



# SKILLS DEMAND SURVEY IN INFORMATION AND COMMUNICATION TECHNOLOGY SECTOR



Prepared for  
**Palli Karma Sahayak Foundation (PKSF)**

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**Human Development Research Centre**

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# **SKILLS DEMAND SURVEY**

## **IN INFORMATION AND COMMUNICATION TECHNOLOGY SECTOR**

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## Abbreviations

BACCO	Bangladesh Association of Call Center and Outsourcing
BACI	Bangladesh Association of Construction Industry
BANBEIS	Bangladesh Bureau of Educational Information & Statistics
BASIS	Bangladesh Association of Software and Information Services
BBS	Bangladesh Bureau of Statistics
BEIOA	Bangladesh Engineering Industry Owners Association
BGMEA	Bangladesh Garments Manufacturers and Exporters Association
BIDS	Bangladesh Institute of Development Studies
BKMEA	Bangladesh Knitwear Manufacturers and Exporters Association
BMET	Bureau of Manpower, Employment and Training
BPO	Business Processing Outsourcing
BSIC	Bangladesh Standard Industrial Classification
BTEB	Bangladesh Technical Education Board
BTMA	Bangladesh Textile Mills Association
CBLM	Competency-based Learning Materials
CBT&A	Competency-based Training and Assessment
CCTV	Close Circuit Television
CISC	Construction Industry Skills Council
CS	Competency Standards
DCI	Data Collection Instruments
DTE	Directorate of Technical Education
EBT	Enterprise-based Training
EIG	Employment and Income Generation
FYP	Five Year Plan
FY	Fiscal Year
GDP	Gross Domestic Product
GoB	Government of Bangladesh
HDRC	Human Development Research Centre
HSC	Higher School Certificate
ICT	Information and Communication Technology
IMT	Institutes of Marine Technology
ISC	Industry Skills Council
ISIC	International Standard Industrial Classification
ISP	Internet Service Provider
KE	Knowledge Economy
KEI	Knowledge Economy Index
KII	Key Informant Interview
KPO	Knowledge Process Outsourcing,
LFMEAB	Leather Goods and Footwear Manufacturers & Exporters Association of Bangladesh
LFS	Labour Force Survey
MoE	Ministry of Education
MoEWOE	Ministry of Expatriates' Welfare and Overseas Employment

MoU	Memorandum of Understanding
NGO	Non-government Organization
NSC	National Skill Certificate
NSDC	National Skills Development Council
NTVQF	National Technical and Vocational Qualifications Framework
PKSF	Palli Karma-Sahayak Foundation
RPL	Recognition of Prior Learning
RTC	Registered Training Centre
RTO	Registered Training Organization
SCDC	Standard and Curriculum Development Committee
SDCMU	Skills Development Coordination and Monitoring Unit
SEIP	Skills for Employment Investment Program
SMI	Survey of Manufacturing and Industry
SSC	Secondary School Certificate
TSC	Technical School and College
TTC	Technical Training Centers
TTTC	Technical Teachers' Training College
TVET	Technical and Vocational Education and Training
VTTI	Vocational Teacher Training Institute
WI-FI	Wireless Fidelity

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On this backdrop, PKSF entrusted Human Development Research Centre (HDRC) to perform this crucial and challenging task of skills demand survey. This survey is essential to explore occupation wise potential job demand and to determine the number of prospective human resources by skill level in ICT sector (e.g., less-skilled, semi-skilled and skilled) as per employers' demand in congruence with the objective of SEIP. This study is crucial to PKSF, as the data could be useful to formulate an action plan to ensure effective demand-driven skills training program for the less-skilled, underprivileged and low-income groups of people.

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## Executive Summary

Palli Karma-Sahayak Foundation (PKSF) is working with Skills for Employment Investment Program (SEIP) to support the targeted group of people to enhance their employable skills with the purpose of meeting the skills demand of the industries and self-employment as well. PKSF, through 22 training centers, is providing training mostly to the poor and low income group participants to improve their skills and make them employable. This study aims to let PKSF know the present and future skills demand as well as skills gap in Information and Communication Technology (ICT) sector of Bangladesh to formulate her future policy and program in the area of skills development.

In particular, this study aims to explore occupation wise employment demand in ICT sector and determine the number of prospective human resources by category of less-skilled, semi-skilled and skilled occupation. This task is likely to be accomplished according to employers' demand in congruence with the objective of SEIP. The specific objectives of the study are as follows.

- 1) To identify occupation wise job demand in ICT sector;
- 2) To examine the skills gap of existing human resources in comparison with potential job market demand;
- 3) To identify the causal factors of skills gap of existing human resources;
- 4) To formulate an action plan to ensure effective demand-driven skills training program for the less-skilled, underprivileged and low-income group.

### Study Design and Implementation

The study adopted both quantitative and qualitative tools to collect data and information from primary and secondary sources. Enterprise level survey was conducted to collect primary data on the job demand, skills gap and causal factors of skills gap by interviewing both employer and employee using semi-structured interview schedule. For primary data collection, this study followed non-probabilistic or purposive sampling with a total number of 10 enterprises for sample survey. Officially published data were also used extensively. Both quantitative and qualitative data were analyzed and triangulated. In addition, relevant stakeholders and knowledgeable entrepreneurs of this sector were consulted in different phases of the study.

