

Ministry of Technology

INFORMATION AND COMMUNICATION TECHNOLOGY AGENCY OF SRI LANKA (ICTA)

Terms of Reference

National IT and BPM Workforce Survey 2021

1. Introduction

Information and Communication Technology Agency (ICTA) of Sri Lanka is the apex ICT institution of the Government. In terms of the Information and Communication Technology Act No. 27 of 2003, (ICT Act) as amended by Act No. 33 of 2008, ICTA has been mandated to take all necessary measures to implement the Government's Policy and Action Plan in relation to ICT. In terms of Section 6 of the ICT Act.

ICTA's vision is to see 300,000 IT professionals, 500 digitally empowered government CIOs contributing to, and operating their digital infrastructure, while high levels of public sector and citizen digital literacy rates are achieved. The agency targets significant usage of shared solutions and digital services by 2024, which would vastly benefit citizens of Sri Lanka. From an industry perspective, Sri Lanka will enter the third wave of technology during the digital transformation, with 750 tech companies, 1000 IT and IT infused startups and 500 other technology startups in place by 2024. ICTA believes that this expansion and technology innovation would enable the industry to reach the US\$ 3 billion export revenue earner mark.

2. OBJECTIVE OF THE CONSULTING ASSIGNMENT

The primary objective of the workforce survey is to gain a clear understanding of the supply of employable IT BPM workforce against the current and projected demand for such workforce in the IT BPM industry. The respondents of the IT BPM workforce are categorized as follows;

IT Companies-Organizations with the primary business objective of providing IT products and services *including* software, hardware and telecom related IT services which includes Startups, SME's, Large Scale Organizations.

BPM Industry Organizations- Business Process Management (BPM) sector companies

Non IT Private Sector - organizations outside the IT sector that employ IT professionals (IT User Organizations)

Public sector- Ministries, departments, corporations and other Government organizations

IT Training Organizations -Universities, degree awarding and non-degree awarding private institutions, as well as government technical colleges (Degree, Higher National diploma).

The achievement of this aim will enable;

- i. The IT industry and BPM suppliers, IT user organizations and the public sector to gain a realistic picture of the overall demand and supply of IT Human Resources.
- ii. Universities and other IT and BPM training institutions to improve their offerings.
- iii. Students can make better course selections that will lead to higher employability in the IT industry.
- iv. Potential investors have vital information about the IT and BPM workforce that will help them to make their investment decisions.
- v. Policy makers use the data for Human Resource planning and development.

The IT Workforce survey will also replicate and build on the five previous survey rollouts completed in 2004, 2006, 2010, 2013 and 2018 which would enable a longitudinal study of the nature of the IT workforce. Where required, modifications deemed necessary might be made, but always ensuring that longitudinal studies can still be carried out.

3. SCOPE OF WORK AND TASKS TO BE CARRIED OUT

The following areas need to be covered when conducting the workforce survey.

3.1 Global overview of IT & BPM workforce

- i. By sub sectors IT and Non-IT organizations that employ IT professionals, BPM industry organizations, IT Training organizations including classification of job roles by diversity (gender, differently abled employees).
- ii. Global impact to the IT and BPM workforce due to COVID 19 including how the landscape has changed when it comes to the requirement of the industry workforce
- iii. Analysis of productivity growth due to new work setups adopted by the IT and BPM industry
- iv. Global demand for IT workforce

3.2 Composition of the current IT & BPM workforce by sub sector, geography and trends

- i. Workforce growth and profile are classified according to the job roles (including overall growth, growth by sub sectors, workforce by job categories, Migration of IT workers, Profile of IT workforce: Age profile, Gender profile, Experience & Qualifications).
- ii. Gender balance and observations on female participation and the challenges faced by females on equal participation
- iii. Measures taken by organizations to accommodate working mothers and their responsibilities and Differently abled individuals.
- iv. Geo information of workforce placements- Home offices/employee distribution geographically and related challenges.
- v. Analyse product and service delivery - workforce trends separately.

3.3 Demand for IT & BPM workforce including

- i. Number of graduates (Degree and degree equivalent, professional qualifications/certifications, Diploma and Certificate qualifications), skills, current and future trends, entry level qualifications, job advertisements etc.

