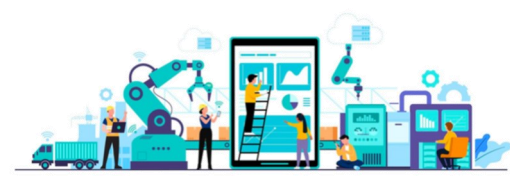


TECHNICAL NOTES



This page is deliberately left blank



A) CONCEPT AND DEFINITION OF DIGITAL ECONOMY

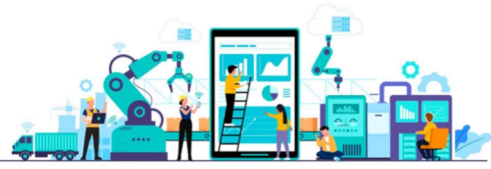
The **Malaysia Digital Economy 2024** publication presents a comprehensive overview of the nation's digital economy, compiling data from the Economic Census 2023 Usage of ICT and E-Commerce by Establishment (ICTEC), Economic Census 2023 Information and Communication Services, ICT Use and Access by Individuals and Households Survey Report (ICTHS) 2023, Information and Communication Technology Satellite Account (ICTSA) 2023, Quarterly Services Statistics (QSS), and digital economy indicators by the Department of Statistics Malaysia (DOSM) and relevant agencies. The publication integrates both monetary and non-monetary indicators to highlight how businesses, households, and individuals are embracing the digital age. The publication plays a crucial role in supporting the formulation of informed policies and strategies for the advancement of ICT and e-commerce in Malaysia.

CONCEPT OF DIGITAL ECONOMY

The digital economy has advanced as a result of ICT advancements, cloud computing, artificial intelligence, and other breakthroughs. In this economy, both individuals and businesses are increasingly dependent on digital mechanisms of exchange for economic and social purposes.

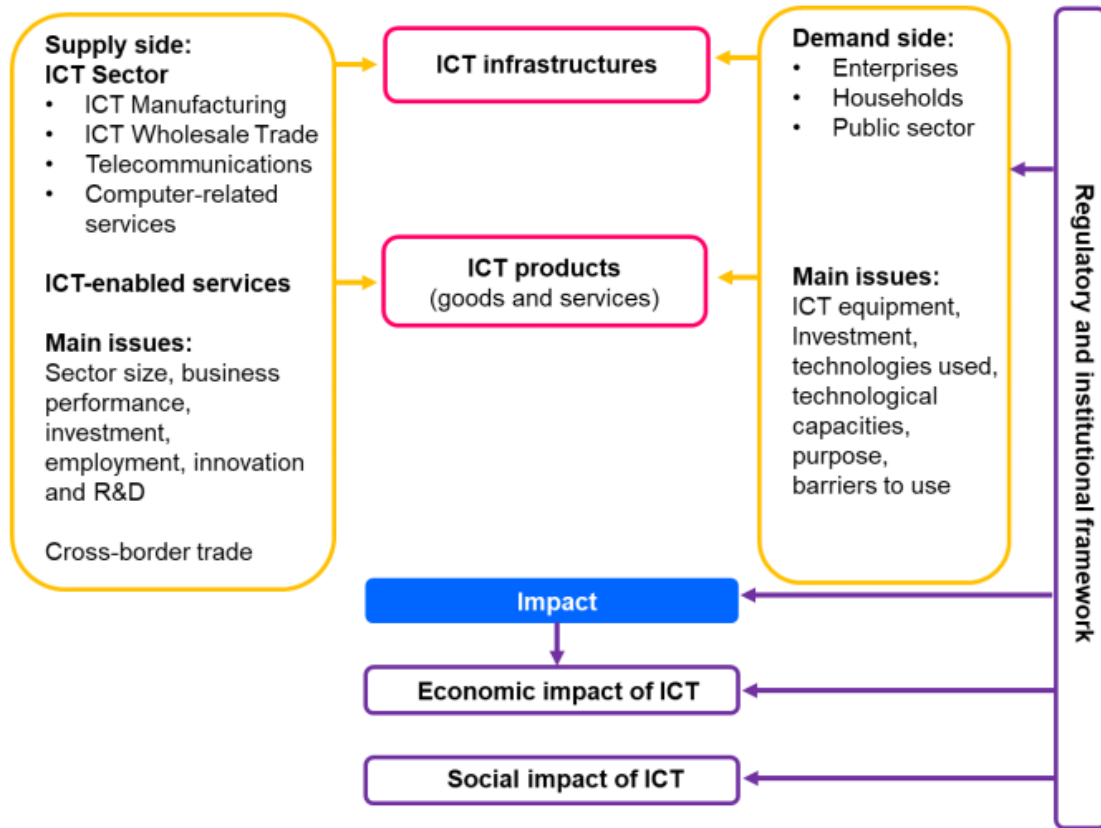
The term "digital economy" has become widely used to describe how digital technology is altering production (supply) and consumption (demand) patterns. The different technologies and economic aspects of the digital economy can be broken down into three broad components (UNCTAD, 2019):

- i. Core aspects or foundational aspects of the digital economy, which comprise fundamental innovations (semiconductors, processors), core technologies (computers, telecommunication devices) and enabling infrastructures (Internet and telecoms networks).
- ii. Digital and information technology (IT) sectors, which produce key products or services that rely on core digital technologies, including digital platforms, mobile applications and payment services. The digital economy is to a high degree affected by innovative services in these sectors, which are making a growing contribution to economies, as well as enabling potential spillover effects to other sectors.
- iii. A wider set of digitalising sectors, which includes those where digital products and services are being increasingly used (e.g., for e-commerce). Even if change is incremental, many sectors of the economy are being digitalised in this way. This includes digitally enabled sectors in which new activities or business models have emerged and are being transformed as a result of digital technologies. Examples include finance, media, tourism and transportation. Moreover, although less often highlighted, digitally literate or skilled workers, consumers, buyers and users are crucial for the growth of the digitalised economy.



At present, specific elements of the digital economy can be quantified according to the components or 'building blocks' of supply and demand (Figure a).

Figure a: Building Blocks of The Digital Economy



Note.

Source: Adapted from OECD (2005)

In terms of sector, there is not yet a broadly recognised definition of the digital economy, however the G20 Roadmap offers a first effort to a definition by distinguishing between three levels of measurement. In its broadest sense, the digital economy currently encompasses every economic sector; it has been described as;

“All economic activity reliant on, or significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services and data. It refers to all producers and consumers, including government, that are utilising these digital inputs in their economic activities” (OECD, 2020).

The OECD definition of the digital economy provided above is translated in a measurement perspective built around four layers, moving from the centre towards broader definitions in its outer layers.

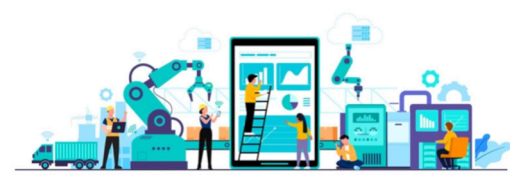
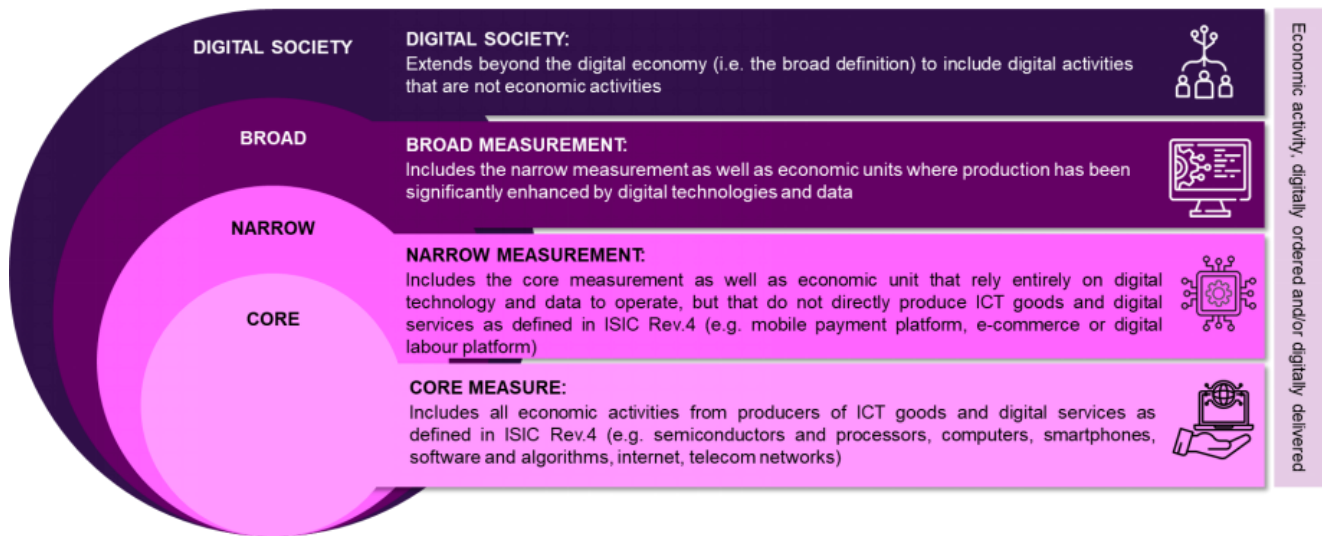


Figure b: Different Layers of Digital Economy

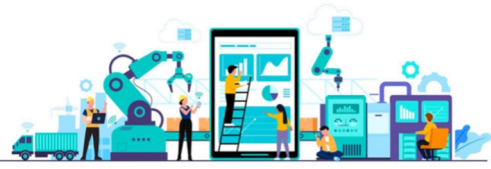


Note.

Source: OECD, 2020, A G20 Roadmap toward a Common Framework for Measuring the Digital Economy: A Report for the G20 Digital Economy Task Force (DETF), OECD Publishing, Paris.

Recent analysis in the Digital Economy Report 2024 by UNCTAD underscores the critical intersection of digitalisation and sustainability. UNCTAD emphasises the need to address the environmental impacts of digital technologies across their life cycle, from resource extraction to energy consumption and waste management. Simultaneously, digital innovations are widely acknowledged as tools to enhance efficiency, reduce emissions, and support environmental preservation efforts. The digital economy serves as a vital driver for equitable and sustainable development, potentially bridging digital divides and fostering environmentally conscious growth when guided by coordinated global efforts.

In Malaysia, the concept of the digital economy is defined as the economic and social activities that involve the production and utilisation of digital technology by individuals, businesses, and government (MyDIGITAL, 2021). This encompasses a wide range of activities facilitated by digital tools and platforms, from e-commerce to digital public services. The goal of Malaysia’s digital transformation, as outlined in the MyDIGITAL initiative, is to leverage this digital economy to foster economic growth, improve productivity, and create more high-paying jobs while ensuring inclusive and sustainable development across all sectors of society.



B) INFORMATION AND COMMUNICATION TECHNOLOGY SATELLITE ACCOUNT (ICTSA)

1. Introduction

Information and Communication Technology Satellite Account (ICTSA) of Malaysia 2023 is based on the System of National Accounts (SNA) 2008, the OECD Guide to Measuring the Information Society 2011 and the OECD Internet Economy Outlook 2012. The concepts and definitions are adapted to Malaysia's requirement.

2. Establishment of ICTSA

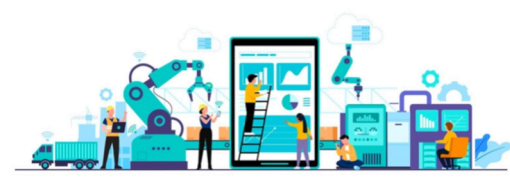
The compilation of ICTSA is made possible due to the well established of System of National Accounts in Malaysia. The term "satellite account" is adopted to reflect the nature of the account developed. It is a "satellite" to the core set of National Accounts that presents additional information which is beyond the available information provided in the National Accounts.

This satellite information focuses on a particular aspect of the economy for example contribution of ICT to the nation. It also permits further linkages to additional information specific to ICT such as income, exports, imports and employment. ICT consists of industries such as manufacturing, trade, services and content & media.

The development of satellite account is a systematic statistical measurement that applies concepts, definitions and classification which are based on international standard to enable comparison among countries. Various information available in different agencies is compiled to provide holistic and better picture of the impact of ICT industry in Malaysia.

