State of Palestine
Palestinian Central Bureau of Statistics

ICT Business Survey, 2021
User Guide

February, 2023

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1. Concepts, Indicators and Definitions

The following terms used in this report are defined in accordance with the Glossary and Guide on Statistical Indicators issued by PCBS, certified on the latest international recommendations in statistics, and consistent with international systems.

Statistical Unit:
Statistical unit in economic survey series is an enterprise, and defined as an economic entity that is capable, in its own right, of owning assets, incurring liabilities, and engaging in economic activities and transactions with other entities.

Establishment:
An establishment is an enterprise or part of an enterprise that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added.

Economic activity:
Referring to a process consisting of actions and activities carried out by a certain entity that uses labour, capital, goods and services to produce specific products (goods and services). In addition to that, the main economic activity refers to the main work of the enterprise based on the (ISIC) and that contributes by the large proportion of the value added, whenever more than one activity exists in the enterprise.

Number of employed persons:
This includes unpaid owners and family members, and paid employees, both permanent and temporary.

Paid-employed person (wage employee):
A person who works for a public or private employer or under its supervision and receives remuneration in wage, salary, commission, tips, piece rates or in kind …etc. This item includes persons employed in governmental, non – governmental and private institutions along with those employed in a household enterprise in return for a specific remuneration.

Information and communication technology:
It is used to describe the tools and the process to access, retrieve, store, organize manipulate, produce, present and exchange information by electronic and other manual automated means.

Internet:
The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer − it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network.

Mobile (cellular) telephone:
Mobile (cellular) telephone refers to a portable telephone subscribing to a public mobile telephone service using cellular technology, which provides access to the PSTN. This includes analogue and digital cellular systems and technologies such as IMT-2000 (3G) and IMT-Advanced. Users of both postpaid subscriptions and prepaid accounts are included.

Smart phone:
A smart phone refers to a mobile handset that is used as the person's primary phone device, which has smart capabilities, including Internet-based services, and performs many of the functions of a computer, including having an operating system capable of downloading and running applications those created by third-party developers.

Desktop:
A computer that usually remains fixed in one place; normally the user is placed in front of it, behind the keyboard.

Laptop:
A computer that is small enough to carry and usually enables the same tasks as a desktop computer; it includes notebooks and netbooks but does not include tablets and similar handheld computers.

Tablet:
A tablet is a computer that is integrated into a flat touch screen, operated by touching the screen rather than (or as well as) using a physical keyboard.

A web presence:
A web presence includes a website, homepage or presence on another entity's website (including a related business). It excludes inclusion in an on-line directory and any other web pages where the business does not have control over the content of the page.

E-commerce:
E-commerce is the sale or purchase of goods or services conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. The payment and the delivery of the goods or services do not have to be conducted online.

Web sales:
Web sales means sales placed via the web through: Websites for enterprise or apps, online store, web forms, extranet (web shop or web forms), booking/reservation applications for services, apps for mobile devices or computers or e-commerce marketplace websites or apps used by several enterprises for trading goods or services.

Cloud computing services:
Cloud computing refers to ICT services that are used over the internet to access software, computing power, storage capacity etc.; where the services have all of the following characteristics: are delivered from servers of service providers; can be easily scaled up or down (e.g. number of users or change of storage capacity) ; can be used on-demand by the user, at least after the initial set up (without human interaction with the service provider) ; are paid for, either per user, by capacity used, or they are pre-paid. Cloud computing may include connections via Virtual Private Networks (VPN).

The Internet of Things (IoT):
The Internet of Things (IoT) refers to interconnected devices or systems, often called "smart" devices or systems. They collect and exchange data and can be monitored or remotely controlled via the internet.

3D Printing:
Additive Layer Manufacturing (ALM) and 3D printing are equivalent terms for the same process. The latter is the popular term widely known while the former describes more precisely the process of joining materials to make physical objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing methodologies such as CNC machining or milling (e.g. lathe) that uses a rotating milling cutter to remove material from a solid block of material.

Artificial intelligence:
Artificial intelligence refers to systems that use technologies such as: text mining, computer vision, speech recognition, natural language generation, machine learning, and deep learning to gather and/or use data to predict, recommend or decide, with varying levels of autonomy, the best action to achieve specific goals.

Domain name:
It is the unique name by which a network-attached device. It is used to identify a particular host in various forms of electronic communication such as the World Wide Web, e-mail.

Website:
Location on the World Wide Web identified by a web address. Collection of web files on a particular subject that includes a beginning file called a home page. Information is encoded with specific languages (Hypertext mark-up language (HTML), XML, Java) readable with a Web browser, like Netscape's Navigator or Microsoft's Internet Explorer.

