hospitality sectors, which are mostly concerned with TVET-related skills. It is an effort to provide demand-driven skills development as per the needs of the industries. The NSIS collects the number of required workers and maps them with the supply of TVET graduates for the trades, but the system is still nascent and unable to capture the extensive demand and supply of skills on a timely basis. It is important to further strengthen skills data collection, management, and utilization while involving the private sector to keep updating the information. It is also important to note that provinces also have taken a similar initiative, and Punjab, for instance, operates a similar labor force information system for TVET graduates in Punjab.

**An innovative approach to apply machine learning techniques on labor market big data is emerging for understanding skills demand in Pakistan.** Contrary to the survey- and interview-based approach for understanding skills demand in the labor market, there is an emerging approach to use online job portals for understanding the labor market conditions and skill demand and supply in Pakistan by considering the skills demand signaled through the portals as a real reflection of skills demand. In partnership with Rozee.pk, an online job portal in Pakistan founded in 2007, an analysis was conducted using a dataset consisting of 2.4 million job seekers and 33,000 registered employers corresponding to 184,000 jobs posted on the platform. At the crudest level of occupational classification, namely the first digit of the International Standard Classification of Occupations 08 (ISCO-08), the three most demanded occupations are managers, professionals, and technicians and associate professionals. On the supply side, most job seekers belong to these occupations (details of the job portal analysis are given in Box 5 and a description of the analytical method in Box 6).[15]

**Box 5: Advantages and caveats of online job portals**

Online job portal data have unique features that can supplement traditional data such as labor force surveys and establishment surveys. These unique features are the following: (a) online job portal data can provide contemporaneous information, whereas traditional data are published after long lags, from months to years; (b) online job portal data provide rich, granular information about skill demand and supply; (c) online job portal data include information about actual labor market transactions and job matching processes, which remain invisible in traditional labor force and enterprise surveys; and (d) it is possible to make a labor market diagnosis through coherent, systematic analysis on both sides of employers and workers.

[15] A job-seeker's occupation has been identified based on his/her past jobs by using text analysis and a machine learning method.

In addition to these distinct features of online job portal data, there are other advantages of using the data, which are: (a) online job portals are an increasingly common job matching channel; (b) online job portals have the potential to improve the efficiency of job search and matching process; and (c) online job portal data are relevant to particular challenges in Pakistani labor markets—for example, the online job data are suitable to examine labor market situations surrounding fresh graduates or female job seekers (Matsuda et al. 2019).

On the other hand, there are also limitations, and the most important issue is the representativeness of the data as online job-search platforms are subject to self-selection biases and other forms of sampling error. Carnevale, Jayasundera, and Repnikov (2014) argued that online job-portal data are vulnerable to systematic errors arising from how employers and job seekers use them. For example, online job advertisements tend to be skewed toward upper-level and professional positions in formal sector wage employment, while lower-level and unskilled positions, including ones in the informal sector to which the majority of Pakistani workers belong, are often filled through other channels. The voluntary nature of participation in an online job-search portal creates an inevitable degree of self-selection bias.

**Box 6: Machine learning techniques used for skills demand analysis on Rozee.pk data**

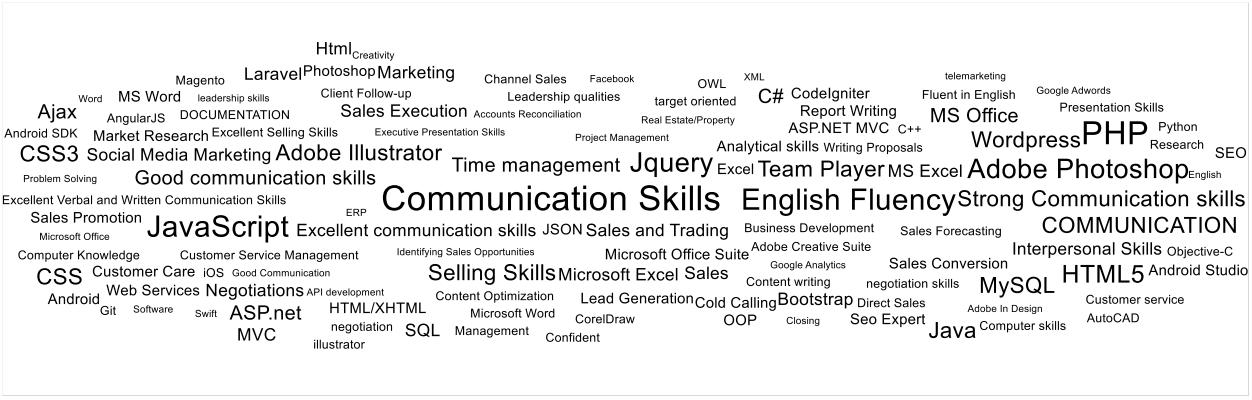
The text analysis was built on the method and procedures developed by Atalay et al. (2018). It applied a *continuous bag of words* (CBOW) model and mapped job titles and job descriptions to, respectively, occupations and associated skills. A CBOW model is a natural language processing technique that finds synonyms for words and phrases. For example, the model concludes that 'lecturer' and 'instructor' have similar meanings to each other if these two words tend to appear near similar words such as 'teach', 'course', and 'school'. For each job post in the online job data, the analysis associated the ICSO-08 occupation title that a CBOW model found most similar to its job title. Similarly, job-seekers' occupations were identified by using the titles of their previous jobs.

The skill categorizations used in the text analysis (that is, nonroutine analytic, nonroutine interactive, routine manual, cognitive, social, writing, and so forth are listed in Table 13) followed Autor, Levy, and Murnane (2003) and Deming and Kahn (2018).[16] For each skill category, they list related words. For example, the words related to *nonroutine analytic* are 'analyze', 'analyzing', 'design', 'designing', 'devising rule', 'evaluate', 'evaluating', 'interpreting rule', 'plan', 'planning', 'research', 'researching', 'sketch', and 'sketching'. The related words for *routine manual* are 'control', 'controlling', 'equip', 'equipment', 'equipping', 'operate', and 'operating'. The text analysis expanded the list of related words by adding the words that a CBOW model found similar to the original words. Then, the text analysis considered a job description to require a skill if the job description included any word in the expanded list for the skill category. Similarly, a job seeker is considered to possess a skill if his/her self-reported skills include any word in the list.

**In the specific segment of formal sector labor market, which recruits staff from an online job portal, communication skills, one of the socio-behavioral skills, is one of the most expressed skills in the job descriptions of the online job portal jobs.** The analysis in Figure 20 presents the frequency of word count. Among the job advertisements analyzed, 'communication skills' was the most frequently used skill. This may be consistent with the findings of the Enterprise Survey, in which hotel/restaurant and retail/wholesale employers see human capital constraints as the main business obstacle. The jobs that require human interactions emphasize the importance of communications and socio-behavioral skills.

[16] The categorization by Autor, Levy, and Murnane (2003) is also used by OECD for discussing skills categories in PISA (OECD 2014).