3. Concepts and Definitions

- a. Information and Communication Technology (ICT)** refers to the technologies and services that enable information to be accessed, stored, processed, transformed, manipulated and disseminated, including the transmission or communication of voice, image and/or data over a variety of transmission media.



b. ICT industry refers to the industries which produce ICT products as primary activities. Details of ICT industry are described in the Classification Section. The main categories of ICT industry in the compilation of ICTSA are as follows:

1. ICT manufacturing
2. ICT trade
3. ICT services
4. Content and media

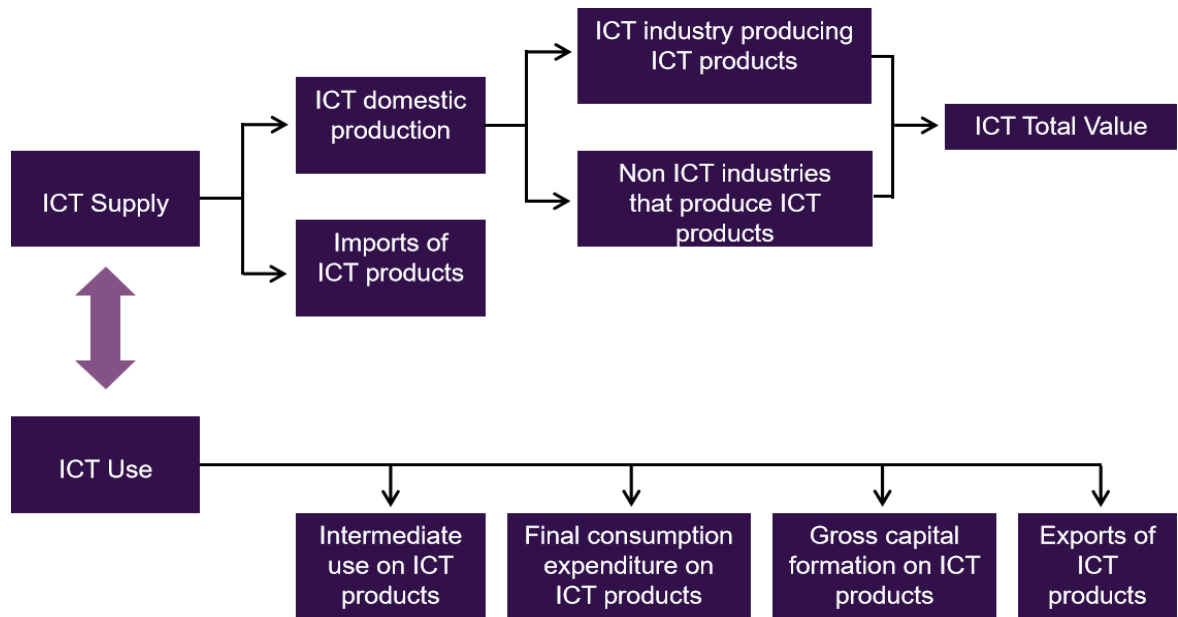
c. Non ICT industries refers to the industries other than ICT industries that produce ICT products.

d. The details of ICT products are listed in the Classification Section. The main categories of ICT products are as follows:

1. ICT goods
 - 1.1. Computers and peripheral equipment
 - 1.2. Communication equipment
 - 1.3. Consumer electronic equipment
 - 1.4. Miscellaneous ICT components and goods
2. ICT services
 - 2.1. Manufacturing services for ICT equipment
 - 2.2. Business and productivity software and licensing services
 - 2.3. Information technology consultancy and services
 - 2.4. Telecommunications services
 - 2.5. Leasing or rental services for ICT equipment
 - 2.6. Other ICT services
3. Content and media products
 - 3.1. Printed and other text-based content on physical media, and related services
 - 3.2. Motion picture, video, television and radio content, and related services
 - 3.3. Music content and related services
 - 3.4. Games software
 - 3.5. Online content and related services
 - 3.6. Other content and related services



e. Schematic view of ICTSA



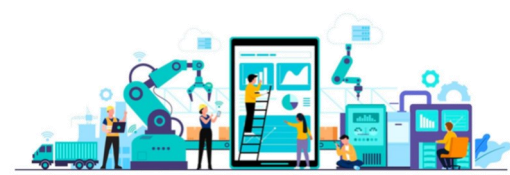
f. **E-commerce** transaction is the sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. E-commerce transaction can be between enterprises, households, individuals, governments and other public or private organisations.

Method of payment and the ultimate delivery of the e-commerce goods or services might be done through computer network/internet or traditionally.

E-commerce transactions include orders made in web pages, extranet or Electronic Data Interchange (EDI). Nevertheless, orders made by telephone calls, facsimile or manually typed e-mail are not categorised as an e-commerce transactions.

g. **E-commerce of non ICT industries** is an industries that is not categorised under the ICT industry classification.

h. **ICT to economy** consists of ICT industry plus e-commerce of non ICT industry.



4. Production Accounts of ICT Industry

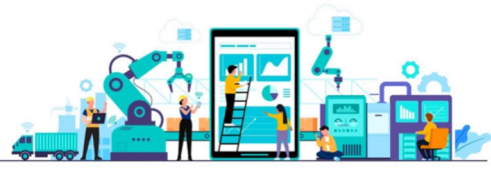
- a. **Gross Domestic Product (GDP)** is the total value of all goods and services produced in a certain period after deducting the cost of goods and services used up in the process of production. This value is before deducting the allowances for consumption of fixed capital i.e. the sum of value added of resident producer in producers' prices plus import duties. GDP is equivalent to expenditure on the GDP (in purchasers' prices) i.e. the sum of all components of final expenditure on goods and services less imports of goods and services.

GDP can be measured by using three approaches namely Production, Expenditure and Income Approach.

- b. **Value added** is the difference between output and intermediate consumption. It represents the added value of goods and services by economic activity. Hence, it is approximately equivalent to commercial profit, salaries and wages, depreciation and indirect taxes; plus interest paid less interest received.
- c. **Gross Value Added of ICT Industry (GVAICT)** is the sum of Gross Value Added of all ICT industry.

5. Generation Income Accounts of ICT Industry

- a. **Compensation of employees** includes remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done during the accounting period.
- b. **Gross operating surplus** refers the operating surplus before deducting the consumption of fixed capital and mixed income.
 - i. **Operating surplus** refers to measures the surplus or deficit accruing from processes of production before deducting any explicit or implicit interest charges, rent or other property income payable on the financial assets, land or other natural resources required to carry on the production. By definition, operating surplus can only be earned by industries.



- ii. **Mixed income** includes an unknown element of remuneration for work done by the owner of the enterprise or other members of the household, as well as operating surplus accruing from the production.
 - iii. **Consumption of fixed capital** is defined as the decline in the current value of the stock of fixed assets owned and used by a producer during the course of the accounting period as a result of physical deterioration, normal obsolescence or nominal accidental damage.
- c. **Taxes less subsidies on production and imports** consists of taxes on products and other taxes on production less subsidies on product and other subsidies on production.

i. **Taxes on products**

Taxes that are payable per unit of some goods or services and usually become payable when they are produced, delivered, sold, transferred or otherwise disposed by their producer. The tax may be a specific amount of money per unit of quantity of a good or service, or it may be calculated ad valorem as a specified percentage of the price per unit or value of the goods or services transacted. For example, sales taxes, excise taxes, import duties, export duties, etc.

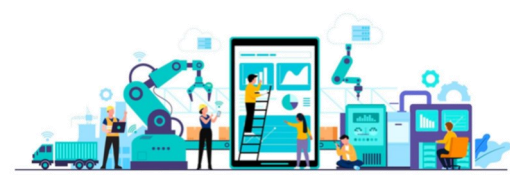
ii. **Other taxes on production**

Other taxes on production consists of all taxes except taxes on products that enterprises incur as a result of engaging in production such as taxes payable on land, fixed assets or labour employed in the production process or certain activities or transactions. Examples of other taxes on production are taxes payable by enterprises for business licenses, payroll taxes, stamp duties, etc.

iii. **Subsidies on products**

A subsidy payable per unit of a good or service. The subsidy may be a specific amount of money per unit of quantity of a good or service, or it may be calculated ad valorem as a specified percentage of the price per unit of the goods or services. A subsidy on products usually becomes payable when the good or service is produced, sold or imported, but it may be also payable in other circumstances such as when a good is transferred, leased, delivered or used for own consumption or own capital formation.

The subsidy may be designed to influence resident enterprises' levels of production or the prices at which their outputs are sold.



iv. Other subsidies on production

Other subsidies on production consists of subsidies except subsidies on products that resident enterprises may receive as a consequence of engaging in production such as subsidies on payroll or workforce. The subsidy may be designed to influence the remuneration of the institutional units engaged in production.

6. Framework of ICTSA

The basis of ICTSA compilation in Malaysia is the framework of supply and use tables (SUT). However, it only focuses on ICT products and industries. The supply table indicates the goods and services of ICT products that are supplied by each producer. Meanwhile, use table tracks the usage of those ICT products by industries, government, households and exports.

Supply of each product (valued at purchasers' prices) consists of;

- Domestic production by industry (valued at basic prices);
- Imports;
- Transport, retail and wholesale trade margins; and
- Taxes less subsidies on production and imports.

Use of each product (valued at purchasers' prices) consists of:

- Intermediate use by industries (products that are consumed by industries in the process of producing other products); and
- Final use by type of expenditure. Final use includes consumption households and government, products that have been capitalised, changes in inventories and exports.

A comprehensive use table includes primary inputs of production namely compensation of employees, gross operating surplus and other taxes less subsidies on products and production for each industry.

The SUT are used to assemble and integrate all data required to produce estimates of economic aggregates related to ICT. Output consists of those goods and services produced within an establishment which become available for use outside that establishment. The value of ICT output is the market value of ICT goods and services. Value added will be computed for ICT industry and non ICT industries which produce ICT products. The following table illustrates the basic structure of SUT.



SUPPLY TABLE

Supply of product	Output of industries at basic prices* (economic activities)				Imports	Total supply at basic prices	Trade and transport margins	Taxes less subsidies on products	Total supply at purchasers' prices**
	Industry A	Industry B	Industry ...	Total industry (1)	(2)	(3) = (1) + (2)	(4)	(5)	(6) = (3) + (4) + (5)
ICT product A	Output by product and by industry				Imports by product	Supply by product			
ICT product B									
ICT product C									
ICT product									
Total Supply (ICT product)	Total output by industry				Total imports	Total supply by product			

USE TABLE

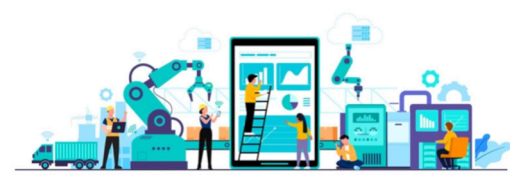
Use of product	Intermediate use by industry (economic activities)				Final consumption expenditure	Gross capital formation	Exports	Total use at purchasers' prices**
	Industry A	Industry B	Industry ...	Total intermediate use (1)	(2)	(3)	(4)	(5) = (1) + (2) + (3) + (4)
ICT product A	Intermediate consumption by product and by industry				Final use by product and by type of expenditure***			
ICT product B								
ICT product C								
ICT product ...								
Total use (ICT product)	Total intermediate consumption by industry				Total final use by product and by type of expenditure***			
Compensation of employees	Value added by component and by industry							
Gross operating surplus								
Taxes less subsidies on production and imports								
Industry output at basic prices*								

Note.

* Basic prices is the price received by the producer for a unit of good and service produced as output, excluding any tax payable or including any subsidy receivable on the product as a subsequent of its sales or use. It also excludes any delivery charges invoiced separately by the producer.

** Purchasers' prices is the price paid by the purchaser to take delivery of a good and service at the time and place required by the purchaser. It includes any transport charges paid separately by the purchaser.

*** Type of expenditure refers to the final consumption expenditure, gross capital formation and exports.



7. Measurement of e-commerce

Measurement of e-commerce value added is based on the manual OECD Internet Economy Outlook 2012. There are two recommended approaches, which are narrow and broad approaches. Narrow approach only takes into account value added from the wholesale and retail sectors. While, broad approach includes all industries across the economy.

It is assumed that the share of revenue from e-commerce to total revenue for each industry is proportional to the percentage of value added from e-commerce to the total value added for the same industry. Broad approach is used in measuring the e-commerce in Malaysia. E-commerce consists of the value of ICT industry and non ICT industries.

8. Data sources

The data sources in compiling ICT Satellite Account are as follows:

INDUSTRY / DATA	DATA SOURCES
ICT manufacturing industries	<ul style="list-style-type: none"> • GDP
ICT trade industries	<ul style="list-style-type: none"> • Economic Census
ICT services industries	<ul style="list-style-type: none"> • Annual Survey
Publishing of books, periodicals and other publishing activities	<ul style="list-style-type: none"> • SUT
Motion picture, video and television programme activities	
Sound recording and music publishing activities	
Programming and broadcasting activities	
Other information service activities	
Non ICT industries	
Exports and imports of ICT goods and services	<ul style="list-style-type: none"> • External Trade Statistics • Statistics of International Trade in Services
Tax and subsidies	<ul style="list-style-type: none"> • GDP Income Approach



INDUSTRY / DATA	DATA SOURCES
Government final consumption expenditure	<ul style="list-style-type: none"> Financial Accounts of Federal Government, State Government, Local Authorities and Statutory Bodies
Private final consumption expenditure	<ul style="list-style-type: none"> GDP Household Expenditure Survey
Gross capital formation	<ul style="list-style-type: none"> GDP
Compensation of employees	<ul style="list-style-type: none"> GDP Income Approach
Gross operating surplus	<ul style="list-style-type: none"> GDP Income Approach
Employment	<ul style="list-style-type: none"> Annual Labour Force Survey Annual Economic Survey Quarterly Survey of Services Monthly Manufacturing Survey Monthly Survey of Wholesale & Retail Trade

9. Main Tables ICTSA

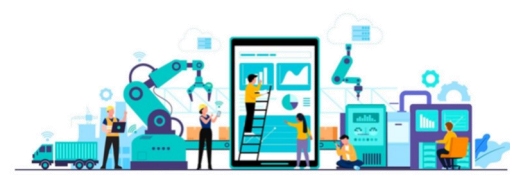
ICTSA comprises of nine (9) tables of each table and the explanation are as follows:

Table 1: ICT industry and non ICT industries that produce ICT products

Table 1 contains the statistics on all industries that produce ICT products. This table derived from SUT 2015 according to the ICT product classification. For the subsequent years, data is based on published Annual GDP.