- ii. Local Demand for IT workforce (including number of graduates, most sought after jobs).
The recommended respondents for the survey are CEOs, HR Managers and /or IT Managers, etc. In the case of government organizations it should be head of department
- iii. The desired skills of the recent industry hiring requirements including entry level qualifications
- iv. Desired competencies of the most current hiring requirements
- v. The desired soft skills of the most recent hiring requirements
- vi. Identify and document the future requirements and Potential IT jobs in demand
 - i. By analysing trends in both the local and foreign markets in relation the IT Industry
- vii. Information specifically on workforce and qualification requirements of product and service delivery companies)
- viii. Potential/projected most demanding jobs skills profiles which may arise by 2024

3.4 Supply to the IT & BPM workforce by diversity and geography (Province wise) including;

- i. Overall supply of graduates (Degree and degree equivalent, professional qualifications/certifications, Diploma and Certificate qualifications);
- ii. Supply by level of qualifications; major skills; enrolments & completion of IT qualifications (reflection of enrolment and completion gap).
- iii. School leavers joining Technology or related streams and their current competencies
- iv. Overall supply of TVET/ NAITA/VTA and Technical College graduates,
- v. Capture the level of employability of above mentioned (A to E) supply streams/institutions

3.5 Demand-Supply Gap -Gap between demand and supply of *graduates* as defined below;

3.5.1 Skill gap analysis

- i. Current demand vs. supply (locally)
- ii. Future demand vs. current supply (locally)
- iii. Global demand/supply vs. local demand/supply

This includes but not limited to gaps in terms of the availability of qualifications, availability of certifications, availability of academic programs, geographical distribution and any other relevant factors applying to a, b, c above

3.6 Recommendations provided for consideration

- Global success stories of countries supplying IT workforce for global demand (outsourcing countries, their IT capacity building strategies)
- Identifying and recommending appropriate prioritization of academic programs which contribute towards a future employable workforce.

3.7 Task 1: Methodology, Sample Frame and Questionnaire Design

- i. Consult representatives of ICTA and gather details on the requirements for survey design, questionnaire development and implementation time schedule.
- ii. Recommend and develop a comprehensive representative sampling frame of software and hardware companies, non IT user organizations, IT degree and non-degree awarding training organizations, BPM industry organizations and government institutes.
- iii. The Consultant must apply proven statistical methods when establishing the representative sample. The Consultant in his bid shall discuss and make proposals on how to select a representative and statistically valid sample.
- iv. The survey mainly consists of three sub samples; a) organizations that employ IT professionals to assess the demand b) BPM industry organizations, c) IT Training organizations to assess the supply of employable professionals. Different questionnaires will have to be used in each of the samples. Separate sections for collecting information on IT usage in each organization should be included in both questionnaires.
- v. In addition, secondary data should be collected on availability and content of IT subjects in schools. This data can be collected going through the records of IT units of line Ministries as well as the provincial education Ministries.

3.7.1 The Employer Organizations Sample-The employer sample includes four categories of organizations

- i. IT Suppliers: Organizations with the primary business objective of providing IT products and services *including* software, hardware and telecom companies)
- ii. IT Users: Private Sector organizations outside the IT sector, Public sector such as Ministries, departments, corporations and other Government organizations

3.7.2 BPM Sample _ Business Process Outsourcing (BPO) sector companies

3.7.3 The Training Organizations Sample-

- i. The sample of training organizations should include Universities, degree awarding and non-degree awarding private institutions, as well as government technical colleges (Degree, Higher National diploma).
- ii. The recommended respondents for the survey are CEOs, HR Managers and /or IT Managers, etc. In the case of government organizations it should be head of department or government Chief Innovation officers who are in charge of IT subject
- iii. Provide, in English, a detailed Survey Implementation Plan outlining all the steps involved in the design and implementation of the survey, including a project time schedule and resource plan, draft questionnaires (in English) and outlines of the instruction manuals to be developed. Submit the survey implementation plan to ICTA in electronic form and as a hard copy.
- iv. Develop two different questionnaires for IT Human resources employers and Training organizations for conducting interviews with relevant respondents of selected organizations. Provide all instruments and documentation to ICTA in electronic form and as hard copies.
- v. The survey questionnaire has to be developed by the Consultant in English. The Consultant in his bid shall present their understanding of the potential risk and challenges that they would face in conducting interviews in a survey of this nature.
- vi. Consultant in his bid shall discuss potential approaches that can be used for data quality assurance and validation.