An Industrial Robot:
An industrial robot is an automatically controlled, reprogrammable, multipurpose manipulator programmable in three or more axes, which may be fixed either in place or in mobile for use. Most existing industrial robots are based on the robot arm with a solid base and a series of links and joints with an end effecter that carries out the task.

A Service Robot:
A service robot is a machine that has a degree of autonomy that enables it to operate in complex and dynamic environment that may require interaction with persons, objects or other devices, excluding its use in industrial automation applications. They are designed to fit their tasks, working in the air (e.g. as a drone), under water, or on land, using wheels or legs to achieve mobility with arms and end effectors to physically interact and are often used in inspection and maintenance tasks.

2. Survey Questionnaire

The questionnaire is the key tool for data collection; it was developed following a review of international recommendations and country experiences in this field, and discussion with stakeholders, through a workshop at PCBS to discuss products and indicators of the survey. It must be conformed to the technical characteristics of fieldwork to allow for data processing and analysis, in addition to identification data, quality controls.

The survey questionnaire consists of eleven sections covering many issues related to the access and use of information and communication technology by economic enterprises in various economic activities, in addition to access barriers, expenditures on information and

communication technology, and the volume of e-commerce in Palestine, in addition to a set of economic indicators related to financial activities.

3. Data Set Linkage

The data set are merged into one data file there is no need for key variable.

4. Target Population

Target population of ICT business survey included of all -profit non-governmental enterprises that work in any of the following activities (industry, construction, internal trade, services transportation and storage, information and communication, finance and insurance).

5. Sampling Frame

The sampling frame is the list of all economic enterprises that work in any of the following activities (industry, construction, internal trade, services transportation and storage, information and communication, finance and insurance) enumerated in the Establishments Census, 2017.

Sample size

The estimated sample size is 3,615 economic enterprises, of which 2,872 economic enterprises responded (2,051 in the West Bank and 821 in Gaza Strip).

Sample Design

The sample is a regular stratified random sample of one stage.

Sample Strata

Enterprises have been divided into three levels, they are namely:
First level, geographical classification of enterprises and was classified into two regions: The West Bank and Gaza Strip.
Second Level, economic activity of the enterprises was classified according to (ISIC-4) 2 digits.
Third level, employment size category of the enterprises was classified according to the number of employees as follow:

1. Enterprises that employ 4 employed persons and less.
2. Enterprises that employ 5-10 employed persons.
3. Enterprises that employ 11-29 employed persons.
4. Enterprises that employ 30 employed persons and more.

6. Classifications

Data collection and processing of statistical data was depending on classifications adopted by PCBS according to international standards compatible with the Palestinian privacy:

Classification of economic activity was according to the Palestinian Industrial Classification for Economical Activities (fifth digits), and this classification was prepared based on the International Standard Industrial Classification of All Economic Activities (ISIC-4).

7. Weights Calculation

The weight of statistical units (sampling unit) in the sample is defined as the mathematical inverse of the selection probability, where the sample of the survey is one-stage stratified systematic random sample, so we calculated the weight of each enterprise depending on the selection probability of each enterprise (a systematic random sample), then weights were

adjusted based on interview result. Adjusted weights are important to reduce bias resulting from non-responses.

8. Calculation of Variance

Data of this survey were affected by sampling errors due to use of the sample. Therefore, certain differences were expected in comparison with the real values obtained through censuses. Variance was calculated for the most important indicators as shown in tables below. Dissemination of results at the national level did not pose a problem.

Variance Estimation of the Most Important Indicators at the level of Palestine

Variable	Estimate	Standard Error	95% Confidence Interval		C.V%	Number of observations
			Lower%	Upper%		
Percentage of economic enterprises that used mobile phones for business purposes	91.9	1.0	89.9	93.6	1.0	2,746
Percentage of economic enterprises that used computer (desktop, laptop)	41.4	1.4	38.7	44.1	3.4	1,971
Percentage of economic enterprises that used or had access to internet for business purposes	61.1	1.6	58.0	64.2	2.6	2,260

9. Reference Date

The Reference Date for all parts of the Questionnaire is from 01\01\2021 to 31\12\2021. (Otherwise different reference period is determined**).**

10. Data Collection

Data of the ICT Business Survey, 2021 were collected through personal interviews using PC-tablets in both the West Bank and Gaza Strip, except for Jerusalem Governorate (J1), where the traditional paper questionnaires method was used due to its specificity, and the application was designed according to the supporting survey questionnaire with automated edit rules to check the logicality and consistency of the data, as well as being supported by alert or warning messages in the event of illogical and inconsistency in the data. As for Jerusalem Governorate questionnaire (J1), its data were entered on computers in the entry hall at the headquarters, and the same designed application for tablets was used.