Table 2A, 2B and 2C: Supply and use of ICT products

Table 2A, 2B and **2C** present the statistics on the supply and use of ICT products. The value of supply must be equal to the value of use of ICT product. The data on the supply and use of ICT products are derived from the SUT 2015. For the subsequent years, data are based on published Annual GDP. Industry and products have been selected based on the ICTSA classification. Supply of ICT products data comprises of domestic production of ICT products,



imports of ICT products and tax less subsidies on ICT products. Use of ICT products data consists of intermediate use of ICT products, final consumption expenditure of ICT products by households and governments, gross capital formation for ICT products and export of ICT products.

Table 3 and Table 4: Exports and imports of ICT products

Tables 3 and 4 consists the exports and imports statistics for ICT products. Data from goods extracted from the customs declaration (International Trade Statistics) where the compilation is based on the Harmonized Commodity Description and Coding Systems (HS) code. Meanwhile, the value of the exports and imports services is derived from the balance of payments statistics. The arrangement also took into account the recommendations by the 2008 SNA and Balance of Payments and International Investment Position Manual Sixth Edition (BPM6) particularly in implementation on treatment of Goods for Processing from Abroad (GFP) and Manufacturing Services (MS).

Net exports are one of the important variables used to calculate the GDP. When net exports are positive, it shows a trade surplus and when it is negative, it represents a trade deficit.

$$\text{Net Exports} = \text{Exports Value} - \text{Imports Value}$$

Table 5: Income components of ICT industry

Table 5 consists statistics on Income components of ICT industry comprises of compensation of employees, gross operating surplus and taxes less subsidies on production and imports. This statistics is derived using on SUT 2015 according to the ICT industry. For the subsequent years, data is based on published Annual GDP Income Approach.

Table 6: Employment in the ICT industry

Table 6 is statistics on employment data in the ICT industry. The statistics is compiled using Annual Labor Force Survey, Annual Economic Survey, Quarterly Survey of Services, Monthly Manufacturing Survey and Monthly Survey of Wholesale & Retail Trade are obtained by the Department of Statistics Malaysia.

Table 7A, 7B and 7C: Gross Value Added of ICT Industry

Table 7A, 7B and 7C comprise the Value Added statistics of ICT Industry at current prices. The measurement of Gross Value Added of ICT Industry is the sum of Gross Value Added of all ICT industry. Statistics is obtained from published Annual GDP.



Table 8A and 8B: Gross Value Added of e-commerce

There are two table for e-commerce. Table 8A are present the Gross Value Added of e-commerce by ICT industry while Table 8B was Gross Value Added of e-commerce by main sector. Measurement of e-commerce value added is based on the OECD Internet Economy Outlook 2012. Data are based on the percentage of e-commerce revenues by industries from the Economic Census 2016. For the subsequence years, data is based on Usage of ICT and E-Commerce (ICTEC).

Table 9: ICT contribution to economy

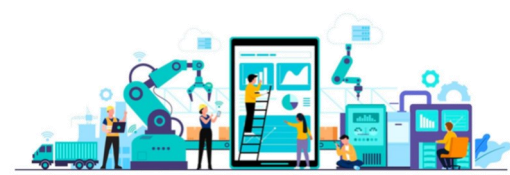
Table 9 is statistics to economy which is comprises Gross Value Added of the ICT Industry (Table 7) and the Gross Value Added of e-commerce by non ICT industries (Table 8A).

8. Publication and Data Revision

This publication presents ICTSA for the year 2015 to 2023. The series will be updated whenever any latest data available.

9. Symbols

- : negative
- .. : not applicable
- e : estimate
- p : preliminary
- 0 : value less than 0.05
- % : per cent



C) ECONOMIC CENSUS 2023 INFORMATION AND COMMUNICATION SERVICES

1. SCOPE AND COVERAGE

The census covered all registered establishments engaged in **Information and Communication Services** which included main activities as follows:

- i. Publishing;
- ii. Motion picture, video & television programme production, sound recording & music publishing;
- iii. Programming & broadcasting;
- iv. Telecommunication services;
- v. Computer programming, consultancy & related activities; and
- vi. Information services.

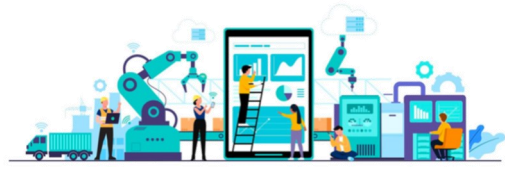
Overall, coverage of the survey for Information and Communication Services was 35 industries at 5-digit level under the Malaysia Standard Industrial Classification (MSIC), 2008.

Coverage for year 2010 and above are not the same as the coverage in 2009 and below, due to differences in the classification of activity (2010 and above - MSIC 2008; 2009 and below - MSIC 2000). Publishing activities are not covered in Information and Communication Services prior to 2009 and motion picture, video and television programme production, sound recording and music publishing activities are covered only in this services after 2010.

2. SOURCE OF FRAME

The main source for the establishment statistics frame is from the Malaysia Statistical Business Register (MSBR), while for the Accommodation sub-sector, includes unregistered homestay. MSBR is a list of establishments/ enterprises operating in Malaysia that includes the Register of Companies (ROC), Register of Business (ROB) and Limited Liability Partnership (LLP) registered with the Companies Commission of Malaysia (CCM) as well as establishments registered with local authorities (LA) and professional bodies. The list in the MSBR is updated regularly based on surveys and censuses conducted by the Department of Statistics Malaysia (DOSM) and administrative data sources from various agencies. The main source of administrative data is from the CCM.

In addition DOSM also works together to obtain the latest information from other agencies such as the Employees' Provident Fund (EPF), the Royal Malaysian Customs Department, the Inland Revenue Board (IRB), LA and professional bodies. The frame is updated by taking into account new establishments and any changes in the status of the establishments such as closed down, not in operation, change in activity and location/ correspondence address so as to ensure that the frame is at the most current status.



3. TYPE OF BUSINESS ACTIVITY

Type of business activity refers to both principal and secondary activities. The principal activity refers to the activity to which the establishment devoted most of its resources or activity which derived most of its income. Secondary activities are defined as those incidental or ancillary to the principal activity. The classification of the industry of the establishment is based on the principal activity and is in accordance with the Malaysia Standard Industrial Classification (MSIC) 2008 Ver. 1.0 conforms to the International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4, United Nations, with modifications to suit local conditions.

4. CONCEPTS AND DEFINITIONS

Concepts and definitions of Information and Communication Services adopted in this publication is based on the recommendations of the Malaysia Standard Industrial Classification (MSIC) 2008 Ver. 1.0:

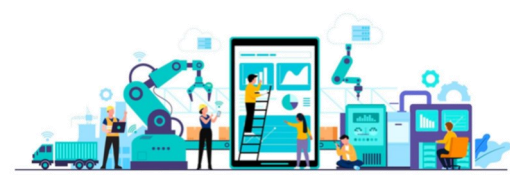
i. Publishing activities

Publishing includes the acquisition of copyrights to content (information products) and making this content available to the general public by engaging in (or arranging for) the reproduction and distribution of this content in various forms. All the feasible forms of publishing (in print, electronic or audio form, on the internet, as multimedia products such as CD-ROM reference books, etc.), are included in this division except publishing of motion pictures.

ii. Motion picture, video and television programme production, sound recording and music publishing activities

Motion picture, video and television programme production, sound recording and music publishing activities include production of theatrical and non-theatrical motion pictures whether on film, video tape or disc for direct projection in theatres or for broadcasting on television; supporting activities such as film editing, cutting, dubbing, etc; distribution of motion pictures and other film productions projection to other industries; as well as motion picture or other film production projection.

Also included is buying and selling of motion picture or other film productions distribution rights. Besides, it also includes the sound recording activities, i.e. produce, release, promote and distribute the original sound master recordings, publishing of music as well as sound recording service activities in a studio or elsewhere.



iii. **Programming & broadcasting activities**

Programming & broadcasting activities includes the activities of creating content or acquiring the right to distribute content and subsequently broadcasting that content, such as radio, television and data programme of entertainment, news, talk, and the like. Also included is data broadcasting, typically integrated with radio or TV broadcasting. The broadcasting can be performed using different technologies, over-the-air, via satellite, via a cable network or via internet. This division also includes the production of programme that are typically narrowcast in nature on a subscription or fee basis, to a third party, for subsequent broadcasting to the public (limited format, such as news, sports, education, or youth-oriented programming).

iv. **Telecommunication services**

Telecommunication services includes the activities of providing telecommunication and related service activities, i.e. transmitting voice, data, text, sound and video. The transmission facilities that carry out these activities may be based on a single technology or a combination of technologies. The commonality of activities classified in this division is the transmission of content, without being involved in its creation. The breakdown in this division is based on the type of infrastructure operated.

v. **Computer programming, consultancy and related activities**

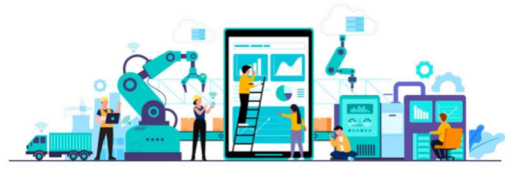
Computer programming, consultancy and related activities includes the following activities of providing expertise in the field of information technologies such as writing, modifying, testing and supporting software to meet the needs of a particular customer; planning and designing computer systems that integrate computer hardware, software and communication technologies; on-site management and operation of clients' computer systems and/ or data processing facilities; providing infrastructure for hosting or data processing services; and other professional and technical computer related activities.

5. **CENSUS YEAR**

Refers to the year in which a census was conducted.

6. **REFERENCE YEAR**

The reference year of the census was the calendar year 2022. Establishments whose accounting year differed from calendar year were requested to report according to the accounting year or financial year covering at least six (6) months in the reference year.



7. METHOD OF COLLECTION

This census was generally conducted through three (3) methods of data collection, namely:

7.1 Online method through the e-BE portal

This method targets respondents who have used this method for previous routine surveys.

7.2 Data collection method via e-mail, post, fax and telephone

This method targets respondents who have used this method for previous routine surveys. Respondents were given a period of one month to complete and return the questionnaire to the DOSM.

7.3 Face-to-face data collection method

Field work operation is carried out to get feedback from establishments that have not yet given answers from the two methods above and this method also targets establishments that have never been involved in a routine survey of DOSM.

8. REPORTING UNIT

The reporting unit used in the Economic Census 2023 is the establishment. An establishment is defined as "an economic unit engaged in one activity, under a single legal entity and operating in a single physical location". Each establishment is assigned an industry classification based on its principal activity and not according to the activities of the parent company.

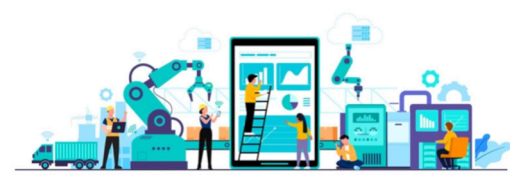
Thus, each branch of a multi-branch organisation at a different location was conceptually treated as a different establishment. The establishment is requested to give separate returns for each activity in terms of value. However, if in practice, the accounts are centrally kept such that it was not possible to obtain separate data for each individual unit or branch. That entity or enterprise is treated as a single reporting unit and allowed to submit a consolidated questionnaire covering all units or branches.

9. LEGAL STATUS

The legal status of an establishment is defined as follows:

9.1 Individual proprietorship

This refers to a business, owned and operated by one person for his own profit. The owner has the exclusive right to control the operation of the establishment.



9.2 Partnership

This refers to a group of individuals who agree to contract and to carry out a business with the objective of profit making. All shareholders or anyone could manage the business for all parties. A trading partnership must comprise of at least two members and should not exceed a maximum of twenty members.