3.8 Task 2: Survey Field Testing and Implementation

- i. The Consultant must provide the appropriate training to enumerators, supervisors, and data entry personnel in order to safeguard the collection of accurate data. Consultant must also present briefly the enumerator training approach, survey management and monitoring methods and any other additional quality control elements that can be used to ensure the reliability and validity of data.
- ii. Pre-test the questionnaire with appropriate sub samples (at least 5%). After the pre-test, if necessary, revise the questionnaire and documentation, if necessary, adapt the sample size to ensure that final results will be of statistical validity. A test of data entry (data entry program and procedures) must also be included in the testing procedures. Provide ICTA with a summary of test results and relevant comments and suggestions.
- iii. After approval by ICTA, conduct field operations and collect data in accordance with the plans and proposals developed previously. Measures should be in place to ensure the data quality.
- iv. The Consultant will be responsible for appropriate awareness raising among respondents of the survey, to inform about its purpose, value and requirements, and how participants can benefit from contributing effectively during the data collection process. *(The Consultant in his bid shall present approaches on how the necessary awareness raising can be achieved)*
- v. All appointments and arrangements with the companies need to be arranged and facilitated by the Consultant. ICTA will not be responsible for these meetings, but will help the Consultant to establish the initial contact with the relevant staff.
- vi. For data collection, the method of face to face interviews and key informant interviews must be used to gather information.
- vii. Consultants in his bid shall present techniques that can be used to ensure the required level of response rate and reduce as far as possible the non-response errors.
- viii. The Consultant must be able to facilitate the survey in three languages – Sinhala, Tamil and English. Additionally, the survey questionnaire will have to be produced and circulated in all three languages. Reporting requirements and other outputs of this assignment must be done in English.

- ix. Consultant will be responsible for managing this project, which will include taking care of administrative activities to structure and run the project effectively.
- x. ICTA will own the questionnaires and final report, and all related data/information in respect of this assignment. Additionally, ICTA will also have the right to reproduce and circulate the survey questionnaire, report and findings at its discretion.
- xi. Whenever possible all activities must be conducted by online communication techniques while ensuring the quality and reliability of data, to minimize physical contact and must adhere to current COVID19 prevention regulations issued by the Government of Sri Lanka.

3.9 Task 3: Data Entry, Processing, Analysis and Reporting

- xii. Enter collected data into database software. The software must be able to verify ranges and consistency of the data and generate reports indicating missing data, data outside of the accepted ranges, and inconsistent answers. Clean data records and verify that the sample is still sufficient for reliable statistics. Provide a brief data entry report to ICTA in electronic form and as hard copy. Together with the report, deliver the data base in MS Excel format containing all entered data records.
- xiii. Conduct data analysis. The Consultant will conduct exploratory data analyses (e.g. frequencies, percentage tabulations, and cross tabulations) of key survey variables and their correlations. Where necessary, statistical significance levels need to be calculated to enable proper interpretation of results.
- xiv. Provide, in English, a Final Survey Report presenting the results of the survey. The report must contain descriptive statistics of all variables of the survey, cross tables, and graphs. Selected variables should be presented by graphs and/or correlation measures. A critical review of the methodology, realisation, and results should be given, together with recommendations for improvement. The report must be submitted in electronic form and as a hardcopy.
- xv. Based on the findings, make recommendations that can be adapted by policy makers to improve the situation.

- xvi. Conduct a presentation workshop at ICTA to present and discuss Final Survey Report findings, when specified by ICTA. The Consultant will be expected to produce a report on the workshop deliberations, and make amendments to the Final Survey Report based on the workshop outcomes if necessary.
 - a. Consultants are advised to present all requirements for effectively carrying out the assignment in their proposals.

4.0 QUALIFICATIONS OF CONSULTANTS

4.1 Staffing

The key functions are (1) Survey design, Planning and development of survey tools, (2) Field Management, (3) Statistical Data Analysis, and (4) Project Management (5) strong expertise in the local IT industry 5) Report Writing.

The suggested minimum number of key staff is as follows (please see the table below). The Consultant is free to propose the number and structure of experts appropriate to his implementation approach, provided that the team properly covers the above mentioned functions. The following functions should be covered by project personnel: Survey Planning and Design, Field Management, Data Collection Supervision, Data Collection, Data Management, Data Entry, Data Analysis, Project Management, and Quality Assurance.