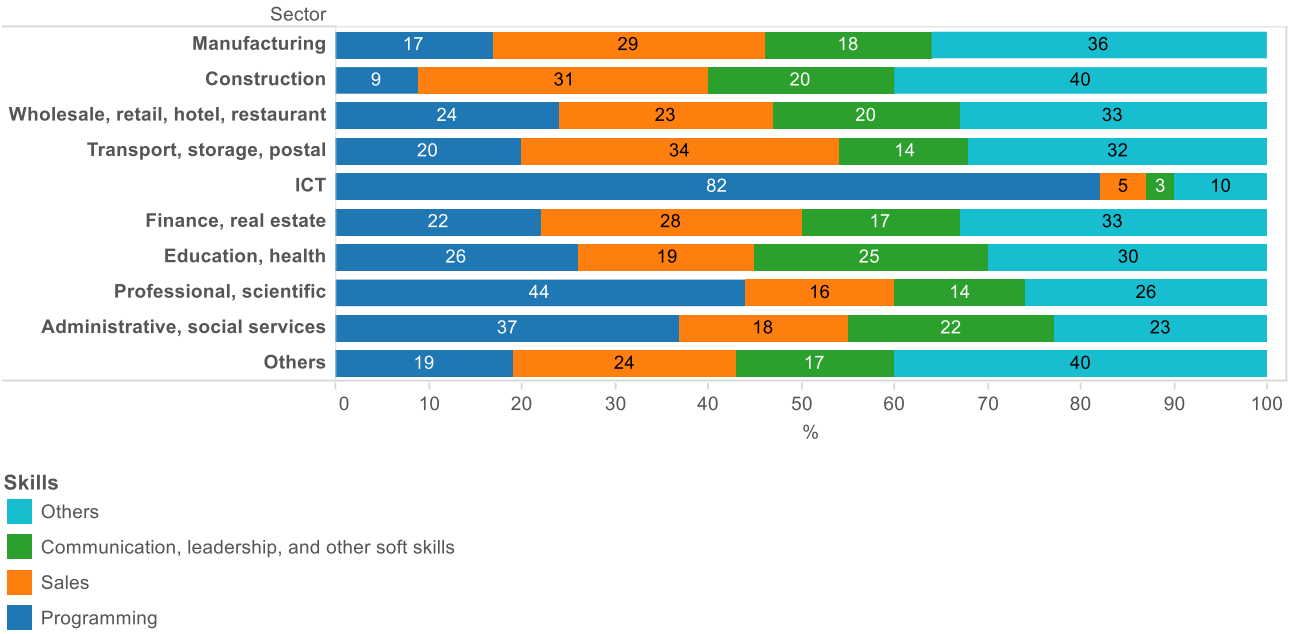
**Figure 20: Word cloud for most demanded skills as expressed in job descriptions**




*Source*: Matsuda et al. 2018.

**Programming skills are the most highly demanded category of skills (63 percent share overall) in the advertisement sector, followed by sales skills (12 percent share).** The composition of user firms of this online job portal may be inclined toward IT sectors, and that is why programming skills are so highly demanded (Figure 21). Yet, the industry-wise analysis of job descriptions shows that programming-related skills are the most demanded category of skills even in other economic sectors. The specific programming skills may be different from one post to another, including PHP, Java, HTML, SQL, Adobe, CSS, and so on. Sales-related skills are also in high demand in most industries and exceeds one-fourth of the skills required in construction, transport, manufacturing, and finance industries.

**Figure 21: Required skills by industries**




*Source*: Matsuda et al. (2018).

**Using skills classifications by the nature of tasks to be performed at the workplace, nonroutine skills are overall more demanded than routine skills across occupation categories.** Going deeper into the STEP classification to analyze the nature of skills performed at the workplace, two additional classifications are applied to the analysis (see Box 7 for the occupational skills classifications). According to this analysis, for the jobs posted on an online job portal, jobs tend to require more nonroutine skills than routine skills, irrespective

of educational requirements (Table 13). Jobs that require post-secondary level education demand nonroutine interactive (74 percent) and analytic (73 percent) skills while a few of them require nonroutine manual skills (19 percent), routine cognitive skills (27 percent), or routine manual skills (35 percent). Although the demand for nonroutine analytical skills, project management, and people management are a distinguished feature of higher-skilled jobs, jobs that require secondary and higher secondary education also demand more nonroutine skills in general than routine skills. Overall, more skills and a variety of skills are demanded for post-secondary level jobs. From the job-seekers' side, these skills are not expressed, and the most concrete self-claimed skill offer is related to computer skills.

**Table 13: Percentages of jobs and job seekers expressing demand and supply of skills, by education level**

| | **Demand** | | | **Supply (self-expressed)** | | |
|---|---|---|---|---|---|---|
| **Education** | **Secondary or less** | **Higher secondary** | **Post-secondary** | **Secondary or less** | **Higher secondary** | **Post-secondary** |
| *Autor, Levy, and Murnane (2003) classification* | | | | | | |
| Nonroutine analytic | 34 | 48 | 73 | 28 | 32 | 31 |
| Nonroutine interactive | 59 | 67 | 74 | 27 | 27 | 29 |
| Nonroutine manual | 18 | 13 | 19 | 1 | 1 | 1 |
| Routine cognitive | 12 | 14 | 27 | 17 | 20 | 14 |
| Routine manual | 19 | 21 | 35 | 9 | 13 | 10 |
| *Deming and Kahn (2018) classification* | | | | | | |
| Cognitive | 48 | 59 | 73 | 19 | 18 | 20 |
| Social | 35 | 41 | 54 | 13 | 12 | 14 |
| Character | 64 | 69 | 75 | 20 | 21 | 22 |
| Writing | 12 | 17 | 28 | 4 | 4 | 4 |
| Customer service | 55 | 66 | 64 | 23 | 25 | 26 |
| Project management | 19 | 25 | 49 | 21 | 23 | 23 |
| People management | 32 | 34 | 53 | 23 | 24 | 25 |
| Financial | 10 | 13 | 27 | 23 | 26 | 21 |
| Computer (general) | 20 | 26 | 45 | 48 | 47 | 44 |

*Note:* See Box 7 for the definition of skills category.

**Box 7: Skills classifications**

International studies have used different skills taxonomies depending on the instruments used to analyze skills performed at workplaces. Taking advantage of available job descriptions and the application of machine learning techniques, Autor, Levy, and Murnane (2003) and Deming and Kahn (2018) classifications are used for this analysis. These are within the STEP framework—which consists of higher-order categories of cognitive, socio-behavioral, and technical skills.

**Table 14: Skills Classification and Tasks**

| **Skills classification** | **Tasks, keywords, and phrases** |
|---|---|
| *Autor, Levy, and Murnane (2003) classification* | |
| Nonroutine analytic | Researching, analyzing, evaluating and planning, making plans/constructions, designing, sketching, working out rules/prescriptions, and using and interpreting rules |
| Nonroutine interactive | Negotiating, lobbying, coordinating, organizing, teaching or training, selling, buying, advising customers, advertising, entertaining or presenting, and employing or managing personnel |
| Nonroutine manual | Repairing or renovating houses/apartments/machines/vehicles, restoring art/monuments, and serving or accommodating |
| Routine cognitive | Calculating, bookkeeping, correcting texts/data, and measuring length/weight/temperature |
| Routine manual | Operating or controlling machines and equipping machines |

| *Deming and Kahn (2018) classification* | |
|---|---|
| Cognitive | Problem solving, research, analytical, critical thinking, math, statistics |
| Social | Communication, teamwork, collaboration, negotiation, presentation |
| Character | Organized, detail oriented, multitasking, time management, meeting deadlines, energetic |
| Writing | Writing |
| Customer service | Customer, sales, client, patient |
| Project management | Project management |
| People management | Supervisory, leadership, management (not project), mentoring, staff |
| Financial | Budgeting, accounting, finance, cost |
| Computer (general) | Computer, spreadsheets, common software (for example, Microsoft Excel, PowerPoint) |

*Source:* Adapted from Autor, Levy, and Murnane (2003) and Deming and Kahn (2018).

## Are There Skills Gaps? Skills Demand and Supply Deep Dive by Occupations

**There is a relative shortage of specific technical skills in the labor market in specific occupation categories.** To analyze if there are shortages of demand and supply skills, an analysis of an online job portal was conducted by converting the various occupation categories into a standardized classification called the International Standard Classification of Occupations (ISCO).[17] Table 15 presents the ISCO 1-digit level (broadest level of occupational category), supply, demand, and tightness. On an online job portal, manager, professional, and technicians and associate professionals are the most demanded and supplied[18] ISCO 1-digit categories, which reflects that Rozee.pk is a platform for high-end jobs. However, in this segment of the labor market, demand for service and sales workers is not fulfilled, indicating there is a skills demand in the higher-end jobs, and those occupational categories are not only in technical skills categories.