### Study Findings

#### *Future Job Demand Assessment*

The projected future job demand in ICT sector indicates that the total number of employment in this sector will be 241,203 by the year 2022 and 524,552 by the year 2027 increasing from 110,911 in the year 2017. It also implies that 130,292 additional jobs will be created in this sector by the year 2022 and 413,641 by the year 2027.

The bulk employment in the ICT sector will be under less-skilled occupation. Less-skilled job will be on rise from 66.4 per cent in 2017 to 70.8 per cent in 2027; a total of 371,383 job will be created under less-skilled category in the year 2027 from 169,324 in the year 2022 and 73,636 in the year 2017. Among the different occupations under less-skilled category, considering the changed skill-mix assumption, the highest number of jobs will be created for Call center operator which is accounted for 186,216 jobs followed by Data entry operator (131,138) and Computer operator (41,964) in 2027.

The proportion of semi-skilled jobs will decrease during the period of 2017-2027 although the absolute number of employment will increase. Under the semi-skilled category, the projected number of job created will be 67,669 in 2027 and 33,285 in 2022 from 17,337 in

2017. Among different trades under semi-skilled category, in 2027 highest number of jobs will be created for Web based product marketing (23,605) followed by Digital graphic design (18,359); and Content developer (13,114).

Although the share of skilled worker in the ICT sector will decrease to 16.3 per cent in 2027 from 18.0 per cent in 2017, it does increase in absolute term. The projected number of jobs under skilled category will be 85,502 in 2027 from 19,938 in 2017. Under the skilled category of occupation, the highest number of job will be created for Web developer (52,455) in 2027.

The overseas employment in the ICT sector is much understated due to lack of available statistics. The dynamics of overseas employment in this sector has changed in last 5-6 years and the thrust is on skilled and professional employment.

### *Skills Gap Assessment and its Causes*

Competency assessment results obtained in this study is showing a very much dismal scenario where very few competent workers are found. Majority of the workers are either less-competent (87.8%) or semi-competent (10.6%) across the occupations. No competent workers are found in the less-skilled trades; while there is only one trade (digital graphic design) in the semi-skilled trades and one (web developer) in skilled trades, where some competent workers are found. This assessment indicates that there is serious skills gap or skills shortage in various occupations or trades in the ICT sector of Bangladesh.

Lower level of general education and non-attractive financial benefits were found to be the cogent reasons behind the existing skills gap in the ICT sector, followed by lack of English proficiency. Lower level of general education hinders further development of skills and non-attractive remuneration or financial compensation cannot motivate workers for further skills development.

Any particular standard skills development training is expected to develop three distinct types of qualifications namely, generic competencies, sector specific competencies and occupation specific competencies. BTEB develops comprehensive training curriculum and assessment mechanism to address these key competencies that are required for acceptability in both national and international market. Study finds that the reality is somehow different where the quality of training and certification is not up to the mark to satisfy the market demand.

### *Job Requirements and General Hiring Practices*

The requirements for various trades set by employers do not vary between domestic and international market to a large extent. Sector and occupation specific skills are required for particular occupations while there are a number of pre-requisites for all occupations referred as generic competencies. ICT enterprises usually recruit their manpower directly, not through any agency. In general, regarding recruitment of less- and semi-skilled manpower, the following requirements in addition to specific technical skills are expected to be met by the prospective employee. Such requirements are maintained with more importance in case of overseas recruitment.

- Age should not exceed a particular limit;
- Educational qualification (in some cases, it is a must);
- Physical fitness;
- Ability to read and write;
- Certificate on training or any other qualification (if any).

Job placement mechanism or recruitment procedure is important to understand how the job demand is absorbed in the marketplace. Advertisement in web portals was found the leading method for recruitment, followed by notice in the organizational website. These web-based methods will continue as dominant hiring practices in the coming days. Side by side, training centre and industry linkage could be a potential instrument to find out the qualified candidate to recruit in various jobs in the ICT sector. Experience is taken into consideration, to a larger extent, than relevant training for recruiting workers in the sector; along with noticeable gender dimension. The entrepreneurs seemed comparatively keen to the experience while providing employment to female job-seekers and to the training while providing employment to male job-seekers.

### *Skills Development System*

A good number of Bangladeshi public and private TVET institutions provide a number of courses and training programme for ICT sector. There is a total of 16 different courses and/or trades relevant to skills development of the sector. Each of the training courses has its own curriculum, duration, entry requirement and assessment procedure.