9.3 Limited liabilities partnership

Refers to business entity regulated under the Limited Liability Partnerships Act 2012. It is featured with the protection of limited liability to its partners similar to the limited liability enjoyed by shareholders of a company coupled with flexibility of internal business regulation through partnership arrangement similar to a conventional partnership; and

9.4 Private limited company

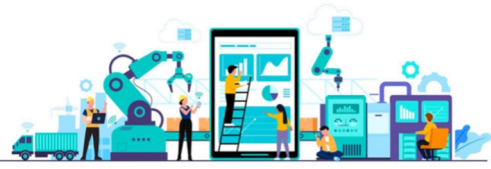
A private company established to undertake a business with the objective of making a profit. The shares are closely held by the shareholders of the company who have control over its operation.

Characteristics:

- i. Regulated under the Companies Act 1965 and is a legal entity separate from the owners;
- ii. Number of its shareholders between 2 - 50 members;
- iii. Company owners have limited liability;
- iv. Shareholders who own 51 per cent or more of the total shares shall be entitled to manage the company. The company's shares can be traded but not in the open market;
- v. Trading of share must be with the consent of the other shareholders;
- vi. Not listed on the Stock Exchange; and
- vii. Business life expectancy is longer and can be identified by the words "Sendirian Berhad" (Sdn. Bhd.) at the end of the company name.

9.5 Public limited company

A public limited company is a company established with limited liability, by a minimum of two persons to operate the business with the objective of making a profit. The shares in a public limited company are openly held and in the case of company listed on the Bursa Malaysia, the shares are freely transferable.



Characteristics:

- i. Regulated under the Companies Act 1965 and is a legal entity separate from the owner;
- ii. Owned by the shareholders and there is no limit to the shareholder;
- iii. Management of the company is under the board of director responsibilities as appointed by shareholders; and
- iv. Listed on Bursa Malaysia.

9.6 Co-operative

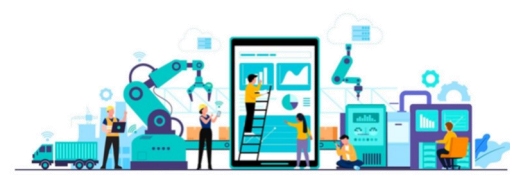
This refers to a voluntary association with unrestricted number of members and registered under the Co-operatives Act 1993. Funds are collectively owned to meet the needs of members.

9.7 Public corporation

This refers to an undertaking set up under a Special Act Parliament or by the State Legislature.

9.8 Private non-profit making organisation

This is non-stock company set up with limited liability. It comprises mainly welfare, religious, educational, health, cultural, recreational and other organisations providing social and community services to households. These services are provided free of charge or at prices, which do not necessarily or fully cover the cost of providing such services (subsidy). Any profit made is reinvested in the organisation.



10. OWNERSHIP

The ownership of an establishment is classified by the residential status of the owner (s) of the majority (more than 50%) of the paid-up capital and not by their citizenship status. In instances where each party (Malaysian Resident and Non- Malaysian Resident) held equal shares in the business, the establishments were classified as "Joint Ownership".

A Malaysian Resident is any individual, company or other organization ordinarily domiciled in Malaysia for a period of at least one year. Malaysian registered branches and incorporated subsidiaries of foreign based/origins are also regarded as Residents.

A Non-Malaysian Resident is any individual, company or other organization ordinarily domiciled in a country other than Malaysia. Foreign branches and/or subsidiaries abroad owned by Malaysian Residents are also regarded as Non-Residents.

11. VALUE OF GROSS OUTPUT

The value of gross output of **Information and communications services** is defined to include the following items:

- + Income from services rendered
- + Income from repair and maintenance services for telecommunication services and installation services for telecommunication networks
- + Income from advertising and online advertising space
- + Subscription income and income from providing program to other broadcasting establishments
- + Royalties, copyrights, licensing, franchise fees and licensing of rights to use syndicated media content
- + Income from commissions and brokerage earned and management services
- + Rental income received (except for rent of land) and leasing of computer hardware
- + Value of sales (good / materials purchased for resales without undergoing further processing)
- + Other operating income
- + In-house research and development expenditure
- + Built / self-produced fixed assets
- Cost of goods sold (goods/material purchased for resale without undergoing further processing)



12. VALUE OF INTERMEDIATE INPUT

The value of intermediate input of **Information and communications services** is defined to include the following elements:

- + Purchase of goods, materials and services
- + Payment for data processing and other services related to information technology
- + Cost of material used includes materials for repairs and maintenance
- + Costs of films purchased for projection, payment for programmed provider and payment for rental of films
- + Amount paid for outsourcing, payment for current repairs & maintenance work done by others and payment for providing workers
- + Domestic interconnect and international out payment
- + Royalties paid to non-government organizations / corporate sponsorship (local and foreign)
- + Telecommunication, printing cost and advertising and promotion
- + Expenditure for electricity, water, fuel, lubricants, gas, stationery, office supplies and others
- + Payment for security services and warranty claim
- + Operation expenditure and Operational lease
- + Fees paid to non-working directors for their attendance at Board of Directors' meetings
- + Other operating expenditure
- Changes in stock (Closing stocks - Opening stocks)

Effective 2014, research and development expenditure has been removed from calculation of intermediate input and treated as capital asset in line with the Recommendation of System of National Accounts (SNA) 2008.

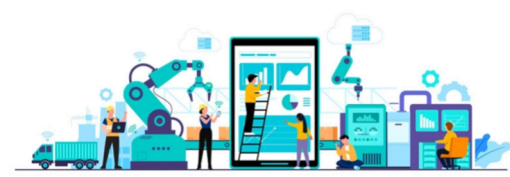
13. VALUE ADDED

Value added is increment to the value of commodities and services contributed by the establishment. Value added is derived as the difference between the value of gross output and value of intermediate input.

14. NUMBER OF PERSONS ENGAGED

Labour force statistics employ various terminologies to explain the labour market, depending on the definition, scope, and coverage of the published statistics.

The term number of **employed persons** in the statistics published by DOSM through the Labour Force Survey (LFS) refers to all persons aged 15 to 64 years who, at any time during the reference week, worked at least one hour for pay, profit, or family gain (as an employer, employee, own-account worker, or unpaid family worker).



On the other hand, the number of **filled jobs** in the Employment Statistics refers to the persons employed at the end of each reference quarter, including full-time and part-time employees, permanent, short-term or seasonal employees, employees paid with monthly salaries or based on hours worked, employees on short vacation such as sick leave or annual leave, and newly hired employees to fill the vacancy in the current quarter. These statistics exclude proprietors and partners of unincorporated businesses, unpaid family workers, employees on strike during the quarter, employees on unpaid leave during the entire quarter, and employees provided by other agencies such as subcontractors and consultants.

Meanwhile, the number of **formal employees** in Employee Wages Statistics is refer to the person who works under a contract of service or apprenticeship with the employer and receives remuneration for the work completed. Formal employees do not include those who fall under non-standard employment, including self-employed, gig-workers, own-account workers, unpaid family workers, etc.

In the Economic Census 2023 publication, the number of persons engaged refers to all working persons who worked for the establishments which has been censused; in December or the last pay period of the reference year. The number of persons engaged was classified under the following categories:

14.1 Working proprietors and active business partners

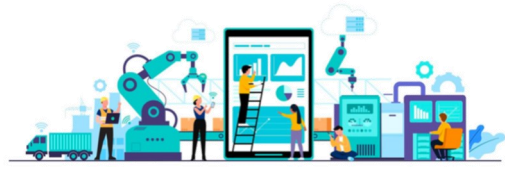
This category refers to all individual proprietors and partners, part-time or full-time, who are actively engaged in the work of the establishment. Therefore, it excludes silent and inactive partners.

14.2 Unpaid family workers

This is defined as all persons (full-time or part-time) in the household of any of the owners of the establishment who perform a specified job and work for a minimum of one third of the normal working time for the establishment, but do not receive regular payment either in cash or in kind for the work done. Such workers generally receive food, shelter and other support as part of the household of an owner but this would continue whether they worked in the establishment or not.

14.3 Paid employees (full-time)

Refer to all paid workers (full-time) who work for at least six hours a day and/or 20 days a month. All such employees are to be categorised according to Malaysia Standard Classification of Occupations 2020 (MASCO) as follows:



14.3 Paid employees (full-time) (cont'd.)

i. **Manager, professional and researcher included:**

a. **Manager**

Refer to those who devise, analyse, formulate, direct and advise on government policy, and make, amend and repeal laws, public rules and regulations, and represent and act on behalf of the government, and oversee the interpretation and implementation of policies and government legislation, or carry out similar tasks on behalf of special interest organisations, or plan, organise, lead, control and coordinate the policies and activities of enterprises, organisations, departments or the internal section; and

b. **Professional**

Refer to those responsible for increase the existing stock of knowledge, apply scientific or artistic concepts and theories, teach about the foregoing in a systematic manner, or engage in any combination of these three activities.

ii. **Technicians and associate professionals**

Refer to those who perform technical and related tasks connected with research and the application of scientific or artistic concepts and operational methods, and government or business regulations.

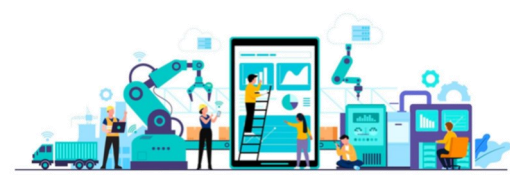
iii. **Clerical, services & sales workers, craft workers, plant & machine operators and related occupations includes:**

a. **Clerical support workers**

Refer to those who record, organise, store and retrieve related information and perform clerical duties especially in connection with administrative operations, handling of money, travel arrangements and requests for information and appointments;

b. **Service and sales workers**

Refer to those who provide personal services related to travel, housekeeping, catering, personal care, or protection against fire and unlawful acts, or demonstrate and sell goods in wholesale or retail shops and similar establishments as well as at stalls and markets;



c. Craft and related trades workers

Refer to those who apply their specific knowledge and skills in the fields of mining and construction, metal forming, and erect metal structures, make, fit, maintain and repair machinery, equipment or tools, carry out printing work as well as produce or process foodstuffs, textiles, or wooden, metal and other articles including handicraft goods; and

d. Plant & machine operators and assemblers

Refer to those who operate and monitor industrial and agricultural machinery and equipment, drive and operate trains, motor vehicles and mobile machinery and equipment, or assemble product component parts according to strict specifications and procedures

iv. Elementary occupations

Refer to those who perform simple, routine and non-systematic tasks which mainly require the use of handheld tools or with the assistance of simple machines, and in some cases considerable physical effort.

14.4 Paid part-time employees

This is defined as all paid workers who work for less than 6 hours a day and/or less than 20 days a month.

15. CATEGORY OF SKILLS

Category of skills has been categorised according to Malaysia Standard Classification of Occupations (MASCO) 2020 as follow:

i. High-skilled workers

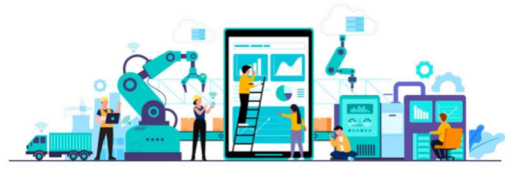
Managers and professionals, researcher, technician and associate professionals;

ii. Semi-skilled workers

Clerical support, service and sales, craft and related trades workers and plant and machine operators and assemblers; and

iii. Low-skilled workers

Elementary occupations.



16. SALARIES & WAGES

All payments (salaries, wages, bonuses, commissions, overtime pay and cash allowances including cost of living, housing, car, food, etc.) made throughout the reference year to all paid employees in each category. For all directly employed workers, total payments made before deductions for income tax and employees' contributions to Employees' Provident Fund (EPF)/ Social Security Organisation (SOCSO)/ Other provident/ Retirement Funds Incorporated (KWAP). The employer's contribution to such funds as mentioned above should be excluded.

17. VALUE OF FIXED ASSETS

Fixed assets covers all goods, new or used, tangible, which have a normal economics life span of more than one year. For instance land, building & structure, transport equipment, computer, machinery & equipment, furniture & fittings and other assets. Other assets also include biological assets namely trees/ crops (except for logging trees that intended for logging), livestock and aquaculture fisheries which can produce products repeatedly and have a life expectancy of more than one year.

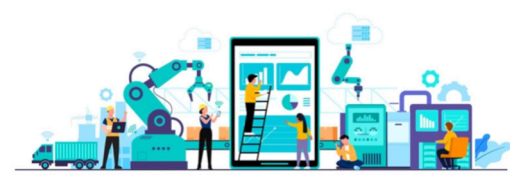
Value of assets as at the beginning and end of 2021 were based on net book value. Purchases, alterations and major repairs or capital expenditure during the year valued at actual cost incurred. Value of assets sold during the year refers to the realized value. Research and development expenditure also treated as capital asset in line with the recommendation of System of National Accounts (SNA) 2008.

18. WOMEN-OWNED ESTABLISHMENT

Women-owned establishment refers to a minimum of 51 per cent of the equity held by a women OR the biggest shareholders are women and the establishment is managed by a women OR the Chief Executive Officer or Managing Director is women that owns at least 10 per cent of the equity.

