



# Profiling of the basic skills & competences required by the national ICT labour markets in Pakistan

Desk and Field Research Report



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# Profiling of the basic skills & competences required by the national ICT labour markets in Pakistan

The purpose this report is to conduct a profiling of the basic skills and competences required by the national ICT labor markets in Pakistan

## 1 Brief Summary of the Desk Research

IT Sector contributes about 1.4% of the GDP of Pakistan which amounts around to \$2.6 billion in 2018-2019 fiscal year. Pakistan has more than 7,000 IT businesses and 15 IT parks with IT-enabled infrastructure. During FY 2018-19, Pakistan's IT & ITES exports have grown at 8.18% while growth of export remittances by 151% during the current 5 years. According to Payoneer's Global Gig Economy Index, Pakistan has ranked on the top slot of the fastest-growing freelance market in Asia and 4th ranked globally with an exceptional growth rate of 47%.

Main sector of IT industry are Software and Services, Telecommunication, Banking, Commerce, Health and Transport. Website Development, Mobile App Development, Software Development, Artificial Intelligence Development and Animations are the main job roles in IT industry.

Understanding computer programming and strong coding skills is a prerequisite of every IT development job. SQL is the most popular classic database among developers. Software Engineering skills like Software Documentation, Debugging, Testing, and Software development fundamentals and process are also important. Developers needs to be proficient with the Integrated Development Environment (IDEs). Experience with cloud-based infrastructures, version control tools and project management tools a plus. To be a better programmer one must know at least the basics of Discrete Mathematics, Linear Algebra, Calculus, Statistics and Probability.

In addition to technical skills, IT employees need soft skills. The most important soft skills are communication, complex problem-solving, critical creativity, collaboration, persuasion, work ethic and emotional intelligence.

Based on experience of academics and industry experts following are usual weaknesses found in IT graduates e.g. rote learning, lack of analytical skills, less emphasis on IT tools at mainstream higher education, unable to apply math skills to real world problems and poor communication,



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soft skills, and presentation skills. A lack of vision and outdated curriculum creates the skills gap. Universities lack specialized programs and R&D grants. We overcome skill by focus on the need to fast-track the interventions required by improving the instructional design & teacher training material, initiating skills development programs, and renewing methods of assessments.

Among skills, Artificial Intelligence is among skills that can still use growth within Pakistan. Proficient understanding of cloud-based networks and systems is also a crucial skill that is needed by almost most of the growing tech business. For storing and processing huge streams of data, big-data experts can also make a huge difference within the tech-landscape of Pakistan. With the rise of the tech landscape, the need of maintaining secure systems can also increase the demand of cyber-security experts. Apart from the above essential skills, some of the complementary skills can also make a huge difference in the tech outcome of the country, some complementary IT skills are Project Management, Virtualization and System Architecture Management.

## 2 Field Research

In Field research, we take 10 on-line surveys with stakeholders of the ICT sector, 5 interviews with ICT market representatives, 4 interviews with representatives of recruitment agencies, 4 targeted consultation with ICT training providers.

### 2.1 On-line survey key findings

10 ICT professionals took part in this survey.

[https://docs.google.com/forms/d/1PVMRRo66nkQ-e\\_DTS51QkoesWtDgRjECZ2Q-q9PsQ2o/edit](https://docs.google.com/forms/d/1PVMRRo66nkQ-e_DTS51QkoesWtDgRjECZ2Q-q9PsQ2o/edit)