**Table 15: Labor supply, demand, and tightness by occupations (ISCO-08, 1 digit)**

| Occupations (ISCO 1-digit level) | ISCO | Supply | Demand | Tightness (%) |
|---|---|---|---|---|
| Managers | 1 | 228,862 | 165,513 | 72 |
| Professionals | 2 | 287,797 | 194,713 | 68 |
| Technicians and associate professionals | 3 | 228,487 | 198,974 | 87 |
| Clerical support workers | 4 | 46,219 | 23,031 | 50 |
| Services and sales workers | 5 | 43,748 | 84,251 | 193 |
| Skills agricultural, forestry, and fishery workers | 6 | 2,723 | 528 | 19 |
| Craft and related trades workers | 7 | 20,901 | 10,051 | 48 |
| Plant and machine operators and assemblers | 8 | 17,592 | 7,832 | 45 |
| Elementary occupations | 9 | 11,778 | 4,472 | 38 |

*Source:* Authors' analysis using Rozee.pk.

*Note:* Tightness is a commonly used indicator for labor market analysis, which is defined as the number of job vacancies per job seeker. If this ratio is high (high tightness), the labor demand is strong relative to the labor supply, and it is easy for job seekers to find jobs but hard for employers to find workers. That is, the market is a seller's market. On the other hand, if the tightness is low, finding jobs is hard for job seekers, but employers find workers easily, i.e., the market is a buyer's market.

**ICT professionals and sales workers (ISCO numbers 25 and 52) are occupation categories with a relative skills shortage.** Going into a more specific occupational level demand and supply of skills, Table 16 shows the ISCO 2-digit level occupations that have more than 50,000 registered job seekers or vacancies for the

[17] Although the online job portal does not represent the whole labor market and thus the presented numbers do not reflect the entire market, comparing the ratios of the supply and demand of specific skills and occupation categories allows identification of the relative shortage and oversupply of specific types of skills against labor market demands.
[18] A job-seeker's occupation has been identified based on his/her past occupations by using text analysis and a machine learning method.

occupation category. Compared to the available numbers of vacancies in ICT and sales workers (93,150 and 74,720, respectively), applicants who consider themselves for these occupations are in relative shortage (57,134 and 29,722). This indicates that there are demand-and-supply gaps of skills in specific occupation categories. The supply constraints of skills in these occupations is somewhat consistent with the findings of the Enterprise Survey (Figure 19) discussed earlier, which showed that firms perceived shortage of skills as the major constraint. More detailed analysis of tightness at the 3- and 4-digit level of ISCO-08 occupations is presented in Box 8, which shows skills requirements are becoming very specific due to technological advancement. For example, while there is a good number of job seekers with ICT skills, job seekers with specific skills of software and app developers, or web and multimedia developers are in shortage. On the other hand, computer network and system engineers are relatively oversupplied.

**Table 16: Labor supply, demand, and tightness by occupations (ISCO-08, 2 digit)**

| Occupations (ISCO 2-digit level) | ISCO | Supply | Demand | Tightness (%) |
|---|---|---|---|---|
| Administrative and commercial managers | 12 | 153,094 | 132,902 | 87 |
| Science and engineering professionals | 21 | 66,487 | 32,291 | 49 |
| Teaching professionals | 23 | 68,581 | 13,612 | 20 |
| Business and administration professionals | 24 | 66,055 | 24,773 | 38 |
| Information and communications technology professionals | 25 | 57,134 | 93,150 | 163 |
| Business and administration associate professionals | 33 | 117,888 | 159,775 | 136 |
| Sales workers | 52 | 29,722 | 74,720 | 251 |

*Source:* Authors' analysis using Rozee.pk.
*Note:* Only the ISCO 2-digit level occupations that have more than 50,000 registered job seekers or vacancies for the category are displayed.

**Box 8: Supply, demand, and tightness: ICT professionals and technicians occupations (ICSO = 25, 35)**

The data allow further investigation at the 3- and 4-digit levels. Among ICT occupations, software developers (2512) and web and multimedia developers (2513) are in great demand in terms of the quantity, and also relatively scarce in supply—with tightness of 224 percent and 175 percent (Table 17). On the other hand, specific occupational categories see a potential oversupply of skills. Computer network and system technicians (3513) may be experiencing an oversupply to a great degree; there are 17,432 job seekers for only 1,983 posts.

**Table 17: Supply, demand, and tightness: ICT professionals and technicians occupations (ISCO = 25, 35)**

| Occupations (ISCO 3- and 4-digit levels) | ISCO | Supply | Demand | Tightness (%) |
|---|---|---|---|---|
| **Software and applications developers and analysts** | **251** | **44,202** | **88,471** | **200** |
| Systems analysts | 2511 | 939 | 552 | 59 |
| *Software developers* | *2512* | *25,704* | *57,578* | *224* |
| *Web and multimedia developers* | *2513* | *16,256* | *28,515* | *175* |
| Applications programmers | 2514 | 1,055 | 1661 | 157 |
| Software and applications developers and analysts not elsewhere classified | 2519 | 248 | 165 | 67 |
| **Database and network professionals** | **252** | **12,932** | **4,679** | **36** |
| Database designers and administrators | 2521 | 3,666 | 2118 | 58 |
| Systems administrators | 2522 | 4,112 | 1,804 | 44 |
| Computer network professionals | 2523 | 5,071 | 746 | 15 |
| Database and network professionals not elsewhere classified | 2529 | 83 | 11 | 13 |
| **Information and communications technology operations and user support technicians** | **351** | **24,437** | **5,146** | **21** |
| Information and communications technology operations technicians | 3511 | 3,615 | 693 | 19 |
| Information and communications technology user support technicians | 3512 | 3,195 | 2354 | 74 |
| Computer network and systems technicians | 3513 | *17,432* | *1983* | *11* |
| Web technicians | 3514 | 195 | 116 | 59 |
| Telecommunications and broadcasting technicians | 352 | **433** | **205** | **47** |
| Broadcasting and audio-visual technicians | 3521 | 44 | 78 | 177 |
| Telecommunications engineering technicians | 3522 | 389 | 127 | 33 |

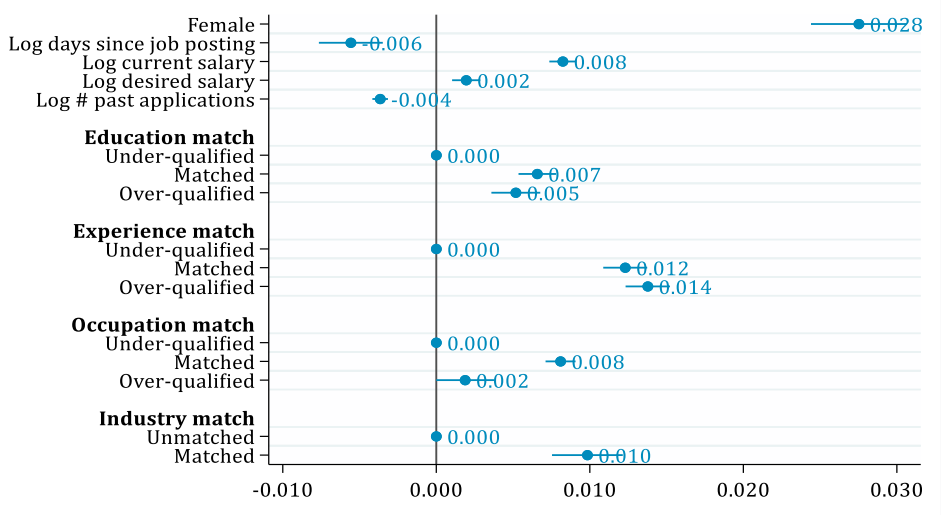
*Source:* Authors' analysis using Rozee.pk.