Data collection process started on 22/03/2022 and was completed in all governorates on 31/05/2022. With the exception of establishments that employ 50 workers or more, their data collection ended at the end of July 2022.

11. Response Rates

The survey sample consists of about 3,615 enterprises of which 2,872 enterprises completed the interview; 2,051 enterprises from the West Bank and 821 enterprises in Gaza Strip. Weights were modified to account for non-response rate. The response rate in Palestine reached 88.8%

Response, Non-Response Cases and Over Coverage

Response, Non-Response Cases and Over Coverage	No. of cases
Response	
completed	2,825
Partially completed	47
Total	**2,872**
Non-response cases	
Temporarily closed	61
Could not reach the address	33
Refused	99
Other	171
Total	**364**
Over coverage cases	
Completely closed	349
Repeated	21
Central government	9
Total	**379**
Total sample size	**3,615**

Response and Non-Response Formulas: Response and Non-Response Formulas:

Percentage of over coverage errors = $\frac{\text{Total cases of over coverage}}{\text{Number of cases in original sample}} \times 100\%$

= 10.5%

Non-response rate = $\frac{\text{Total cases of non-response}}{\text{Net Sample size}} \times 100\%$

= 11.2%

Net sample = Original sample – cases of over coverage

Response rate = 100% - non-response rate

= 88.8%

12. Data Quality

Accuracy

The data accuracy test includes multiple aspects of the survey, most notably sampling errors and non-sampling errors that occur due to the staff and survey tools, as well as survey response rates and their most important impact on estimates. This section includes the following:

Sampling Errors

Data of this survey were affected by sampling errors due to use of the sample. Therefore, certain differences were expected in comparison with the real values obtained through censuses. Variance was calculated for the most important indicators as shown in tables below. Dissemination of results at the national level did not pose a problem.

Non-Sampling Errors

These types of errors could appear on one or on all of the survey stages that include data collection and data entry; known as response and non-persons errors (respondents) interview errors (fieldworkers), and data entry errors.

To avoid errors and reduce their effects, strenuous efforts were made to train the fieldworkers intensively. They were trained on how to carry out the interview, what to discuss and what to avoid, as well as practical and theoretical training during the training course.

13. Data Processing

Data processing was done in different ways including:

1. Tablet applications were developed in accordance with the questionnaire's design to facilitate collection of data in the field. The application interfaces were made user-friendly to enable fieldworkers collect data quickly with minimal errors. Proper data entry tools were also used to concord with the question including drop down menus/lists.
2. The application was examined by all members of the technical committee, and all comments were modified in addition to updates, and the transition between questions. It was also ensured that all edit rules were applied to the survey program, and the final version of the application was provided on time.
3. Developed and uploaded and automated data editing mechanism consistent with the use of technology in the survey to the application, as it is supported with error notifications or messages for fieldworkers for the purposes of data checking, editing or validating, in order to clean the data entered into the database and ensure they are logic and error free as much as possible. The tool also accelerated the extraction of preliminary results prior to finalization of results.
4. In order to work in parallel with Jerusalem (J1) in which the data was collected in paper questioners, the same application that was designed on the tablets was used to enter its data.

14. Derived Variables

Variable Name	Description	Variable values
weight	weight	
Interacted_GGI	interacted electronically with general government institutions	1. Yes 2. No
Web_Purchases	Have Web Purchases of Goods or Services	1. Yes 2. No
economic_activity	Economic Activity	1. Industrial Activities 2. Construction Activities 3. Internal Trade Activities 4. Transport & Storage Activities 5. Services Activities 6. Information & Communications Activities 7. Finance and Insurance Activities
Robotics	Used Robotics	1. Yes 2. No
SM03_Recode	Page Manegment the enterprise's social media or professional networks	1. Specialized team in the enterprise 2. Contracting with external companies or specialized persons 3. Specialized team in the enterprise and Contracting with external companies or specialized persons
emp_size_recode	Employment Size	1. (01-09) employed person 2. (10-49) employed person 3. 50 employed persons and more
Region	Region	1. West Bank 2. Gaza Strip
EC04_B2B_B2G_RECODE	What was the percentage breakdown of the value of web sales in 2021 by type of customer: Sales to other enterprises (B2B), Sales to public sector (B2G)	Percentage
SP07_B_C_RECODE	During 2021, did your enterprise have any of the following difficulties to recruit ICT specialists: Applicants lack of relevant ICT related qualifications from education and/or training, Applicants lack of relevant work experience	1. Yes 2. No