- Following are the profession of respondents

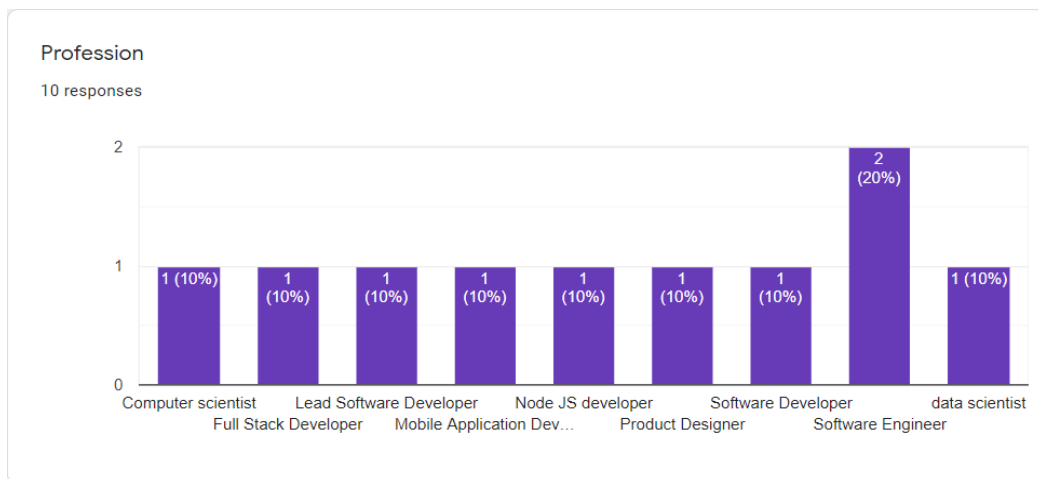


Image 1: Profession of respondents



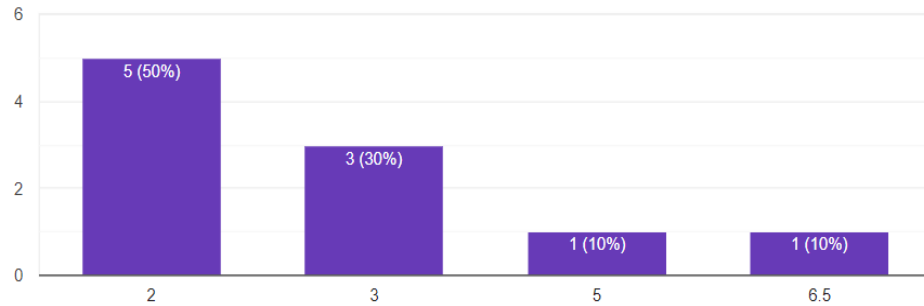
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- 5 professionals have 2 years of working experience and 5 professionals have more than 2 years of working experience.

How many years of work experience do you have ?

10 responses

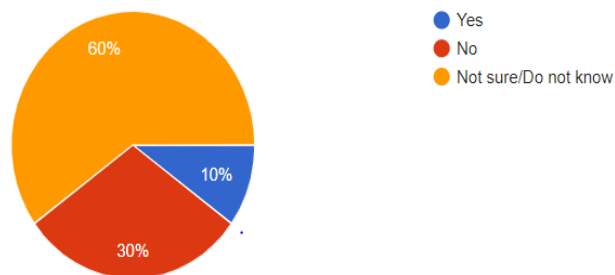


**Image 2: how many years of work experience**

- 4 professionals are from Educational Technology Company their company provides services related to Educational Content, games, and learning solutions. Companies of the other 6 professionals provide Software Development services.
- 6 say they Don't know whether refugees among their target beneficiaries. 3 say No and 1 says Yes.

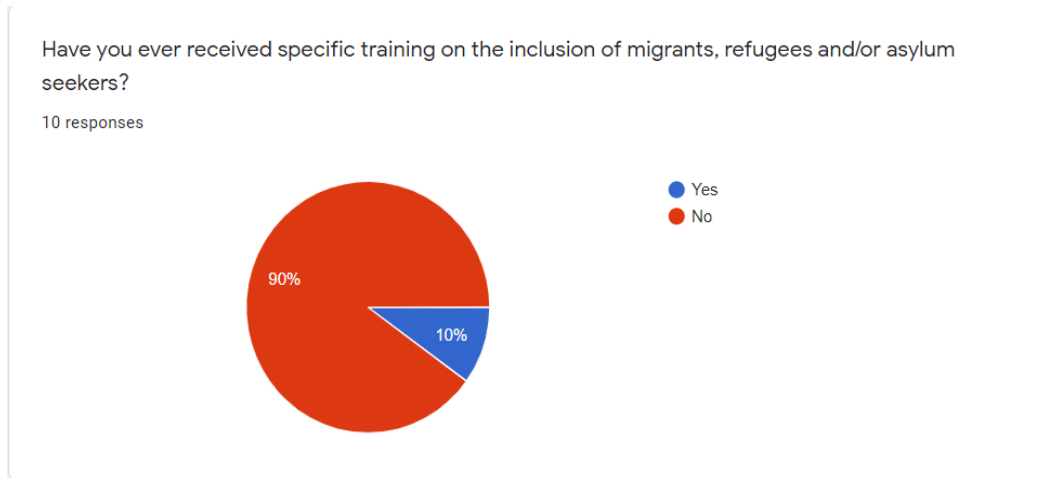
Are there any migrants/refugees among your target group/beneficiaries?