## 4.3. Efficiency of Skills Matching

**The skill matching process, where workers and firms find each other, is important to fill skill gaps and eventually accelerate industrial growth.** As discussed in Section 4.1, Pakistan is facing a skills gap and needs a shift of the skills demand-and-supply equilibrium from a low-skill–low-productivity point to high-skill–high-productivity point. One of the functional aspects of the skills gap is skills matching. Although there may be a sufficient number of job seekers with good-quality skills, a mismatched demand and supply of skills will create a skills gap.

**Firms expect just-matched qualification and skills when hiring workers.** Firms receive various applications when advertising a vacancy, including those who are overqualified, just-matched qualified, and underqualified. An analysis of an online job portal from Pakistan shows that firms are more likely to short-list applicants with just-matched qualifications (Figure 22). The analysis covered the matching status of education, experience, occupational type, and industry type. On the educational level and experience, just-matching and overqualification are both well received by the firms when compared to underqualified job applicants. On the other hand, occupational level matching requires just-right matching over underqualification or overqualification matching. This means, for example, if a job seeker has professional-level skills, career aspirations, or work experience, he or she is not considered as highly for a nonprofessional-level job even if an application is submitted. The same analysis showed technical skills and industry matching are also important (Matsuda et al. 2019).

**Figure 22: Qualification matches and short-listing**




*Source:* Matsuda et al. (2019)
*Note:* Shown are regression results that examine how much the characteristics of applicants/applications affect the probability of being short listed or interviewed. The regression controls for job postings fixed effects. The dependent variable is a dummy indicating that an application is short listed or interviewed. The other controls are marital status dummies, gender match dummies, and job postings fixed effects. The mean probability of being short listed is 9.5 percent. The standard errors are clustered at the job posting level.

**However, industry and skill matching may not always happen, due to information gaps.** There are two reasons for information gaps. First, employers are not signaling the exact skill sets that they expect, and job seekers are not signaling what they offer. Second, employers and job seekers cannot find the other half with matching skills demand or supply and qualifications. The first issue may arise from job-seekers' preparedness for job searches. Some statistics show that many of the currently employed workers feel they would not be able to find jobs if they were to look for a job again. About 31 percent were confident in finding job vacancies,

19 percent said they would be able to prepare resumes, and 28 percent felt they would be able to perform adequately at interviews.[19]

**International studies have shown that job seekers who choose to use social networks are more likely to end up having mismatched jobs and not take advantage of their technical specialties.** A tracer study of DAE graduates from STEVTA showed that 46 percent of employed graduates of STEVTA programs used personal networks for finding a job. This indicates that the job-and-skills matching function is practiced within relatively small networks, and there is a risk of low-quality matching due to a lack of access to a wider range of information.[20] About 50 percent of graduates of STEVTA institutes reported that employment-related counseling provided by their institutes was poor. Even if the TVET sector generates many skilled workers, the absence of well-functioning matching mechanisms would make the TVET system less employment relevant. This suggests that it is important for the TVET sector and also for the education system to have an effective mechanism for career guidance for students and for providing job placement support.

## 4.4. Emergence of New Skills Demand with New Technologies

**Digital technologies can create connectivity and innovations across the economy, such as a 'gig economy'.** The Internet and digital technologies are reshaping employment globally. Much of the focus has been on the possible impact of automation on labor markets, which is usually associated with fear of losing jobs, and on the role of the ICT sector and the jobs it creates. However, the potential effects go beyond, to include the effects of connectivity and innovation across the economy. For example, increasing connectivity to the Internet has enabled markets where workers and employers are matched on tasks, creating the *'gig economy'* and the online freelancing market. It has also allowed firms to get online and engage in e-commerce, often overcoming the barriers that prevented small businesses from participating in global commerce. Other digitally enabled innovations, possibly commonplace in the future (for example, 3D printing, drones) could also transform traditional sectors such as transport and manufacturing, leading to the creation of firms and jobs, but also displacing lagging firms and unprepared workers.

**Pakistan already figures among the world's most active countries in online freelancing.** The State Bank of Pakistan (SBP) has estimated that Pakistan's informal exports of ICT are much higher than formal exports. In FY18, formal ICT exports reached US$1 billion, but per industry experts, the total is around US$2.5 billion of which US$0.5 billion is likely from freelancing activities serving international clients (SBP 2018). Pakistan also has a growing gig economy, including ICT-mediated services such as ride-sharing or petty services. And the SBP estimates that in 2018, digital payments for e-commerce transactions have already crossed PKR 40 billion, doubling from the previous year and suggesting the potential for digital services to improve access to markets for firms.

**Online freelancing and gig economies can provide great potential for workers to access jobs globally, with higher wages than those available in their home countries.** For women, minorities, and workers in emerging markets who otherwise had few or no employment possibilities, the gig economy and online freelancing creates possibilities to work remotely and flexibly. Digital platforms can improve the transparency of the labor market (through better information), match workers and employers more efficiently, and help workers acquire new skills (for example, through e-learning). These could help increase labor force

[19] Authors' analysis using Labor Skills Measurement Survey Wave 2, by including currently employed workers.
[20] A study from Bangladesh argues that social networks allow job seekers to find jobs quickly and easily and thereby reduce search costs, but the types of jobs available from social networks are narrower than those from open channels. As a consequence, those who choose to use social networks are more likely to end up having mismatched jobs, that is jobs in which they cannot take advantage of their specialties. In the context of developing countries, a considerable number of poor job seekers may use social networks out of necessity even if the returns to finding good matching jobs through open channels are sufficiently high (Matsuda and Nomura 2017).

participation and hours worked in the economy and provide opportunities for the unemployed and underemployed, as well as increase human and capital productivity through the ability to choose jobs and occupations based on one's interest and capabilities, and through the occupation of underutilized assets (such as cars and spare rooms). Firms also benefit through the access that e-commerce provides to more markets, while task matching online gives them access to talent, locally and internationally, at competitive rates.

**The right policies and Internet connectivity will be required for exploiting the opportunities created by new technologies.** To reap the potential benefits of the changing technology, Pakistan would need policies that position its economy, and its firms and workers, to take advantage of these technologies rather than be substituted by them. There is a significant part of the population that is not connected to the Internet to begin with (estimates are that about a quarter of the population uses the Internet regularly) and which lacks access to accounts capable of receiving online payments (as of 2017, about a fifth of those in the labor force made or received digital payments). One of the key policies would be addressing the lack of digital and complementary skills. For example, only 37 percent of the population reports being aware of the Internet, and 87 percent of those who know about e-commerce platforms do not use them to buy goods or services. Efforts could focus on ensuring that all young people have some level of digital literacy and skills by the time they graduate from the education system. This goes beyond only some knowledge of programming or use of applications to include foundational skills, such as an ability to continue learning, communication, logical and critical thinking, and numeracy. These prepare individuals to acquire new skills in the continually evolving digital world, position them as more than mere consumers of technology, and develop skills that are difficult to automate. Together they create an important analog foundation—human capital—that sets the stage for a greater realization of digital dividends (World Bank, forthcoming).

**Summary of Key Findings**

- The Pakistani labor market accepts low skills because the main engine of economic growth is price competitiveness with cheap labor. Overall, the skills practiced in the Pakistani labor market are low and basic. The situation of an abundant supply of low-skilled workers and existing demand for them keeps the labor market at a low-skill equilibrium, and there is a growing risk of a low-skills–low-productivity trap for the economy.
- There are skills gaps in the labor market, but formal sector firms manage the gaps through post-employment training.
- Skills gaps are perceived not only on technical skills but more so for the service industry, which requires interpersonal and socio-behavioral skills.
- There are emerging initiatives to understand labor market skills demand, including big data analytics using online job portals.
- Programming skills are the most demanded technical skills in the higher segments of the formal sector job market (63 percent of jobs advertised on an online job portal), and especially software and app developing skills in particular are in relative shortage. The market overall expresses the importance of communications and socio-behavioral skills.
- Nonroutine skills (analytical, interactive) are more in demand than routine skills in the formal sector (over 70 percent as opposed to around 30 percent for jobs that require a post-secondary level of education). Jobs requiring a higher level of education demand a higher variety of skills.
    - Skills gaps occur not only due to lack of training, but could be simply a result of poor matching mechanisms.
    - Pakistan already figures among the world's most active countries in online freelancing and also has a growing gig economy, including ICT-mediated services such as ride-sharing or petty services.