19. ROUNDING

The sum of the component figures may not tally with the sub-total or total figures due to rounding.



20. COMPOUND ANNUAL GROWTH RATE (CAGR)

The calculation of compound annual growth rate (r) is based on the following formula:

$$y_t = y_0 (1+r)^t$$

Where,

$$r = \left[e^{\frac{1}{t} \ln\left(\frac{y_t}{y_0}\right)} - 1 \right] \times 100$$

y_t = Value at current year

y_0 = Value at previous year

t = Number of years, $y_t - y_0$

r = Annual growth rate

21. SYMBOLS AND ABBREVIATIONS

-	: nil
%	: per cent
&	: and
>	: more than
<	: less than
}	: combined
b	: billion
CAGR	: Compounded annual growth rate
m	: million
RM	: Ringgit Malaysia
etc.	: et cetera
cont.	: continue
i.e	: that is
n.a	: Not available
n.e.c	: not elsewhere classified
W.P.	: Federal Territory



D) ECONOMIC CENSUS 2023 - USAGE OF ICT AND E-COMMERCE BY ESTABLISHMENT (ICTEC)

1. INTRODUCTION

This report provides information on usage of ICT and e-commerce by establishment for reference year 2022. The data were collected and compiled from Economic Census conducted in 2023.

The ICT indicators has been developed by the World Summit on the Information Society (WSIS) and was launched in June 2004. The purpose of the core list as a guidance/ input to countries that are conducting ICT surveys. The core list also assists in produce quality and internationally comparable ICT data.

There are 48 ICT indicators in six groups as follows:

- ICT infrastructure and access - 10 indicators
- Usage and access of ICT by households and individuals - 13 indicators
- Usage of ICT by businesses - 12 indicators
- ICT sector (producing) - 2 indicators
- International trade in ICT goods - 2 indicators
- ICT in education - 9 indicators

2. LEGAL AUTHORITY

The Economic Census 2023 was conducted under the **Statistics Act 1965 (Revised 1989)**. **Section 5** under this Act requires any establishment operating in Malaysia to provide actual or best estimate information to the Department. According to the Act, the contents of the questionnaire are **confidential** and only aggregate figures are published.

3. SCOPE AND COVERAGE

This publication used data from Economic Census 2023 (reference year 2022). The census collected information from registered establishments in Agriculture, Mining & quarrying, Manufacturing, Construction and Services sectors. The classifications for industries were referring to Malaysia Standard Industrial Classification (MSIC) 2008 Version 1.0, which is in accordance with the International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4 United Nations. The coverage for all sectors encompasses 1,200 categories of industries as shown in **Table 1**.

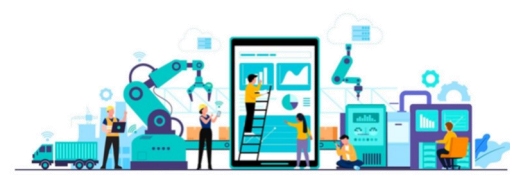


Table 1: Category of industries by sector

Sector	Category of Industries
Agriculture*	142
Mining & quarrying	56
Manufacturing	259
Construction	72
Services	645
Total	1,174

Note: (*) Entrepreneurs in the Agriculture sector which registered with relevant government agencies for the purpose of receiving aid were **NOT** covered except palm oil's entrepreneurs.

4. SOURCE OF FRAME

The main source for the establishment statistics frame is from the Malaysia Statistical Business Register (MSBR), while for the Accommodation sub-sector, includes unregistered homestay. MSBR is a list of organisations/ enterprises operating in Malaysia that includes the Register of Companies (ROC), Register of Business (ROB) and Limited Liability Partnership (LLP) registered with the Companies Commission of Malaysia (CCM) as well as organisations registered with local authorities (LA) and professional bodies. The list in MSBR is updated regularly based on surveys and censuses conducted by the Department of Statistics Malaysia (DOSM) and administrative data sources from various agencies. The main source of administrative data is from the CCM.

In addition, DOSM also works together to obtain the latest information from other agencies such as the Employees' Provident Fund (EPF), the Royal Malaysian Customs Department, the Inland Revenue Board (IRB), Social Security Organisation (SOCSO), LA and professional bodies. The frame is updated by taking into account new establishments and any changes in the status of the establishments such as closed down, not in operation, change in activity and location/ correspondence address so as to ensure that the frame is at the most current status.



5. TYPE OF BUSINESS ACTIVITY

Type of business activity refers to both principal and secondary activities. The principal activity refers to the activity to which the establishment devoted most of its resources or activity which derived most of its income. Secondary activities are defined as those incidental or ancillary to the principal activity. The classification of the industry of the establishment is based on the principal activity and accordance with the Malaysia Standard Industrial Classification (MSIC), 2008 Ver. 1.0. The MSIC 2008 conforms to the International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4, published by United Nations Statistics Division, with modifications to suit local conditions.

6. CONCEPT AND DEFINITIONS

The industries are categorised into five main sectors namely Agriculture, Mining & quarrying, Manufacturing, Construction and Services. The sectoral definitions include the following activities:

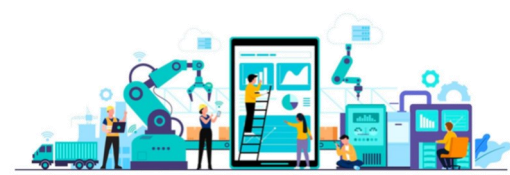
6.1 Agriculture

Agriculture comprising the activities of growing, breeding and rearing of animals and production of animal products, felling of trees and other plants, as well as capture fishery and aquaculture includes the use/ utilisation of plants/ vegetal and animals natural resources. There are four subsectors:

6.1.1 Crops refer to production of crops products including organic farming. Crops also include the growing of non-perennial and perennial crops for the purpose of seed production;

6.1.2 Livestocks refer to animals or bird that are preserved for commercial and breeding purposes. Livestock production includes raising (farming) and breeding of all animals, also production of livestock products such as eggs, milk, honey, etc;

6.1.3 Forestry and logging includes the production of round wood for the forest based manufacturing industries as well as the extraction and gathering of wild growing non-wood forest product. Besides the production of timber, forestry activities which produce the product through the minimum process, such as fire wood, charcoal, wood chips and round wood used in unprocessed form are also included. These activities can be carried out in natural or forests plantation. This also includes part of the forestry operation based on fee or contract basis; and



6.1.4 Fisheries comprise of fishing and aquaculture, covering the use of fishery resources from marine, brackish or freshwater, with the purpose of capturing or gathering fish, crustaceans, molluscs and other marine organisms and products. Aquaculture refers to the production process involving the culturing or farming (including harvesting) of aquatic organisms using techniques designed to increase the production of the organisms beyond the natural capacity of the environment.

6.2 Mining & Quarrying

Mining and quarrying include the extraction of minerals occurring naturally as solids (coal and ores), liquids (petroleum) or gases (natural gas). Extraction can be achieved by different methods such as underground or surface mining, well operation, seabed mining, etc. However, the sub-sector of mineral mining and quarrying was not covered in this publication.

6.3 Manufacturing

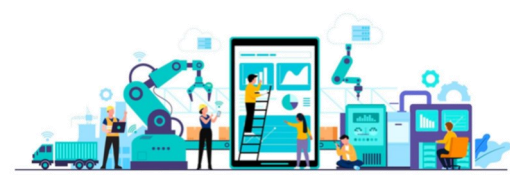
The physical or chemical transformation of materials or components into new products, whether the work is performed by power-driven machines or by hand, whether it is done in a factory or in the worker's home, and whether the products are sold at wholesale or retail.

The classification of eight (8) sub-sectors by division are as follows:

Division	Description
Food products	
10	Manufacture of food products
Beverages and tobacco products	
11	Manufacture of beverages
12	Manufacture of tobacco products
Textiles, wearing apparel and leather products	
13	Manufacture of textiles
14	Manufacture of wearing apparel
15	Manufacture of leather and related products



Division	Description
Wood products, furniture, paper products and printing	
16	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
17	Manufacture of paper and paper products
18	Printing and reproduction of recorded media
31	Manufacture of furniture
Petroleum, chemical, rubber and plastic products	
19	Manufacture of coke and refined petroleum products
20	Manufacture of chemicals and chemical products
21	Manufacture of basic pharmaceutical, medicinal chemical and botanical products
22	Manufacture of rubber and plastics products
Non-metallic mineral products, basic metal & fabricated metal products	
23	Manufacture of other non-metallic mineral products
24	Manufacture of basic metals
25	Manufacture of fabricated metal products, except machinery and equipment
Electrical, electronic and optical products	
26	Manufacture of computer, electronics and optical products
27	Manufacture of electrical equipment
28	Manufacture of machinery and equipment n.e.c.
Transport equipment, other manufacturing and repair	
29	Manufacture of motor vehicles, trailers and semi-trailers
30	Manufacture of other transport equipment
32	Other manufacturing
33	Repair and installation of machinery and equipment



6.4 Construction

New construction, alteration, repair and demolition. The installation of any machinery or equipment installed which is built-in at the time of the original construction is included, as well as installation of machinery or equipment after the original construction but which requires structural alteration in order install.

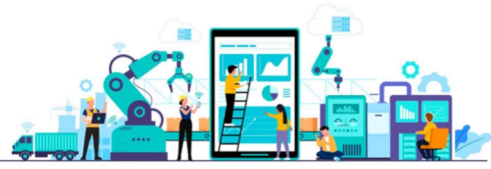
6.5 Services

Services related to Electricity, gas, steam & air conditioning supply; Water supply, sewerage, waste management & remediation activities, Wholesale & retail trade; Transportation & storage; Information & communication; Accommodation; Food & beverage; Finance; Real estate; Professional, scientific & technical; Administrative & support services; Private education; Private health & social work; Art, entertainment & recreation and Personal services & other activities.

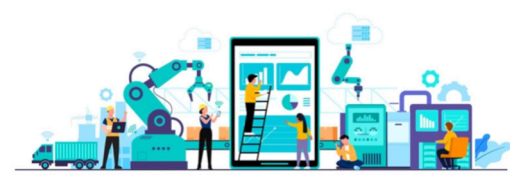
6.5.1 Electricity, gas, steam & air conditioning are defined as an activity of providing electric power, natural gas, steam, hot water and the like through a permanent infrastructure (network) of lines, mains and pipes. The dimensions of the network is not decisive; also included are the distribution of electricity, gas, steam, hot water and the like in industrial parks or residential buildings. This section therefore includes the operation of electric gas utilities, which generate, control and distribute electric power or gas. Also included is the provision of steam & air-conditioning supply;

6.5.2 Water supply; sewerage, waste management & remediation activities comprised of activities related to waste management includes collection, treatment & disposal such as scheduled waste, solid waste and waste water from industrial and household, including recovery materials & contaminated sites. The waste from the treatment process can be disposed of or used as input for other production process. Related activities in water treatment and supply are also included in this sector;

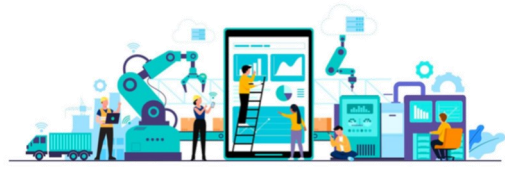
6.5.3 Wholesale & retail trade encompasses of wholesale and retail trades, sales and repair of motor vehicles & motorcycles;



- 6.5.4 Transportation & storage** includes all establishments provided land transport, freight transport by road, other land transport, water transport, warehousing & supporting activities such as storage & warehousing, terminal operations, car parking services, highway operations, port operations, cargo handling/stevedoring, shipping agencies & forwarding of freight and other supporting activities for transportation services;
- 6.5.5 Information & communication** comprises activities of publishing, motion picture, video & television programme production, sound recording & music publishing, programming & broadcasting, telecommunication services, computer programming, consultancy & related activities and information services;
- 6.5.6 Accommodation services** refer to the provision on a fee of short-term lodging, whether open to the general public or restricted to members of a particular organisation. It excludes rental of long term furnished accommodation which is classified in Real Estate;
- 6.5.7 Food & beverages** services include food and beverage serving activities providing complete meals or drinks fit for immediate consumption, whether in traditional restaurants, self-service or take-away restaurants, whether as permanent or temporary stands with or without seating;
- 6.5.8 Financial services** include monetary intermediation activities; other financial service activities and activities auxiliary to financial services; insurance/ takaful, reinsurance/ retakaful and pension & provident funding activities; and activities auxiliary to insurance/ takaful and pension funding;
- 6.5.9 Real estate services** include acting as lessors, agents and/or brokers in one or more of the following: selling or buying real estate, renting real estate, providing other real estate services such as appraising real estate, property management or acting as real estate escrow agents. Activities in this division may be carried out on own or leased property and may be done on a fee or contract basis. Also included is the building of structures, combined with maintaining ownership of leasing of such structures;



- 6.5.10 Professional, scientific & technical** includes specialised professional, scientific & technical activities which require a high degree of expertise and training, and specialised knowledge and skills available to users. Activities performed include legal & accounting activities, activities of head offices, management consultancy activities, architecture & engineering activities, technical testing & analysis, scientific research & development, advertising & market research, other professional, scientific & technical activities and veterinary activities;
- 6.5.11 Administrative & support services** includes a variety of activities that support general business operations, including rental & leasing activities, employment activities, travel agency, tour operator & other reservation service activities, security & investigation activities, services to buildings and landscape activities & office administrative, office support & other business support activities;
- 6.5.12 Private educational services** refer to establishments registered with the Ministry of Education, Malaysia and the Ministry of Higher Education that provides academic, pre-primary & primary education, secondary education, higher education, other education and educational support activities;
- 6.5.13 Private health & social work services** include hospital services, medical & dental practice activities, other human health activities, residential care activities and social work activities without accommodation;
- 6.5.14 Arts, entertainment & recreation services** include a wide range of activities to meet varied cultural, entertainment & recreational interests of the general public, including live performances, operation of museum sites, gambling, sport and recreation activities; and
- 6.5.15 Personal services & other activities** includes activities of membership organisations, activities of business, employers and professional membership organisations, activities of trade unions, activities of others membership organisations, repair of computers and personal & household goods and other personal services activities such as washing and dry-cleaning of textiles and fur products; hairdressing and other beauty treatment and funeral and other services activities.