An adequate number of experts, who can, within the limited timeframe, facilitate and conduct surveys as well as analyse and report on survey data must be proposed by the Consultant. *[Personnel proposed to cover the key functions (Key Experts) must be included into the proposal with their full CVs (in accordance with the format provided)].* Positions to cover the other project functions must also be presented in the bid, including the number of staff, their input in terms of staff days, and their work schedule, but particular persons must not be nominated and their CVs not included into the proposal. A description of an appropriate team structure, team collaboration arrangements and project management functions must be included into the proposal.

Consultants are strongly recommended that all the survey enumerators/field staff are at least undergraduates from a recognized IT faculty. Consultants in their bid, shall discuss potential approaches that can be used for selection and effectively coordinate capable field staff.

Expert	Preferable Academic Qualification	Preferable Experience	Preferable number of similar assignments conducted
Team Leader/ Survey Specialist	Master's degree from a recognized university	<p>- Demonstrated experience at least 5 years in designing surveys, developing questionnaires, analysing and interpretation of data, and compiling into a report</p> <p>- Demonstrated knowledge of best practices in surveys and statistics</p> <p>Excellent language skills (Sinhala/ Tamil and English)</p>	At least 3 similar local/ global assignments specially in the areas of IT Industry and IT usage related surveys
Statistician	Master's degree from a recognized university	Minimum 3 years demonstrated experience in handling statistical analysis and implementing national level surveys /Project evaluations	At least 3 similar assignments
IT Industry Expert	IT/Computer Science Degree from a recognized university	<p>Degree in IT</p> <p>Minimum 10 years Demonstrated experience in local IT industry,</p> <p>In-depth knowledge in the local and global situation of the IT-BPM workforce</p>	3 similar assignments specially in the areas of IT Industry and IT usage related surveys
Project Manager	Degree from a recognized university in IT	Minimum 3 years demonstrated experience in managing surveys	At least 3 similar assignments

Survey Enumerators	Should be undergraduates or graduates from a recognized university	Language skills; Experience with the particular type of respondents will be an added benefit. Excellent language skills (Sinhala, Tamil and English) of the relevant staff.	Demonstrated experience in conducting face-to-face interviews at least in 3 surveys; All enumerators experience in similar assignments will be an added benefit.
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4.2 Survey organization

- i. The organisation should be specialised and have relevant experience in designing and conducting national level surveys, preferably in the area of IT for Development.
- ii. The survey organisation should be able to provide a strong network of enumerators and office facilities to facilitate information gathering and manage the survey successfully.

5.0 OUTPUTS, DELIVERABLES AND TIME FRAME

- i. The time duration for the assignment is 24 Weeks.
- ii. All reports and deliverables need to be prepared in English and submitted to ICTA in electronic form (DOC format and PDF) and one hard copy.
- iii. Questionnaire forms are to be prepared in English and translated into Sinhala and Tamil.

- iv. Upon completion of the project, ICTA will own all evaluation tools and reports, and all related data/information in respect of this assignment. Additionally, ICTA will also have the right to reproduce and circulate the evaluation tools and report at its discretion.

Phase / main reports	Task	Deliverable	Deadline
Inception Report	Finalize work plan, survey sites schedule, survey sample, enumerator training and survey questionnaires	Report on the survey approach, sampling frame and the survey sample survey questionnaires Detailed work plan Report on field staff training	Contract date + Week 3
Interim Report I	completion 50 % of the survey Progress update	Field Monitoring Report 1 (Details of survey implementation, monitoring and quality assurance activities conducted))	Contract date + Week 11
Interim Report II	completion 100 % of the survey Progress update	Field Monitoring Report 2 (Details of survey implementation, monitoring and quality assurance activities conducted)	Contract date + Week 19
Survey Draft Report	Completion of Survey, Completion of data entering and cleaning Completing data analysis	Draft Survey Report	Contract date + Week 21

	Presentation of draft survey report Progress update		
Survey Final Report	Incorporating comments on the draft report Submission of final report	Final Survey Report Completed questionnaires Completed database	Contract date + Week 23

6.0 CLIENT'S INPUTS:

The clients will provide the following documents / information to the consultants

- i. Relevant introductions for conducting the surveys in the selected agencies.
- ii. A list of government organisations, by which the Consultant can determine the sample frame.
- iii. A list of variables which are mandatory to include into the survey.
- iv. Background information of ICTA projects relevant for the implementation of the survey.

7.0 PROCEDURES FOR REVIEW OF OUTPUTS

A committee will be appointed by ICTA to review the outputs.