# Chapter 5: Policy Discussions

This report has found that the current flow and stock of skills in Pakistan are suboptimal for keeping Pakistan's economic growth at a high equilibrium and for what is required for the skills system to keep up with a competitive, relevant, and ever-changing skills demand. There is no single 'right' or 'best' approach to skills development, but there are a few important strategic approaches that Pakistan should consider for the country to be more competitive on skills and productivity.
This report proposes six strategic areas for the way forward.

1. **Take the whole-of-education and skills system approach for lifelong learning**
    - Invest in early childhood education.
    - Consider skills development as lifelong learning, requiring a whole sector approach.
2. **Establish foundational skills for better life and economic opportunities**
    - Strengthen good-quality basic education.
    - Provide tailored support to out-of-school children for their skills development.
    - Rebuild foundational skills among the low-skilled labor force.
3. **Build market-driven skills for employability and globally competitive productivity**
    - Supply a well-balanced secondary education and TVET programs for the middle-skilled groups in the context of continuously changing technology and labor market structure.
    - Ensure industry-led, locally relevant, and flexible TVET systems to respond to the changing demands in skills.
    - Consider multiskilling TVET for local labor market relevance and for a gig economy.
    - Provide entrepreneurship and digital training to promote entrepreneurship and participation in a gig economy.
4. **Accelerate high-skill–led economic growth through skills for innovation and excellence**
    - Update the higher-skills development system with technological advancement.
    - Ensure analytical, socio-behavioral, and management skills development for nonroutine work.
    - Build vertical links of institutions for sector-specific technical skills development.
5. **Strengthen opportunities within society's comfort zones for women in the short run and expand the horizon in the long run**
    - Expand society's comfort zones for diversified economic opportunities for women.
    - Create women-friendly ecosystems in the short run, including home-based enterprises.
6. **Commit to labor market outcomes, not to supply of training**
    - Enhance job placement and career guidance systems.
    - Link skills development policies with industry development policies and cross-sectoral approaches for skills building for economic development.
    - Ensure a more integrated federal and provincial TVET system.
    - Continuously monitor the labor demands and labor market outcomes of training.

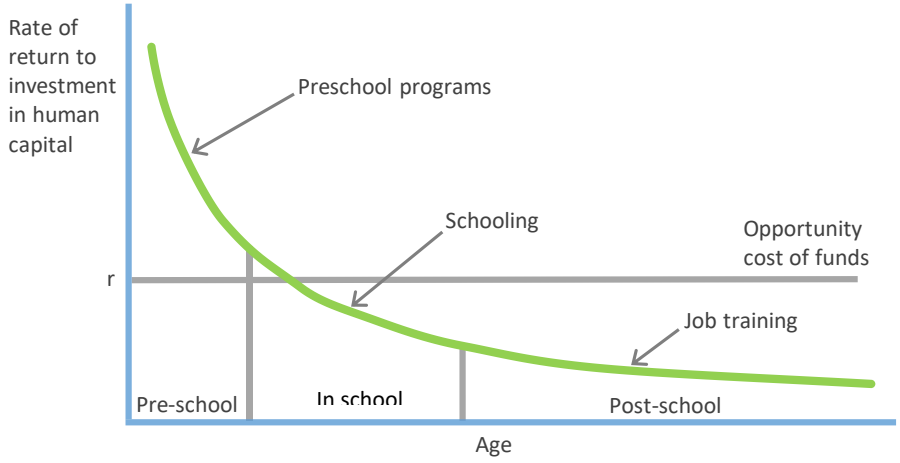
## Policy Area 1: Take the whole-of-education and skills system approach for lifelong learning

**In today's global economy and society, skills need to be redefined as the labor market and the society require a variety of skills, including cognitive, socio-behavioral, and technical skills.** The definition of a skilled worker is not one having only TVET skills but also having a combination of cognitive, socio-behavioral, and technical skills. Socio-behavioral skills and nontechnical skills are highly valued in the labor markets, including in the high-end white-collar work. Skills development is a cumulative process that continues even after individuals come out of the education system. Hence the skills development system should start from ECD and continue lifelong through a whole-of-the-system approach.

***Recommendation 1.1:*** **Build a strong foundation in ECD as the fundamental structure for lifelong human capital development.** Skills formation is a cumulative life-cycle process, which starts early in an individual's

life. International experience and evidence from multidisciplinary areas show that investing in ECD is among the most cost-effective methods for improving economic and social indicators (Naudeau et al. 2011). Improvement of educational outcomes, including cognitive, language, and socio-behavioral skills development, also requires holistic improvement through multidimensional approaches. It will increase school readiness of children and school attainment later in their lives (World Bank 2019c).[21] For long-term development of wide skill pools for the country, including socio-behavioral skills, it is important to start investing in human capital through ECD. Longitudinal economic studies in both developed and developing countries have shown that ECD interventions have the highest rates of return of any form of human capital investment (Figure 23).

**Figure 23: Rates of return to different types of human capital investment**




*Source:* Carneiro and Heckman 2003.

***Recommendation 1.2:*** **Take a whole-of-the-system approach to skills development as there are beneficiaries of all levels of skills groups, including the low-skilled, middle-skilled, and high-skilled groups and for both the inflow of new labor market entrants and existing workers.** Demand for skills development is huge and diverse in Pakistan. Table 18 provides a compilation of the statistics about the skill levels and flow and stock of the labor force, and shows the suggested different approaches for workers of the respective skill groups—which are the *foundational skills for better life and economic opportunities, market-driven skills for local employability and globally competitive productivity,* and *skills for innovation and excellence.* In 2014–15, 60 percent of the 52 million workers (31 million workers) in Pakistan were either uneducated or had less than a primary level of education. To uplift the skill levels of the entire labor force, building basic skills of the inflow and stock of workers will be necessary. In addition to this, annually 2.3 million additional workers join the labor force.[22] The composition of the skill levels of those annual inflow of labor market entrants is estimated to be 0.9 million low-skilled, 1.0 million from the secondary education level, and 0.4 million from higher education. This student flow pattern confirms that the low-skilled workers will continue to be the largest proportion of the labor force in Pakistan in the status quo trend. Skills development is not only TVET but also foundational skills (cognitive and socio-behavioral), which the current and future labor force will need. To cater to the huge demand in various skills levels, a whole-of-the-system approach that supports lifelong learning of skills is needed for skills development in Pakistan.

[21] There are also evidences from Pakistan. In rural Sindh, an evaluation found 24 months of responsive stimulation interventions yielded a fairly large impact on cognitive, language, and motor skills development although not necessarily on socio-behavioral skills (Yousafzai et al. 2014), and an impact on IQ, executive function, and pre-academic skills sustained over time (Yousafzai et al. 2016).

[22] Net increase of the labor force is annual inflow less the retired workers.