7. CENSUS YEAR

Refers to the year in which a census was conducted.

8. REFERENCE YEAR

The reference year of the census was the calendar year 2022. Establishments whose accounting year differed from calendar year were requested to report according to the accounting year or financial year covering at least six (6) months in the reference year.

9. METHOD OF COLLECTION

This census was generally conducted through three (3) methods of data collection, namely:

9.1 Online method through the e-BE portal

This method targets respondents who have used this method for previous routine surveys.

9.2 Data collection method via e-mail, post, fax and telephone

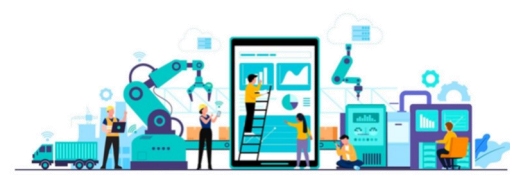
This method targets respondents who have used this method for previous routine surveys. Respondents were given a period of one month to complete and return the questionnaire to the DOSM.

9.3 Face-to-face data collection method

Field work operation is carried out to get feedback from establishments that have not yet given answers from the two methods above and this method also targets establishments that have never been involved in a routine survey the DOSM.

10. REPORTING UNIT

The reporting unit used in the Economic Census 2023 was the establishment. An establishment is defined as "an economic unit engaged in one activity, under a single legal entity and operating in a single physical location". Each establishment is assigned an industry classification based on its principal activity and not according to the activities of the parent company.



Each branch of a multi-branch organisation at a different location is conceptually treated as a different establishment. The establishment is requested to give separate returns for each activity in terms of value. However, if in practice, the accounts are centrally kept such that it is not possible to obtain separate data for each individual unit or branch, the entity or enterprise is treated as a single reporting unit and allowed to submit a consolidated questionnaire covering all the units or branches.

11. ICT DEFINITION

Based on Organisation for Economic Co-operation and Development (OECD) 2015 definition:

(a) Computer

Computer includes personal computer, portable computer (e.g. laptop), tablet and other devices such as *smartphone.

(b) Intranet

Refers to the internal communications network using internet protocols and allowing communication within the organisation.

(c) Extranet

Refers to a closed network that uses internet protocols to secure the sharing of business information with suppliers, vendors, customers or other business partners. It also can be part of a personal website business, where business partners can navigate after being confirmed in the login page.

(d) Local area network (LAN)

A network connecting computers and associated devices within a localized area such as a single building, department or site; it may be wireless.

(e) Wireless local area network (WLAN)

Local area network using high frequency radio waves instead of wires to communicate between networks-enabled devices. WLAN allows users to move around a small area within a radius of 20 to 91 meters.

Note.

* Malaysia including smartphone



(f) Wide area network (WAN)

A network that connects computers and associated devices within a wide geographic area, such as a region or country.

(g) Fixed broadband

Refers to a technology with a speed of at least 256 kbit/s in one or both directions. It consists of wired fixed broadband and fixed wireless broadband.

Wired fixed broadband internet access most commonly used to send/ receive information via cable/ fiber optic (ADSL, SDSL, VDSL), fiber optic technology/ cable technology.

(h) Mobile broadband

Refers to technology at speeds of not less than 256 kbit/s in one or both directions. It covers technologies such as 3G/ LTE/ 4G, UMTS, CDMA2000 and future technologies including both standard and dedicated data subscriptions. Typically used by mobile devices (e.g. laptops, tablets, USB wireless modems, smart phones and other mobile device).

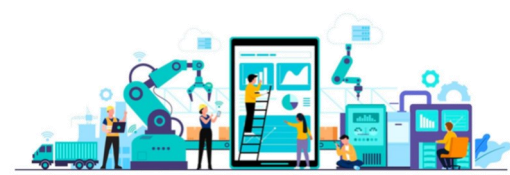
Mobile broadband connection to the internet refers to access via WIFI hotspot (tethering) and not through a router (e.g. USB dongle/ modem/ surfstick such as YES dongle etc.).

(i) Website

A website is a collection of network-related web resources such as a website, multimedia content that is usually identified by a common domain name and published by at least one web server. Websites can be accessed through public Internet Protocol (IP) networks such as the Internet or private local area network (LAN) by the URL that identifies the site. A website can be a personal website, a corporate website for a company, a government website, an organization website and so on.

(j) Social media

Refers to those who have a user profile, account or user license depending on the needs and types of social media. Types of social media are social networks (e.g. Facebook and Instagram), enterprise blogs or enterprise microblogs (e.g. Twitter) and multimedia content sharing websites (e.g. YouTube).



(k) Mobile internet and technologies

Refers to an inevitable product in the development of the PC internet. It combines mobile and internet communications into one. This is a general term for activities where technology, platforms, business models and internet applications are combined with mobile communication technology (e.g. mobile IT equipment, Global Positioning System (GPS) equipment, wireless debit/ credit card payment terminals).

(l) Cloud computing

Cloud computing refers to ICT services used over the internet to access software, computing power, storage capacity, etc. (e.g. HUAWEI Cloud Server, AVM Cloud).

(m) Data analytic

Data analytic is a process or effort to process data into new information so that the characteristics of the data become easier to understand and useful for solving problems, especially those related to research (e.g. Tableau, Big Data Analytics, Mobile Business Intelligence).

(n) Management software

Management software is application software that helps users while performing management activities (e.g. Enterprise Resource Planning, etc.).

(o) Collaborative online platforms

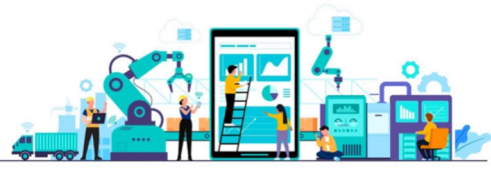
Refers to economic partnerships (e.g. Lazada, Shopee, Grab, etc.).

12. E-COMMERCE DEFINITION

Based on (OECD) 2015, e-commerce transaction is defined as sale or purchase of goods or services, through a network of computers that have been designed for this purpose. E-commerce transactions can occur between enterprises, households, individuals, governments and public or private organisation to another.

Goods or services that have been ordered through e-commerce methods, but the payment or receipt of goods or services can be received either through online or offline.

E-commerce transaction, includes orders placed on websites, extranet or Electronic Data Interchange (EDI). However, the transactions made by telephone, fax, e-mail (mail that is typed manually) and the similar transactions are not categorised as e-commerce transactions.



- (a) E-commerce income means the total income of establishments with e-commerce transactions. Income for wholesale and retail trade establishments refers to the value of sales of goods and services. Sales value means the value of all items for which ownership or effective right to use with a view to ultimate purchase, has been transferred to others.
- (b) E-commerce expenditure means the amount of expenses for establishments that have e-commerce transactions.

(m) E-commerce by type of market

(i) Other business

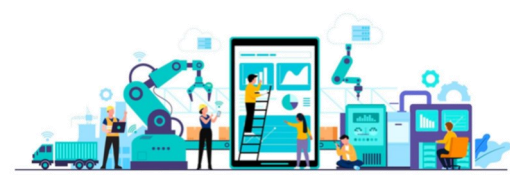
Business to Business (B2B) is related to e-commerce transaction between businesses which sell/ buy products or services to/ from another business. For example, a manufacturer can sell to a wholesaler or a wholesaler can sell to a retailer.

(ii) Individual consumers

Business to Consumer (B2C) is related to e-commerce transaction between businesses and consumers which sell/ buy products or services. For example, business sells garment to consumer (income) or business provide discount coupon to consumers through e-commerce platform (expenditure).

(iii) Government and other non-business organisations

Business to Government (B2G) is a business model that refers to businesses selling/ paying for products, services or information governments or government agencies. B2G networks or models provide a way for businesses to bid on government projects or products that governments might purchase or need for their organisations. This can encompass public sector organisations that propose the bids. B2G activities are increasingly being conducted via the internet through real-time bidding. B2G is also referred to as public sector marketing



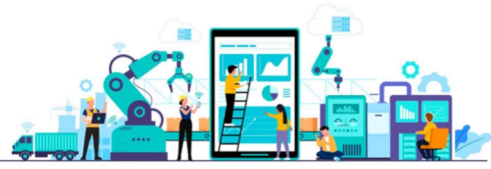
13. MICRO, SMALL AND MEDIUM ENTERPRISES (MSMEs)

The definition of MSMEs used is based on the new definition that came into effect on 1 January 2014 as shown in **Table 2**.

Table 2 : MSMEs Definition

Sector	MSMEs Size	Annual Turnover	Number of Full-Time Employees
Manufacturing	Micro	Less than RM300,000	Less than 5 employees
	Small	Between RM300,000 to less than RM15 million	From 5 to less than 75 employees
	Medium	Between RM15 million to not exceeding RM50 million	From 75 to not exceeding 200 employees
Agriculture, Mining and Quarrying, Construction and Services	Micro	Less than RM300,000	Less than 5 employees
	Small	Between RM300,000 to less than RM3 million	From 5 to less than 30 employees
	Medium	Between RM3 million to not exceeding RM20 million	From 30 to not exceeding 75 employees

Source: Guideline for New MSMEs Definition, SME Corp. Malaysia, October 2013



14. USAGE OF ICT PERCENTAGE CALCULATION

(a) Usage of Computer, Internet and Web Presence

(i) Percentage of computer usage

$$= \frac{\text{Number of establishment used computer}}{\text{Number of establishment operating}} \times 100$$

(ii) Percentage of internet usage

$$= \frac{\text{Number of establishment used internet}}{\text{Number of establishment operating}} \times 100$$

(iii) Percentage of business having web presence

$$= \frac{\text{Number of establishment having web presence}}{\text{Number of establishment operating}} \times 100$$

(b) Usage of Computer, Internet and Web Presence by State

(i) Percentage of computer usage by state

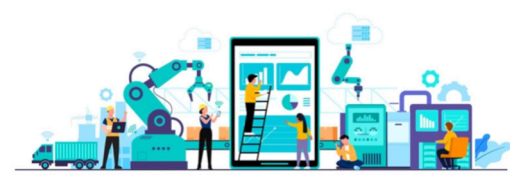
$$= \frac{\text{Number of establishment used computer by state}}{\text{Number of establishment operating by state}} \times 100$$

(ii) Percentage of internet usage by state

$$= \frac{\text{Number of establishment used internet by state}}{\text{Number of establishment operating by state}} \times 100$$

(iii) Percentage of businesses web presence by state

$$= \frac{\text{Number of establishment having web presence by state}}{\text{Number of establishment operating by state}} \times 100$$



(c) Type of Web Presence Owned

- (i) Percentage of owned website

$$= \frac{\text{Number of establishment with owned website}}{\text{Number of establishment operating having web presence}} \times 100$$

- (ii) Percentage of presence on another entity's website

$$= \frac{\text{Number of establishment with web presence on another entity's website}}{\text{Number of establishment operating having web presence}} \times 100$$

- (iii) Percentage of social media

$$= \frac{\text{Number of establishment with social media}}{\text{Number of establishment operating having web presence}} \times 100$$

- (iv) Percentage of e-marketplace

$$= \frac{\text{Number of establishment with e – marketplace}}{\text{Number of establishment operating having web presence}} \times 100$$

(d) Type of Computer Network Infrastructure Used

- (i) Percentage of intranet

$$= \frac{\text{Number of establishment owned intranet}}{\text{Number of establishment operating using internet}} \times 100$$

- (ii) Percentage of extranet

$$= \frac{\text{Number of establishment owned extranet}}{\text{Number of establishment operating using internet}} \times 100$$