BASIS has a target to skilling up 23,000 IT workforces in collaboration with SEIP in 13 different courses. Bangladesh Bank, through 37 training institutes, is providing training support for 1,200 trainees. Through the Technical School and Colleges (TSC), DTE is managing skills development training for ICT sector. Total 64 TSCs, under DTE, are imparting basic and certificate level TVET courses. Under SEIP, DTE would provide training to 10,800 participants on Graphics Design and IT Support Technician course. With the help of SEIP, BMET has a target of total 230 training courses on IT Support Technical; Web Design and CAD (2D and 3D) where student per batch will be 30. PKSF has a target to train 10,000 participants, including ICT sector, in basic trade course. Name of PKSF supported training courses in ICT sector are: 1) Mobile Servicing; 2) IT Support Service; 3) Web Design and Graphic Design; and 4) Outsourcing (ICT). BACCO is working with SEIP to train 5,785 qualified-jobless person, with a stipend of BDT 3,000 per month, who are interested to join in the ICT sector.

### *Current State of Skills Acquisition*

Prior to joining their current job in ICT sector, an 18.3 per cent worker had skills development training, such as, computer training; website development; graphic design; office management; power and equipment; and finance and accounts. The prime motivation behind receiving these training was acquiring new skills (81.8%) followed by getting job after completion of training (63.6%). Majority of them (81.8%) found it beneficial for their performance in the present job.

An 18.6 per cent worker received some sorts of training from their current employer. All the training recipient female workers believed that training was gender sensitive with respect to infrastructure of training venue; behavior of authority and trainer; helpful in getting job and reproductive health needs. About one-third of the workers (31.7%) were in favor of training provisions in future. The reported areas of training among others are finance management and accounting (31.6%); computer operator (10.5%), database management (10.5%), graphic design (10.5%), website development (10.5%); system electronics (5.3%), and mobile application (5.3%).

The surveyed potential job seekers completed training on Computer operator (50%) and Outsourcing (50%) under the training category of trade course. Half of the respondents indicated that there was no verification of learning at the end of training whereas verification by internal assessor and external assessor was reported by 30 per cent and 20 per cent trainees

respectively. According to the potential employee/job seekers, training quality could be improved by taking few initiatives like introducing 2D and 3D content (55.6%); and inclusion of lessons on English language (44.4%).

Among various types of soft skills 90 per cent of employers keep the ‘positive attitude’ at the top of the list followed by mutual interaction and/or team work (70%); problem solving attitude (70%); and self-driven or motivated (40%).

### **Recommendations and Action Plan**

1. In ICT sector there will be a 524,552 jobs in 2027. Employment in this sector is absolutely captured by less-skilled and semi-skilled occupations and this scenario is expected to continue in the next decade. The high demand trades will include Call centre operator (186,216); Data entry operator (131,138), Web developer (52,455); Computer operator (41,964); Web-based product marketing (23,605); Digital graphic design (18,359); Manager for human resource management (17,310); Software developer (15,737); and Content developer (13,114).

Considering the future job demand in various occupations established by this study findings, skill development initiatives should target a number of occupations/trades. Such occupation/trade primarily includes Call centre operator; Data entry operator, Web developer; Computer operator; Digital graphic design; Software developer; and Content developer.

2. NSDC is developing competency standards for the trainings of ICT sector, among others. The courses and their duration are stated below. Training for the above-mentioned high demand trades should be designed on the basis of the following trainings as per CBT&A developed and set by BTEB and NSDC.

a) Computer Operation	580 hrs.
b) Graphic Design	400 hrs.
c) IT Support Technician	380 hrs.
d) Mobile Phone Servicing	360 hrs.
e) Common (NPVC 2; pre vocational)	360 hrs.

3. Since PKSF is working with NGOs for poverty eradication and most of them are creating jobs, self-employment, through Employment and Income Generation (EIG) program, PKSF could have special focus on providing skills training on Call centre operator; Data entry operator, Web developer; Computer operator; and Digital graphic design.
4. In order to ensure inclusion of people from low income group, following intervention strategy should be taken.
  - Trainee selection & need assessment should be done by the NGOs,
  - For easy initial placement, trainings for trades should consider local demand, and
  - Common training (NPVC 2) could be provided in order to make them prepared for further training.
5. It would be more useful to include issues on soft skills in training curriculum since a large number of less-skilled and semi-skilled occupations will be created in ICT sector.
6. Skills development training for the ICT sector imparted by the technical and vocational institutes in Bangladesh, should follow new TVET.

7. In order to minimize the mismatch of skills demand of industries and skills supply by the training institutions, it is important to ensure the competency, acquired from training institutes (TIs). So, TIs imparting government-financed training program should follow the new system.
8. Competency-based Learning Materials (CBLMs) built upon the competency standard approved by BTEB have to be prepared and used in the training. Periodical review of the CBLM is needed for updating knowledge and technology to be imparted by training institutes.
9. Training participants under RTOs should be given the opportunity to be assessed later on to get NTVQF certificate in case of unavailability of the BTEB accredited assessor on time.
10. Assessment should be done at entry level to know the initial qualification of the training participants and accordingly group them for a different level of training.
11. Based on the BTEB approved competency standards, learning materials should include core, trade and soft unit of competency. In addition, it should focus extra unit on labor rights, decent work, safe migration, green job, climate change, disaster and worker migration.