**Table 18: Policy approaches and target beneficiaries**

| Skill levels | Indicative education levels | Estimated annual flow of existing school (million) | Estimated annual inflow to labor market (million) | Stock of labor force ages 15–64 (million) | Stock of nonlabor force ages 15–64 (million) | Strategic approaches | |
|---|---|---|---|---|---|---|---|
| **High skills** | University | 0.7 | 0.4 | 4.1 | 2.5 | **Skills for innovation and excellence** *(Policy Area 4)* | **Skills and economic opportunities for women** *(Policy Area 5)* |
| | College | | | | | | |
| | Post-secondary | | | | | | |
| **Middle skills** | Higher secondary | 0.5 | 0.3 | 9.9 | 10.8 | **Market-driven skills for local employability and globally competitive productivity** *(Policy Area 3)* | |
| | Secondary | 0.9 | 0.4 | | | | |
| | Lower secondary | 0.6 | 0.3 | 6.6 | 6.8 | | |
| **Low skills** | Primary | 1.0 | 0.6 | 9.6 | 6.4 | **Foundational skills for better life and economic opportunities** *(Policy Area 2)* | |
| | Uneducated | 2.0 | 0.3 | 21.9 | 19.2 | | |
| **Total** | | 5.8 | 2.3 | 52.2 | 45.8 | — | |

*Source:* Authors' analysis using AEPAM 2015, 2016, and LFS 2014/15.
*Note:* The information is for the purpose of estimating the magnitude of student flow, and it uses assumptions where there is lack of detailed data. The annual flow of populations coming out of schools is an indicative number of students leaving schools. They include both labor market entrants and NEET (Not in Education Employment or Training). The numbers were calculated from the grade-wise enrollment of 2015–16 and 2016–17 school years reported by AEPAM. However, accurate enrollment statistics, including private schools or nonpublic schools, do not exist in Pakistan. The uneducated are school leavers of grades 1–4, the majority of whom can be considered as under age 10. This study estimates the average annual dropouts from each grade and assumes they are considered economically active at age 15. Enrollment statistics for higher education are based on HEC data, but calibrated with the transition patterns calculated from AEPAM data.

## Policy Area 2: Establish foundational skills for better life and economic opportunities

***Recommendation 2.1:*** **A high-quality basic education system is essential in Pakistan for building foundational skills among the fast-growing youth population.** This policy area concerns the low-skilled group. Due to the ongoing issue of school dropouts, a large out-of-school population, and low level of learning achievement, a large number of uneducated or low-educated workers will continue to enter the labor market. To build a strong skills pool for the country, it is imperative to have good-quality basic education, including ECD. A strong basic education system will also make the system robust to the changing skills demand. International studies have shown vulnerabilities of technical and vocational skills at the time of technological changes.[23] As Pakistan rightly anticipates, technological changes will affect the labor market skills needs, and

[23] Countries that have sustained rapid growth over decades have typically demonstrated strong public investment in basic education. A common issue is how much of education should be general in nature and how much should be vocational. Vocational education is designed to provide students with specific job-related skills that will allow them to move easily into employment. This type of education appears very attractive when there are large youth unemployment problems, as is the case in many developing countries. However, Aghion and Howitt (2009) suggest that countries with productivities far from the technological frontier should put more emphasis on basic education rather than higher or vocational education. Basic education, a key foundation for building human capital, can provide a bigger boost for

one of the critical skills is to adjust to the changing skills demand. Workers should know how to learn and relearn the skills as needs change, and foundational skills acquired through basic education will allow workers to more smoothly adjust to the changing economy. Basic literacy and numeracy are transferrable foundational skills. The top priority of the country's skills development agenda is to ensure quality basic education for all.

***Recommendation 2.2:*** **Provide tailored support to out-of-school children for building their basic foundational skills, including basic literacy, numeracy, socio-behavioral, and vocational skills.** Out-of-school children are not a uniform group. They are a group of children who never attended school or who dropped out of schools. Their age group, socioeconomic background, and status of engagement with economic activities are also different. Their needs and constraints are also different and hence the appropriate actions for them are also different for different groups. What is common is that they are likely to be in the low-skilled group unless they get education or training opportunities; therefore, they should be the key target groups for the public policies when uplifting the skills base of the population. For young children, learning centers and mainstreaming to schools could be a possible option. If children are in their adolescence, nonformal education and combined skills development programs may be more relevant. It is important for the policy makers in Pakistan to identify their needs and constraints and address these through appropriate programs of foundational skills.

***Recommendation 2.3*****: Rebuild foundational skills of the low-skilled labor force.** In the labor force, there are about 30 million workers with less than a primary-level education (Table 18). While a good-quality basic education system can benefit the current and future students and the inflow of labor market entrants, actions are also needed for the existing low-skilled workers to enhance their productivity. One important trade-off that policy makers should be aware of is the economic returns to the educational investment. As already seen in Figure 23, the rate of return is the highest at ECD and then gradually diminishes. However, as there are still a large population of uneducated and low-skilled youth who will continue to contribute to the economy for many decades to come, polices and systems will be needed to support their skills development. A few possible interventions, as suggested below, can be considered for uplifting the skills of the existing labor force.

**Focus on foundational skills, including literacy, numeracy, socio-behavioral, basic TVET, and basic ICT skills, for the large group of currently unskilled or low-skilled workers and future workers.** As literacy and numeracy are basic requirements for many TVET programs and for doing more productive jobs, it is crucial that literacy and numeracy rates should increase for the population. Adult literacy rates (age 15+) in Pakistan are 68 percent for men and 45 percent for women (total 57 percent) in 2014–15. Operationally, there are examples of packaged skills development programs in Pakistan, which combine literacy, numeracy, and basic vocational programs. Adults learn differently than school children—due to time constraints or different life-learned knowledge levels. An adequate curriculum for adults and motivation for continued learning are also keys for such programs. It is also important that basic ICT skills, such as using mobile phones, become a part of basic skills in the 21st century. It is crucial to recognize that the current TVET system, especially long-term training, does not cater to the low-skilled group because of the relatively high educational (minimum of grade 8 or grade 10) requirement, and low-skilled workers need differently designed training packages.

**Establish an RPL system for giving opportunities to the existing workforce to recognize their skills obtained through their career.** The existing workforce has different motivations and constraints for their skills building, and they need different operational approaches than school- or institute-based training programs. RPL is an approach to recognize skills that the workforce acquired on the job, even if they are not formally educated or trained. It is a critical system for Pakistan given that a huge number of workers are in the informal sector and without proper certificates but have considerable work experience acquired through 'learning by doing.' It is therefore important for the group of low-skilled workers. RPL is not a training program by itself, but it is a system of certifying and standardizing uncertified and unrecognized skills of workers built on the

countries far from the global technological frontier—a group that includes most low- and middle-income countries (Aghion and Howitt 2009; Madsen 2014).

CBT&A skills qualification framework. One of the important reasons for the country to advance implementation of CBT&A programs is to enable wider implementation of RPL programs in various technology and trade areas.

**Establish quality foundational skills for all and support lower skilled–level individuals already in the labor force.** Self-employed and informal sector workers who comprise a large share in the economy also need good-quality foundational skills for enhanced productivity. The skills they demonstrate on a daily basis are simple but practical, and having foundational skills of literacy, numeracy, and personal interaction skills focused around the business context would enable them to start up businesses. Because a large proportion of the workers and those who are prone to enter informal self-employment work are low-skilled, training programs should reflect the actual skills demonstrated in the current labor market. Those skills include basic writing and filling out forms, and particular skills such as understanding financial statements and calculating prices and costs on their business. There are requirements for higher skills in the market, and some studies argue the importance of higher skills like English, computer, and information technology (Mustafa, Memon, and Khalil 2015). However, those skills are only needed in very limited formal work environments and cannot be applied to the overall labor market in the country. The labor force structure and today's student flow patterns call for a need for basic and practical skills for the majority of current and future workers.

## Policy Area 3: Build market-driven skills for local employability and globally competitive productivity

**There is a good prospect for the middle-skilled group, with educational attainment of lower secondary, secondary, and higher secondary to grow.** Currently, the middle-skilled group population consists of 32 percent of the labor force. One projection shows the proportion of labor force with secondary education will increase from 32 to 50 percent between 2010 and 2030 (Nayar et al. 2012). However, there are a few issues for this hopeful scenario to materialize. First, the current pace of enrollment increase at primary and secondary levels is much slower than the projected scenario. Second, the labor force participation rate of secondary graduates is among the lowest at 48 percent, which is lower than the 60 percent labor force participation among primary graduates or 53 percent among university graduates. The estimated annual number of entrants to the labor market from this group is 1 million per year, which is marginally larger than the low-skilled group. Changing the labor force structure will require a substantial increase in secondary education graduates and their labor force participation.