10 responses



**Image 3: Are there any migrants among your target group**

- 9 says they did not receive specific training on the inclusion of migrants, refugees and/or asylum seekers 1 say yes.



**Image 4: Have you ever received specific training**

- Below table shows how respondents respond when ask how important the following ICT skills and competences of the young migrants are.

	1 (poor knowledge)	2	3	4	5 (excellent knowledge)
Browsing, searching and filtering data, information and digital content		2	2	6	
Evaluating data, information and digital content		2	5	3	
Managing data, information and digital content			6	3	1
Interacting through digital technologies		2	2	6	
Sharing through digital technologies		1	3	6	
Engaging in citizenship through digital technologies		4	2	4	

Collaborating through digital technologies		2	3	4	1
Netiquette		7	2	1	
Managing digital identity		1	4	5	
Developing digital content		3	3	3	1
Integrating and re-elaborating digital content		3	4	3	
Copyright and licenses	1	2	4	2	1
Protecting devices		1	6	3	
Protecting personal data and privacy		2	4	3	1
Protecting health and well-being			5	4	1
Protecting the environment		2	2	5	1
Solving technical problems		2	4	3	1
Creatively using digital technologies		2	3	4	1
Identifying digital competence gaps		3	3	3	1
<b>F. Social Media</b>			4	3	3

**Table 1: Importance of Skills and Competencies**

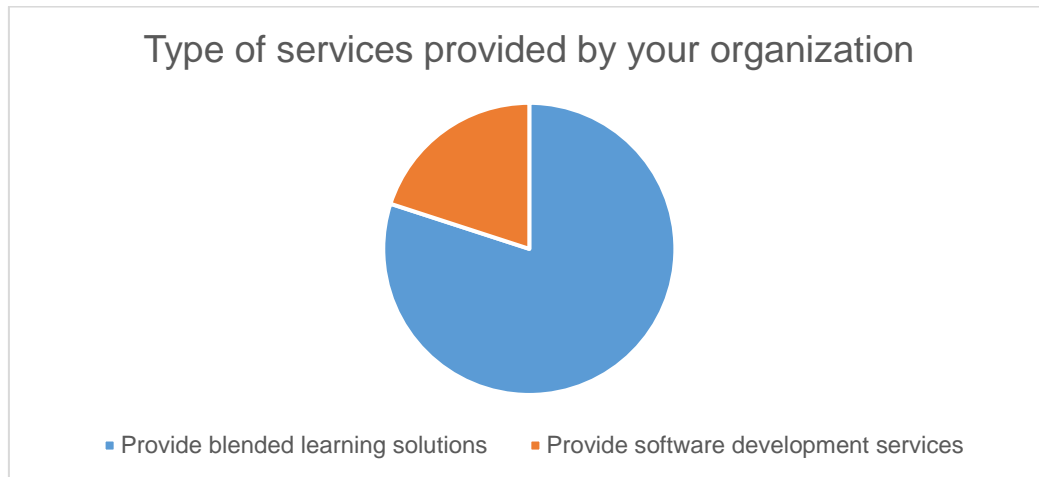
- According to 7 ICT professionals Communication and skills gap, Language barrier, trust issues, get fewer working opportunities and earn to survive alongside study are the main challenges faced by migrants wishing to enter to the labor market. 3 ICT professionals say they don't know about the main challenges.