- (iii) Percentage of Local Area Network (LAN)

$$= \frac{\text{Number of establishment owned LAN}}{\text{Number of establishment operating using internet}} \times 100$$



(iv) Percentage of wireless local area network (WLAN)

$$= \frac{\text{Number of establishment owned WLAN}}{\text{Number of establishment operating using internet}} \times 100$$

(v) Percentage of wide area network (WAN)

$$= \frac{\text{Number of establishment owned WAN}}{\text{Number of establishment operating using internet}} \times 100$$

(vi) Percentage of others area network

$$= \frac{\text{Number of establishment owned others infrastructure network}}{\text{Number of establishment operating using internet}} \times 100$$

(e) Type of Internet Access

(i) Percentage of fixed broadband usage

$$= \frac{\text{Number of establishment owned fixed broadband}}{\text{Number of establishment operating using internet}} \times 100$$

(ii) Percentage of mobile broadband usage

$$= \frac{\text{Number of establishment owned mobile broadband}}{\text{Number of establishment operating using internet}} \times 100$$

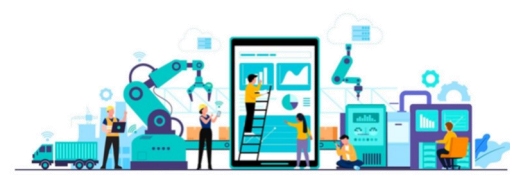
(iii) Percentage of both types of broadband usage

$$= \frac{\text{Number of establishment owned both types of broadband}}{\text{Number of establishment operating using internet}} \times 100$$

(f) Purpose of Internet Usage

(i) Percentage of sending or receiving email

$$= \frac{\text{Number of establishment used for sending or receiving email}}{\text{Number of establishment operating using internet}} \times 100$$



(ii) Percentage of telephoning over the internet usage

$$= \frac{\text{Number of establishment used telephoning over the internet}}{\text{Number of establishment operating using internet}} \times 100$$

(iii) Percentage of posting information or instant messaging

$$= \frac{\text{Number of establishment posting information or instant messaging}}{\text{Number of establishment operating using internet}} \times 100$$

(iv) Percentage of getting information about goods or services

$$= \frac{\text{Number of establishment getting information about goods or services}}{\text{Number of establishment operating using internet}} \times 100$$

(v) Percentage of getting information from government organisations

$$= \frac{\text{Number of establishment getting information from gov. organisations}}{\text{Number of establishment operating using internet}} \times 100$$

(vi) Percentage of interacting with government organisations usage

$$= \frac{\text{Number of establishment interacting with government organisations}}{\text{Number of establishment operating using internet}} \times 100$$

(vii) Percentage of internet banking usage

$$= \frac{\text{Number of establishment used internet banking}}{\text{Number of establishment operating using internet}} \times 100$$

(viii) Percentage of accessing other financial services

$$= \frac{\text{Number of establishment accesing other financial services}}{\text{Number of establishment operating using internet}} \times 100$$

(ix) Percentage of providing customer service

$$= \frac{\text{Number of establishment providing customer service}}{\text{Number of establishment operating using internet}} \times 100$$



(x) Percentage of delivering products online

$$= \frac{\text{Number of establishment delivering product online}}{\text{Number of establishment operating using internet}} \times 100$$

(xi) Percentage of internal or external recruitment

$$= \frac{\text{Number of establishment used internal or external recruitment}}{\text{Number of establishment operating using internet}} \times 100$$

(xii) Percentage of staff training usage (e-learning applications)

$$= \frac{\text{Number of establishment used for staff (e-learning)}}{\text{Number of establishment operating using internet}} \times 100$$

(xiii) Percentage of internet usage for others

$$= \frac{\text{Number of establishment used for others}}{\text{Number of establishment operating using internet}} \times 100$$

(g) Usage of Digital Technology

(i) Percentage of website usage

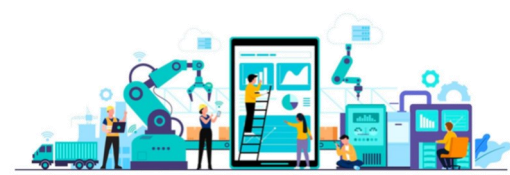
$$= \frac{\text{Number of establishment used for website}}{\text{Number of establishment operating using internet}} \times 100$$

(ii) Percentage of social media usage

$$= \frac{\text{Number of establishment used for social media}}{\text{Number of establishment operating using internet}} \times 100$$

(iii) Percentage of mobile internet and technologies usage

$$= \frac{\text{Number of establishment used for mobile internet and technologies}}{\text{Number of establishment operating using internet}} \times 100$$



(iv) Percentage of cloud computing usage

$$= \frac{\text{Number of establishment used for cloud computing}}{\text{Number of establishment operating using internet}} \times 100$$

(v) Percentage of data analytics usage

$$= \frac{\text{Number of establishment used for data analytics}}{\text{Number of establishment operating using internet}} \times 100$$

(vi) Percentage of managements software usage

$$= \frac{\text{Number of establishment used for management software}}{\text{Number of establishment operating using internet}} \times 100$$

(vii) Percentage of online collaborative platforms usage

$$= \frac{\text{Number of establishment used for online collaborative platforms}}{\text{Number of establishment operating using internet}} \times 100$$

(viii) Percentage of digital technology usage for other purposes

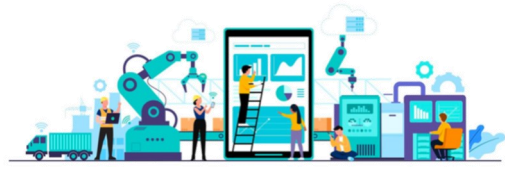
$$= \frac{\text{Number of establishment used for other purposes}}{\text{Number of establishment operating using internet}} \times 100$$

(ix) Percentage of not using digital technologies

$$= \frac{\text{Number of establishment not using digital technologies}}{\text{Number of establishment operating using internet}} \times 100$$

15. ROUNDING

The sum of the component figures may not tally with the sub-total or total figures due to rounding.



16. SUPRA STATE

Based on the System of National Accounts (SNA) 2008, categorisation of institutional units based on their economic interest and geographical activities can be as follows; (1) most activities are within a single region; (2) multi-provincial units with centers of interest in multiple provinces or regions but do not operate on a nationwide scale; and (3) units operating at the national level, with their centre of interests not confined to any specific geographical position (e.g. Supra State). Supra State at the state level is equivalent to an overseas organisation at the national level. In Malaysia, Supra State covers production activities beyond the centre for the key economic interest of any state.

17. COMPOUND ANNUAL GROWTH RATE (CAGR)

The calculation of annual growth rate (r) is based on the following formula:

$$y_t = y_0 (1 + r)^t$$

Solving for r ,

$$r = \left[e^{\frac{1}{t} \ln \left(\frac{y_t}{y_0} \right)} - 1 \right] \times 100$$

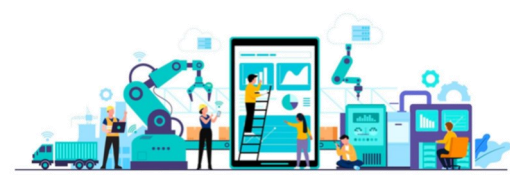
where,

y_t = Value at current year

y_0 = Value at previous year

t = Value at previous year, $y_t - y_0$

r = Annual growth rate

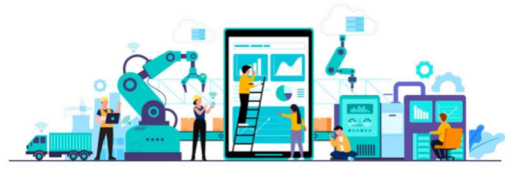


17. REVISION

Revision will be made to the published figures based on the latest census.

18. SYMBOLS AND ABBREVIATIONS

-	:	data not available
&	:	and
%	:	per cent
b	:	billion
etc.	:	et cetera
e.g.	:	example
CAGR	:	Compound annual growth rate
RM	:	Ringgit Malaysia
ISIC	:	International Standard Industrial Classification
MSIC	:	Malaysian Standard Industry Classification
n.e.c.	:	not elsewhere classified
Ver.	:	Version
W.P.	:	Federal Territory



E) ICT USE AND ACCESS BY INDIVIDUALS AND HOUSEHOLDS SURVEY (ICTHS)

1. INTRODUCTION

The statistics released in this report are findings of the ICT Use and Access by Individuals and Households Survey (ICTHS) 2023. It provides data at national, state and administrative district levels. The guidelines, concepts and definitions used in this publication are based on the Manual for Measuring ICT Access and Use by Households and Individuals, 2020 Edition published by the International Telecommunication Union (ITU).

ICTHS was carried out starting reference year 2013, followed by 2015 and 2017. Since 2018, this survey is conducted annually. These technical notes will facilitate users with better understanding pertaining to the published statistics.

2. OBJECTIVES OF SURVEY

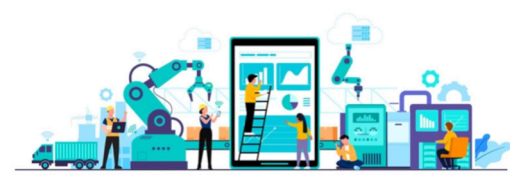
The main objectives are as follows:

- i. To collect the latest and specific information on ICT use and access by individuals and households (HH);
- ii. To serve as an input in the compilation of ICT Satellite Account (ICTSA); and
- iii. To calculate ICT indicators to measure development of national ICT and Digital Economy.

3. METHOD OF DATA COLLECTION

3.1 ICTHS uses the personal interview method using the questionnaire form to obtain information from respondents. During the survey period, trained interviewers visit households in selected living quarters (LQs) to collect demographic information on all household members and detailed information on the use and access of ICT equipment and services.

3.2 Quality checks were done by experienced officers from the DOSM State office to detect and correct any possibility of errors or omissions at the time when the survey is conducted. The review processes were also implemented for selected HH to ensure the quality of the data collected.



4. REFERENCE PERIOD

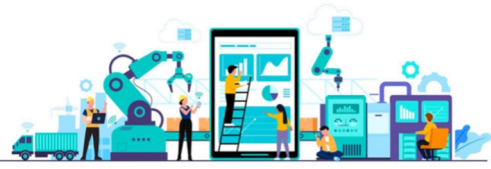
ICTHS 2023 was conducted for three months from September to November 2023. The reference period for ICT use by individuals was for the last three months prior to the interview. Example, if the survey month is in October 2023, then the reference period for individuals is calculated from 1st July 2023 until 30th September 2023.

5. SCOPE AND COVERAGE

- 5.1 The selection of the sample of this survey has taken into consideration both urban and rural areas in administrative district for all states in Malaysia.
- 5.2 The coverage of the survey is HH living in private LQs only and excluding those who are living in residential institutions such as hostels, hotels, hospitals, old folk's homes, military barracks and police, prisons, welfare homes and other institutions.
- 5.3 This survey involved individuals aged five years and above. However, to enable the comparison to be made with the previous survey, the analysis for the use of ICT only involves individuals aged 15 years and above.

6. SAMPLING FRAME

- 6.1 The sampling frame used for the selection of ICTHS 2023 sample are based on the Household Sampling Frame which is made up of enumeration blocks (EBs) created for the 2020 Population and Housing Census which was updated from time to time. EBs are geographical contiguous areas of land with identifiable boundaries created for survey operation purposes, which on average, contains about 80 to 120 LQs. All EBs are formed within gazette boundaries i.e. within administrative, districts or local authority areas.
- 6.2 The EBs in the sampling frame is classified by urban and rural areas. Urban areas are defined as in 2020 Population and Housing Census. Urban areas are gazetted areas with their adjoining built-up areas which had a combined population of 10,000 or more. Meanwhile, gazetted area with population less than 10,000 and not gazetted area are classified as rural area.
- 6.3 Built-up areas are the areas contiguous to a gazetted area and have at least 60 per cent of their population (aged 15 years and above) engaged in non-agricultural activities.
- 6.4 The definition of urban areas also takes into account the special development areas i.e. areas that are not gazetted and development can be identified and separated from the gazetted areas or built-up area of more than five kilometres and has a population of at least 10,000 people with 60 per cent of the population (aged 15 years and above) engaged in non-agricultural activities



6.5 Urbanisation is a dynamic process and keeps changing with development and growth. Thus, the urban areas for 2010 and 2020 Population and Housing Censuses do not necessarily refer to the same areas, as areas fulfilling the above criteria of urban continue to expand and grow within the time.

6.6 The classification of areas by strata is as follows:

Strata	Population of gazette, built-up areas and special development area
Metropolitan	75,000 and above
Urban large	10,000 to 74,999
Urban small	1,000 to 9,999
Rural	All other areas

6.7 For sampling purposes, classification of areas as stated in item 6.6 is used for all states and federal territories. For Sabah and Sarawak, due to inaccessibility, the rural strata had to be further stratified based on the time taken to reach the area from the nearest urban centre.