***Recommendation 3.1:*** **Well-balanced secondary education and TVET programs will be needed for the middle-skilled groups in the context of continuously changing technology and labor market structure.** The skills demand is continuously changing due to changing technology. While expanding access to vocational education can be an attractive option for policy makers seeking to improve labor market outcomes, studies have shown that there is a likely trade-off, where gains in youth employment from vocational education may be offset by less adaptability later in life (Box 9).[24] One immediate risk is potential automation of production. Once people have a strong foundation of literacy, numeracy, and socio-behavioral skills, it is much easier to acquire sector-specific skills when they have to change occupations. This approach is the main driver of economic growth and job creation: it lets people access learning opportunities as they need them under the lifelong learning concept, and it is a crucial means of preparing workers to compete in the global economy (World Bank 2003, 2010).

[24] For example, in Indonesia, the wage premium for male general education graduates against vocational graduates has increased dramatically because of the shift of economic growth drivers from the industrial sector to the service sector (Newhouse and Suryadarma 2011).

**Box 9: Vocational versus General Education**

Policy debates about the balance of vocational and general education programs focus on the school-to-work transition, and expanding access to vocational education can be an attractive option for policy makers in developing countries seeking to improve labor market outcomes. In Pakistan, Punjab has started an initiative to reintroduce vocational training courses in general secondary schools. Such programs existed in earlier years but faded out in the past. A similar initiative is also going on in other countries like India. Worldwide, empirical evidence on the merits of vocational education is mixed. Vocational graduates enjoy higher returns in Egypt (El-Hamidi 2006) and Thailand (Moenjak and Worswick 2003), while general education graduates earn a higher wage in Tanzania (Kahyarara and Teal 2008) and Indonesia (Newhouse and Suryadarma 2011).

On the other hand, an econometric analysis of employment and the wage impact of education streams in 18 countries (including 15 European countries, the United States, New Zealand, and Chile) using the International Adult Literacy Survey conducted from 1994 to1998 shows that there is a likely trade-off, where gains in youth employment from vocational education may be offset by less adaptability later in life. A life-cycle employment effect occurs, in which general secondary education graduates are initially less likely to be employed than those with a vocational education, but their employability becomes higher than vocational graduates later in life. There are also observed wage effects, where general education graduates earn less initially, but over time they earn more than vocational graduates (Hanushek et al. 2011). In Indonesia, the wage premium for male general education graduates against vocational graduates has increased dramatically because of the shift of economic growth drivers from the industrial sector to the service sector (Newhouse and Suryadarma 2011).

***Recommendation 3.2:*** **Ensure an industry-led, locally relevant, and flexible TVET system to respond to the changing demands of the skills.** In the context of continuously changing skills demand, it is important that education and skills development institutes constantly update their knowledge of the labor market demands and keep TVET programs flexible to respond to the demands. As the Pakistani labor market is still competitive on labor cost, the global wave of automation may not have as large an impact as in other upper-middle- or middle-income countries (like China, Mexico). However, if Pakistan is aiming to increase skills and productivity-led growth, automation will make the challenge of decent job creation more difficult, and making workers ready to use machines is gradually becoming more important.[25] They key is to work with industries through PPPs, industry links, and joint skills development efforts. There are good examples of flexible TVET programs, such as outsourcing the training programs or training service delivery to private sectors, as the PSDF or BBSHRRDB do in Pakistan. Partnering with automakers and inviting them to the institutes to invest in equipment and the teaching-learning process is already seen in STEVTA, PTEVTA, and PVTC. Investing in heavy machinery and equipment can be a resource constraint in some cases, but policy makers can think of adopting lease-based procurement of heavy equipment, which allows continuous maintenance services from the providers and regular upgrading of the equipment. It is also important to consider the relevance of skills for the local economy. As industries tend to cluster and groups of firms in the same supply network exist in the same geographical areas, developing training in specific value chains by working with the local firms to identify the skills needed in the local industries is also important. For example, surgical instruments, sporting goods, and the leather industry in Sialkot; textiles and garments in Faisalabad; and ceramics, cutlery, and utensils in Gujranwala are known industrial concentrations in Punjab (Khan 2018).

***Recommendation 3.3:*** **Consider multiskilled TVET for local labor market relevance and for a gig economy.** While the typical TVET approach is to focus on industry-specific skills, potential local entrepreneurs and self-employed workers may require a different set of skills, including skills in multiple areas. For example, industries may focus on a machinery electrician, but the self-employed may need to take on the role of auto electrician, wireman, machinery electrician, and/or refrigeration and air conditioning as a broader trade family

[25] An assessment of the global impact of automation was done by McKinsey Global Institute (2017). The report discusses the case of India, where the impact of automation is not as large as middle-income countries.

of an electrician's job. To serve the local needs better, expanding the mono-skilled TVET to multiskilled TVET will also enhance the marketability of TVET graduates, especially in the local and gig economies. Internationally, there are examples of TVET programs that consist of core and elective content, where elective content can be added to the core programs to have multidimensional skill sets which are often demanded in local economies or in an emerging gig economy where TVET engineers play handyman functions.

***Recommendation 3.4:*** **Provide entrepreneurship and digital training to promote entrepreneurship and participation in the gig economy.** The current structure of the labor market still has a limited share of decent jobs in the formal sector labor market. As a large part of the labor market still engages in an informal economy, improving the quality of work in the nonwage employment sector is also important, including promotion of entrepreneurship. Entrepreneurship skills are trainable as such training programs exist with a broad objective of providing individuals with the entrepreneurial mindsets and skills to participate in entrepreneurial activities (Valerio, Parton, and Robb 2014). Supporting access to credit for TVET graduates, as done in collaboration between PTEVTA and *Akhuwat*, is also a good example of supporting entrepreneurship. As online freelancing and the gig economy are expanding in Pakistan, knowledge of ICT will expand opportunities for TVET and secondary graduates to participate in opportunities enabled by technological advancement.

## Policy Area 4: Accelerate high-skill–led economic growth through skills for innovation and excellence

**There are an increasing number of high-skilled workers who can lead market innovations, but there is a potential issue of a lack of job opportunities.** This policy area will focus on building highly technical and innovative skills as economic leaders of the next generation. Post-secondary level technical education, university and higher education, and professional training are the main educational and training activities. The potential size of beneficiaries may be relatively small in comparison with medium- or low-category skills but is growing. Yet, tertiary education enrollments have increased during the past decades from less than 2.7 percent of the college-age population in 2002 to 10.1 percent in 2017. However, they seem to suffer from a lack of job opportunities and tend to queue for public sector jobs. Unemployment rates among more educated youth have been rising in recent years, presenting a concern around the availability of good jobs and potential public sector queuing (Bossavie, Khadka, and Strokova 2018).

***Recommendation 4.1:*** **There is a demand-and-supply gap of skills for specific occupations in the formal sector, and tertiary education systems would also need to be responsive to the labor market demands.** As seen in the example of the IT sector, skills requirement has shifted from traditional IT system engineers or network technicians to app and software developers, and web and multimedia developers reflecting the changing technologies. The tertiary education system should respond to the changing market demands and adopt new and labor market–relevant technologies in their programs.

***Recommendation 4.2:*** **Ensure analytical, socio-behavioral, and management skills are developed for high-skilled graduates to manage nonroutine works.** Jobs for graduates of post-secondary–level education demand nonroutine interactive skills (85 percent) and nonroutine analytic skills (77 percent). Demands for nonroutine analytical skills, project management, and people management are a distinguished feature of higher-skilled jobs, and the private sector also demands these skills.

***Recommendation 4.3:*** **For the country to develop higher segments of the industrial value chain, it is important that higher education institutes, post-secondary institutes, and TVET institutes build vertical chains to collaboratively establish economic sector-specific skills.** While universities, post-secondary institutes, and TVET institutes are under different administrative authorities, graduates of these institutes may work in the same industry but at different occupations. Industries need different skills at different occupational levels, and there is an opportunity for more integrated industry development if higher education institutes and

TVET institutes are aware of the range of technologies in the same technical domains. Vertical integration of technologies and trades will be more practically implemented with the implementation of NVQF.