## 2.2 Key findings reached through interviews with ICT market representatives

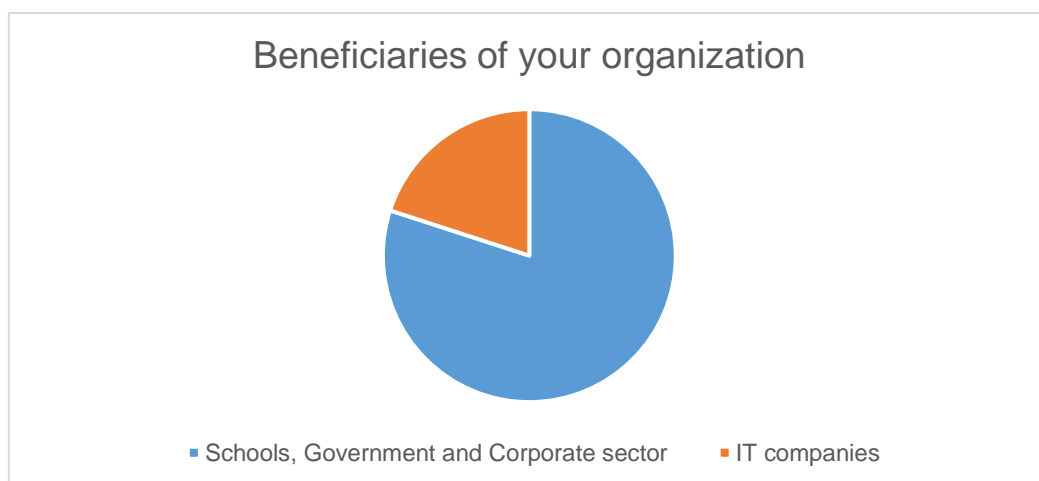
We took 5 online interviews with recognized experts and representatives of the ICT market

- 4 IT professionals companies provide service and support related to Education games, content, and learning management systems. 1 IT professional company provide software development services.



**Image 5: Type of services provided by organization**

- Target beneficiaries of 4 respondents are Schools, Corporate and Government sectors and IT companies are beneficiaries of 1 respondent.



**Image 6: Beneficiaries of organization**

- All 5 say they do not know whether migrants are beneficiaries of their organizations.

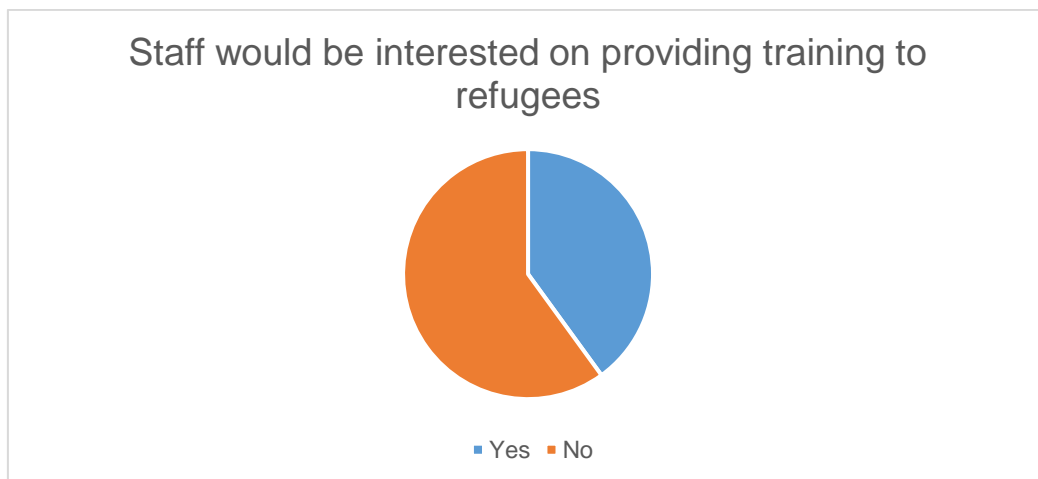


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- Following are the major main challenges faced by migrants wishing to build their knowledge on ICT skills:
  - Professional challenges: Language Barrier, Financial difficulties, Communication difficulties, faced difficulties in accessing quality learning
  - Psychosocial challenges: Helplessness, Anxiety, Loneliness, Depression, Migrants often felt alone, scared, traumatized and anxious.
- According to ICT professionals, following ICT related skills migrants need to improve
  - How to use computer software and hardware, how to manage files, must have basic knowledge of ICT, Knowledge of internet browsing, emailing and Microsoft Office
- Following are the main challenges faced by migrants/refugees wishing to enter to the labor market.
  - Language and Communication barriers, Lack of recognition of skills and education, and faced legal recognition difficulties.
  - Psychosocial challenges are Discrimination, racism, and anxiety.
- All 5 ICT professionals say the staff of their organization is properly trained for providing training to refugees
- 2 respondents say staff of their organization would be interesting to provide training and education to migrants/ refugees. 3 says their staff is not interested



**Image 7: Staff would be interested on providing training to refugees**

- 3 professionals say they don't know about any emerging good/ best practice in the area of initiatives for the integration of migrants/refugees in the labor market. 2 says United nation work in this field.

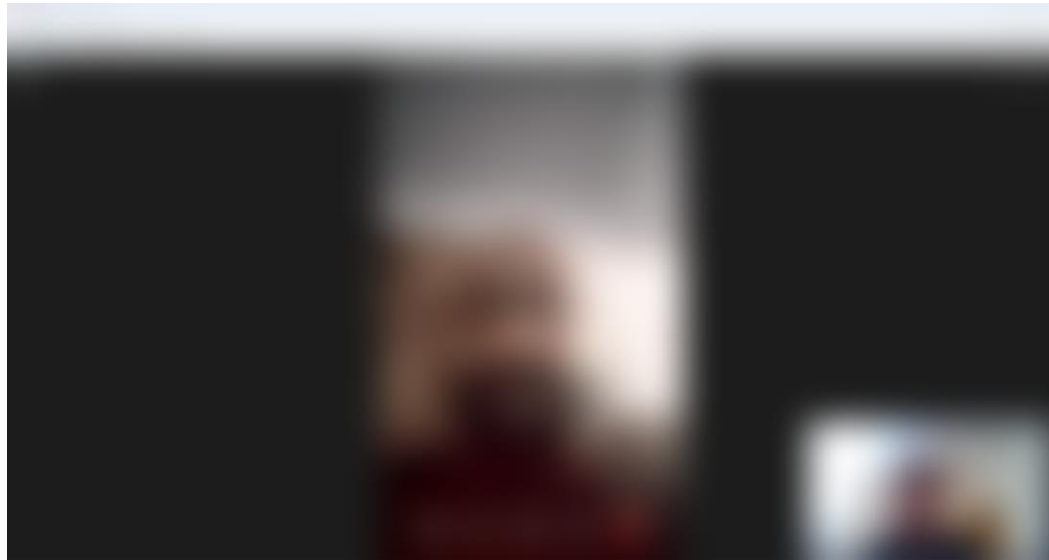


**Image 8: Screenshot of Interview.**

### 2.3 Key findings reached through interviews with representatives of employment agencies

We took 4 online interviews with representatives of employment agencies.

- Following are the major main challenges faced by migrants wishing to build their knowledge on ICT skills:
  - Language and Cultural barrier, faced difficulty in accessing quality learning, education, and skills-building opportunities, have limited access to quality education, financial issues, literacy difficulty
- According to ICT professionals, following ICT related skills migrants need to improve
  - Internet and Browsing, General computer use and Microsoft office
  - How to use ICT tools to find information and correct ICT terminologies
- Following are the main challenges faced by migrants/refugees wishing to enter into the labor market.
  - Professional challenges: faced difficulties in obtaining legal recognition, Language and Communication barriers, few employment opportunities, negative community attitude, and poverty
  - Psychosocial challenges: Refugees are often alone, scared, and traumatized, feel loneliness, helplessness, fear, sadness and distressed
- All 4 ICT professionals say the staff of their organization is properly trained for providing training to refugees.
- All 4 respondents say the staff of their organization would not be interesting to provide training and education to migrants/ refugees.
- 3 professionals say they don't know about any emerging good/ best practice in the area of initiatives for the integration of migrants/refugees in the labor market. 1 says NGOs will work in this field.