## Policy Area 5: Strengthen opportunities within social comfort zones for women's work in the short run and expand the horizon in the long run

**Promoting gender equality makes economic sense in addition to being the right thing to do—South Asia loses 29 percent of potential wealth due to gender inequality.** Promoting gender equity is often discussed as part of the human rights discussion, and it is one of the Sustainable Development Goals. However, lack of economic opportunities, rising from cumulative inequality of human capital, entails large economic costs not only for women themselves but also for their households and countries. A study estimated that SAR loses the largest wealth due to gender inequality, amounting to 29 percent of the total potential wealth, as opposed to the global average of 14 percent (Wodon and De La Briere 2018). In Pakistan, women's contribution to GDP is estimated at only 11 percent as opposed to the world and Asian average of 36 percent, or estimates for neighboring countries like India (18 percent), Bangladesh (19 percent), or Sri Lanka (29 percent) (McKinsey Global Institute 2018). Women's engagement in the economy can potentially lead to multiple large gains for themselves, their households, and the country (World Bank 2019d).

***Recommendation 5.1:*** **Respect society's comfort zone for women's work in the short run and aim for longer-term transformation of the stereotypes.** There are many barriers that women face when they think about entering the labor market, but changing social norms and perceptions is a long-term transformation. Women's stereotypical traditional job areas are more socially accepted, as are new trade areas—such as handicraft, agriculture, caring, and teaching. However, more women are entering into new jobs, such as driving, ICT, or other light manufacturing and should not be barred from entering into new economic areas. Changing the gender landscape in nontraditional areas may require time for society to get used to, and respecting society's comfort zone toward women's work may be necessary in the short run for encouraging women's economic participation. Hopefully, society's comfort zones for accepting women's jobs in various economic sectors can take place in the long run.

***Recommendation 5.2:*** **Cope with social, household, and workplace constraints but establish a women-friendly ecosystem where women's economic participation is fostered, and their skills are utilized.** Today's priority from the skills development angle is to think of solutions that offer economic opportunities for women and solve women's constraints, and there are potential solutions for *womenomics.* For example, many women may have constraints to work in a male-dominant work place; some other women have childrearing responsibilities at home and they do not feel comfortable working full time outside the home. One demonstrated solution to such an issue by *Sanatzar*[26] was establishing nurseries and daycare facilities within a training institute. The training institute offers training programs to mothers while children are taken care of by the female caregivers who were trained by the same institute in the past. Such a model allows creating women's economic space by fostering training, solving household constraints, and generating new jobs for women. While women's work is also constrained by stereotypical female jobs, establishing new role models and new norms for women's work and such awareness raising would be important for gradual change of social acceptability of women's work.

**Home-based enterprise is an already existing model which has the potential for promotion as part of a women-friendly ecosystem.** Pakistan has the lowest rate of women's entrepreneurship in the world—only 1

[26] *Sanatzar*, a district industrial home, is a training cum production center. This scheme was launched in 1979 with the aim to provide an opportunity for socioeconomic uplifting of women in each district in Punjab, and there are 36 *Sanatzar* centers currently. The concept of *Sanatzar* is about empowering women and providing them with opportunities for skills development and self-employment.

percent of women are entrepreneurs compared to 21 percent of men (World Bank 2017b). However, household enterprises, particularly nonfarm household enterprises, are widespread in Pakistan (Weber and Langbein 2018) as part of the widespread informal economy. In fact, many female TVET trainees choose skill areas which they can practice at home—including cutting and sewing, dressmaking, embroidery, and beautician. Although these are rather traditional areas of women's work and nothing prevents women to engage in different types of work, these work styles already exist in the Pakistani society and could be an entry point for those who aspire to work but have not started to work. Key elements of success in women's entrepreneurship include a business-enabling environment, peer networking and learning opportunities, managerial capacity, enhanced autonomy, and financial support (World Bank 2017b). Currently, public and nonpublic sector training providers, including NGOs, offer various types of training for women in these trade areas. Improving the training programs by having more practical and entrepreneurial aspects would also help women engage in economic activities after completion of training.

## Policy Area 6: Commit to labor market outcomes, not to the supply of training

**Skills development is not for the sake of training but for expanding people's career opportunities and improving their life prospects.** Education and training service providers may think their responsibilities are to provide education and training services, but it is a mandate half-achieved. It is important that education and training institutes commit to the learning and training outcomes of the students and beneficiaries. For skills development, it is policy makers' responsibility to ensure the trainees are adequately equipped with skills that are demanded by the labor market, which means the skills development agenda should commit to the labor market outcomes.

***Recommendation 6.1:*** **Enhance job placement and career guidance system as it is an important responsibility of education and training institutes.** This report has seen the weakness in the job placement support and career guidance for TVET students. Many TVET graduates will have to rely on their own networking to find jobs in the wage employment sector. Information mismatches between labor market and jobseekers seem very large, and all students need to know possible career options and skills requirement for getting jobs that they desire. They should also need to learn how to search jobs, write Curriculum vitae (CVs), and prepare themselves for interviews. People who pursue the self-employment path also need facilitation support. They need to learn how to start up and run a business, how to borrow money from financial institutions, or how to sell and market their products. Currently, people use their own network or informal channel to find jobs and start-up jobs, but these are a necessary part of skills that job seekers should learn, and institutes and policy makers should support.

***Recommendation 6.2:*** **Link skills development policies with industry development policies and cross-sectoral approaches for skills building for economic development.** "Jobs need skills, pull skills, and build skills" (World Bank 2012). As in this proverb, skills development is closely connected with jobs and jobs are closely connected with the economy and external environment, including the business environment, foreign direct investment, trade policies, and so on. It is therefore important to tackle skills development through a cross-sectoral approach, including industry and agricultural development, climate investment, and any other external contexts. For example, the health sector will demand health practitioners, the energy sector will demand engineers for renewable energies, or the manufacturing sector will demand factory workers for producing market products. Skills development is about improvement of human resources in any sector, so training can be provided by each sector. It is important for the country to understand the various industry demands for skills, and education and training systems must provide skills development opportunities that are relevant to those sectors. Skills demand and supply can come from both public and private sectors, and effectively coordinating and connecting the skills for supply and demand will enhance the labor market outcomes.

***Recommendation 6.3:*** **Federal and provincial TVET systems need to be more integrated and pursue establishment of a coherent TVET system for the country; national level accreditation of programs may be helpful for better labor market outcomes.** From a TVET system angle, it is important that the provincial TVET reforms are also consistent with the national and federal directions. Many good reforms and technical activities are happening at provincial levels, such as development of CBT&A packages, and there are good examples of sharing such achievements with different provinces via federal engagement. However, overall, many reforms are carried out at provincial levels, and lessons from experiences are not shared with other provinces. Implementing a harmonized TVET system is helpful for the labor market to understand and trust the quality of training and credentials of certifications. India, for example, provided nationally accredited and state-accredited programs and ensured nationally accredited programs apply the same quality standards and follow standard norms across the states. National-level accreditation of TVET programs may be helpful for better labor market outcomes.

***Recommendation 6.4:*** **Continuously monitor labor demands and labor market outcomes of training.** To cope with the ever-changing skills demands of the economy, it is imperative that the training institutes and policy makers know the current skills demand and the relevance of the training that they provide. The relevance of skills means both technical skills and also socio-behavioral or cognitive skills of the workers. Today in Pakistan, comprehensive information of the labor market outcomes is absent. TVET institutes do not necessarily maintain information about graduates' job placement, and even if that exists, such information is not used by policy makers for improving the labor market relevance and the quality of training. Tracer studies of graduates for monitoring the labor market relevance of students' skills (including both technical, cognitive, and socio-behavioral) and the system of job and skill matching functions should be regularly and continuously monitored.

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