**Image 9: Screenshot of Interview.**

## 2.4 Key findings reached through targeted consultation with ICT training providers

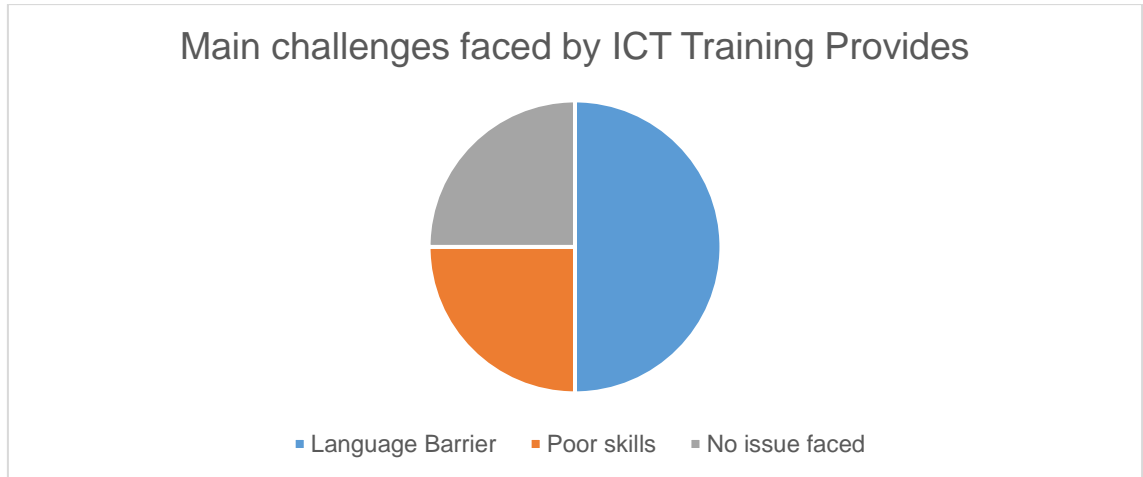
- Organization of All 4 respondents empower university students by conducting interactive technical and non-technical training and workshop sessions.
- Target beneficiaries of all 4 respondents are University Students. 3 says they do not know whether migrants are beneficiaries of their organizations. 1 says migrants are beneficiaries of their organization.
- According to ICT training providers, migrants have very little knowledge of ICT skills. Only Migrants who studied at university have some knowledge of ICT skills.
- Following are the major main challenges faced by migrants wishing to build their knowledge on ICT skills:
  - Professional challenges: Language and Communication difficulties, Fewer opportunities to build ICT skills knowledge, Lack of Counselling of refugees and Financial issues
  - Psychosocial challenges: Loneliness, discrimination, helplessness, depression, anxiety, and new cultural environment
- According to ICT Training providers, following ICT related skills migrants need to improve
  - How to use a computer and mobile phone, how to check emails and messages, how to use a web browser, and Microsoft office.
- All 4 ICT training providers say the staff of their organization is properly trained for providing training to refugees
- All 4 respondents say the staff of their organization would be interesting to provide training and education to migrants/ refugees.



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- 2 training providers say the Language barrier is the main challenge staff faced. 1 provider says very poor skill of migrants is the main issue and 1 provider says he did not face any challenge while training ICT skills to migrants.



**Image 10: Main Challenges faced by ICT training Providers**

### 3 Conclusion

This research is to profile the basic skills and competencies required by the national ICT labor markets. Major growing sectors of national IT industry jobs are Software and Services, Telecommunication, Banking, Commerce, Health, and Transport. Website Development, Mobile App Development, Software Development, Artificial Intelligence Development, and Animations. Field-based online interviews of 10 ICT professionals were conducted to learn about the skills gap between labor and industry. While interviewed ICT market representatives and training providers claimed that migrated labor is not well skilled for handling the emerging IT challenges, lack of training impartment, psychosocial and professional challenges being faced by refugees were highlighted by some of the interviewees. Hence there is a need of realizing a skills-training pathway for refugees as well so that they can contribute in the economy of the country.

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