6.8 For the purpose of tabulation, the strata reclassified were combined as follows:

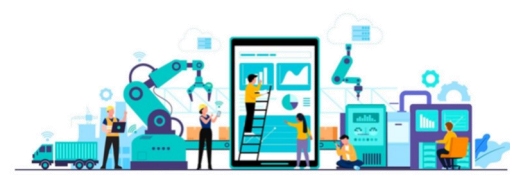
$$\begin{aligned} \text{Urban} &= \text{Metropolitan} + \text{urban large} \\ \text{Rural} &= \text{Urban small} + \text{all rural} \end{aligned}$$

7. SAMPLE DESIGN

7.1 The two-stage stratified sampling design was used in ICTHS 2023. The first level sampling unit were EBs, randomly selected using Probability Proportionate to Size Sampling.

7.2 EBs were selected separately according to the following strata:

Primary strata	State
Secondary strata	Administrative district by state
Tertiary strata	Urban/ rural area by administrative district



7.3 Next, the second level sampling unit were LQs and sample for LQs were selected from the EBs by using Systematic Random Sampling method that generates random number and interval class to ensure every LQs have an equal probability to be selected as a sample. This procedure is performed systematically and scientifically to produce an unbiased sample and can represent the entire populations of HH in Malaysia.

8. SAMPLE SIZE

8.1 The sample of ICTHS 2023 represents the population of the analysis level. The sample size calculation has considered the following elements:

- i. Selected statistics from previous surveys;
- ii. The level of sampling design;
- iii. Desired error; and
- iv. Respond rate

8.2 The distribution of sample size for ICTHS 2023 is as follows:

State	Number of selected EBs	Number of selected LQs
Johor	336	2,675
Kedah	374	2,967
Kelantan	335	2,483
Melaka	152	1,206
Negeri Sembilan	267	2,119
Pahang	354	2,824
Pulau Pinang	198	1,446
Perak	388	3,126
Perlis	93	744
Selangor	314	2,510
Terengganu	284	2,272
Sabah	514	4,010
Sarawak	584	4,251
W.P. Kuala Lumpur	71	520
W.P. Labuan	37	276
W.P. Putrajaya	32	249
MALAYSIA	4,333	33,678



9. DATA EVALUATION

9.1 Data obtained from probability sample survey are subject to two types of error i.e. sampling error and non-sampling error.

i. Sampling Error

Sampling error is a result of estimating data based on a probability sampling. This error can be measured by estimating the Relative Standard Error (RSE) and expressed as a percentage. It is used as an indicator of the precision of the estimated parameters studied. This estimate reflects the level of variation that was estimated through a survey variables compared with the population parameter.

For instance, in ICTHS 2023, the percentage of Internet access by household for Malaysia was 96.0 per cent with RSE of 0.1 per cent. In other words, the standard error (SE) is approximately 0.1 per cent. Based on a 95 per cent confidence level ($\alpha=0.05$), the percentage of Internet access by household was found to be in the range of 95.8% - 96.3%.

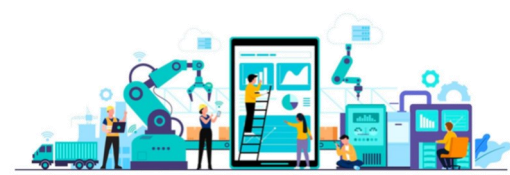
ii. Non-Sampling Error

These errors may arise through incomplete survey coverage, weaknesses in the frame, response errors, non-response errors and also errors during processing such as editing, coding and data capture. To ensure high quality data, several administrative procedures were taken to keep non-sampling errors to a minimum. Intensive training was conducted for the supervisors and enumerators. In addition, close supervision and random checks were carried out on households which were covered by the enumerators to ensure the validity of the information recorded.

In order to resolve the case of non-response error due to several reasons such as vacant house, no one at home, refusal to co-operate or not qualified LQ, the sample size estimation for ICTHS 2023 has taken into account all the possibilities.

The survey frame is updated regularly to overcome the problem of non-response due to vacant home. Wide publicity was carried out through electronic and printed media to minimise the case of 'no one at home' and refusal to cooperate.

In addition, at the data processing stage, each variable's consistency checking and validation process has been systematically implemented in order to minimise the non-sampling error.



10. LIMITATIONS OF SURVEY

Several challenges and limitations occurred during the implementation of this survey. Among them are:

- i. This survey was conducted among selected households and individuals throughout Malaysia. However, it can also be used to provide an overview of ICT accessibility and usage.
- ii. The coverage of this survey only covers the state level for strata 1 and 2 for urban areas, whereas for strata 3 to 6 for rural areas.
- iii. A detailed analysis of ICT use and access by individuals and households by administrative district level is based on a relative value reliability of not more than 20 per cent tolerance interval.
- iv. The findings of the survey should be used with high precaution, and DOSM will not be responsible for any implications resulting from the use of these statistics.

11. CONCEPTS AND DEFINITIONS

11.1 LIVING QUARTERS

Living quarters are defined as **independent** and **separate** structures and are usually used as place of abode. The terms separate and independent mean the following:

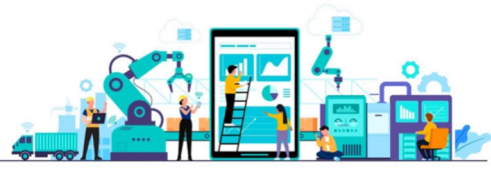
- i. **Separate:** A structure is considered separate if it is surrounded by walls, fence, etc. and is covered by roof.
- ii. **Independent:** A structure is said to be independent if it has direct access via public path, communal passageway or space (that is, occupants can come in or go out of their LQs without passing through others' premises).

11.2 HOUSEHOLD

A person or group of people, whether related or unrelated who usually live together in a living quarter and make provisions (expenses) for food and necessities of life together.

11.3 HEAD OF HOUSEHOLD

Head of household is defined as any members whether male or female which is considered as head of HH by other members. The Head of HH must be an income recipient and is aged 15 years and above.



11.4 ICT ACCESS AND USAGE

11.4.1 ICT access by households: In order for a household to have access to ICT services or equipment, it should be able to be used during interview.

11.4.2 ICT access by individuals:

- Use of ICT services and equipment by one or more individuals in a household, either it was used in LQ or elsewhere;
- Individuals in a household aged 15 years and above; and
- Use of mobile phone, computer and Internet for the last three months.
- The youth age is based on the concepts and guidelines from the Manual for Measuring ICT access and Use by Households and Individuals, 2020 Edition published by the International Telecommunication Union (ITU).

11.4.3 Core ICT Indicators

i. Radio

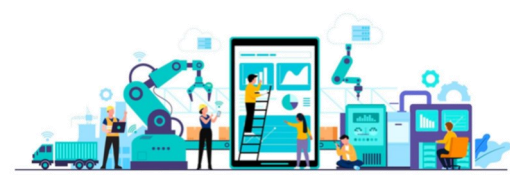
A radio is defined as a device capable of receiving broadcast radio signals, using common frequencies, such as FM, AM, LW and SW. A radio may be a stand-alone device, or it may be integrated with another device, such as an alarm clock, an audio player, a mobile phone or a computer. It includes radio in a car.

$$\frac{\text{(number of in-scope household with a radio)}}{\text{(total number of in-scope households)}} \times 100$$

i. Television

A television (TV) is a device capable of receiving broadcast television signals, using popular access means such as over-the-air, cable and satellite. A television set is typically a stand-alone device, but it may also be integrated with another device, such as a computer or a mobile phone.

$$\frac{\text{(number of in-scope household with a television)}}{\text{(total number of in-scope households)}} \times 100$$



iii. Fixed-line telephone

A fixed telephone refers to a telephone line connecting a customer's terminal equipment (e.g. telephone set, facsimile machine) to the Public Switched Telephone Network (PSTN) and which has a dedicated port on a telephone exchange. This term is synonymous with the terms main station or Direct Exchange Line (DEL) that are commonly used in telecommunication documents. It may not be the same as an access line or a subscription.

$$\frac{\text{(number of in-scope household with a fixed-line telephone)}}{\text{(total number of in-scope households)}} \times 100$$

iv. Mobile phone

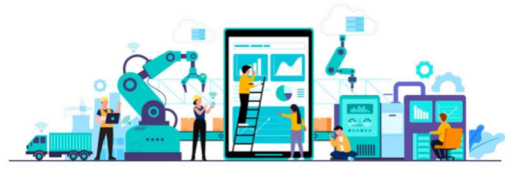
A mobile phone refers to a portable telephone subscribing to a public mobile phone service using cellular technology, which provides access to the PSTN. This includes analogue and digital cellular systems and technologies such as IMT-2000 (3G) and IMT-Advanced. Users of both postpaid subscriptions and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

$$\frac{\text{(number of in-scope household with a mobile phone)}}{\text{(total number of in-scope households)}} \times 100$$

v. Computer

A computer refers to a desktop, a laptop (portable) computer or a tablet (or similar handheld computer). It does not include equipment with some embedded computing ability such as mobile phones, Personal Digital Assistant (PDA) or a TV set.

$$\frac{\text{(number of in-scope household with a computer)}}{\text{(total number of in-scope households)}} \times 100$$



vi. 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 phone, tablet, PDA, games machine, digital TV etc.).

Internet can be accessed via a fixed or mobile network.

$$\frac{\text{(number of in-scope household with a Internet)}}{\text{(total number of in-scope households)}} \times 100$$

vii. Internet Activities

Internet activities are categorised as follows:

a) Access to information

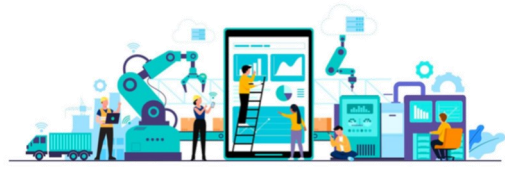
- Finding information about goods or services
- Reading or downloading online newspaper or magazines, electronic books

b) Communication

- Participating in social networks (e.g. Facebook, WhatsApp, Instagram, X etc.)
- Sending or receiving e-mail
- Telephoning over the Internet/ VoIP
- Uploading self - created content to a website
- Managing personal homepage
- Blogging: Maintaining or adding contents to a blog
- Accessing chat sites, blogs, newsgroups or online discussions

c) Professional

- Looking for a job or submitting a job application
- Participating in professional networks (e.g. LinkedIn and Xing)
- Accessing office's computing system for the purpose of doing work from home



j) Entertainment

- Listening to radio online
- Watching television online
- Downloading images, movies, videos or music; playing or downloading games

k) e-Commerce

- Purchasing or ordering goods or services (e-Commerce)
- Selling goods or services via e-commerce

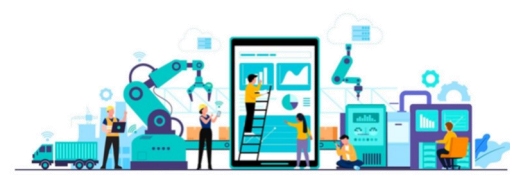
l) Safety, Online Protection and Awareness

- Owning online security tools & adopt measures to ensure online protection
- Verifying the reliability of information found online
- Setting up effective measure (E.g: strong password, log-in attempt notifications) to protect devices and online accounts
- Changing privacy settings on devices, accounts or app to limit the sharing of personal data and information (E.g: name, contact information, photos)
- As an Internet user are you aware of the following cybercrimes: (E.g: spam, hacking, online, fraud stalking, phishing, cyber-bullying, catfish, fake news and spreading of computer virus)

11.4.4 Selected Statistics of Malaysia from Malaysian Communications and Multimedia Commission (MCMC)

i. Broadband

The broadband penetration rate per 100 inhabitants is calculated by dividing the sum of fixed and mobile-broadband subscriptions by total number of population and multiplying by 100. Public Wi-Fi subscriptions are not taken into account.



ii. Mobile-cellular

The mobile-cellular penetration rate refers to the total subscriptions divided by total number of population and multiplied by 100. A penetration rate over 100% can occur because of multiple subscriptions.

iii. Fixed-telephone

The fixed-telephone penetration rate refers to the total subscriptions divided by total number of population and multiplied by 100.

iv. Pay TV

The pay TV penetration rate per 100 households is calculated by dividing the number of household subscriptions by the number of households and multiplied by 100.

11.8 ROUNDING OF ESTIMATES

The calculation of certain categories may not always be the same between tables due to independent rounding. However, the differences were insignificant.

Percentages shown in the tables were computed from actual absolute figures and may not always add up exactly to 100 per cent due to rounding, although the totals were shown as 100 per cent.

11.9 NOTES AND SYMBOLS

W.P	Wilayah Persekutuan
n.a.	Not applicable
ICT	Information and Communication Technology
-	Not available
0.0	Less than half the smallest unit shown. For example, less than

BIBLIOGRAPHY



This page is deliberately left blank



BIBLIOGRAPHY

Overview

MyDIGITAL. (2021). *Malaysia Digital Economy Blueprint*. <https://www.ekonomi.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf>

Organisation for Economic Co-operation and Development. (2020). *Roadmap Toward a Common Framework for Measuring the Digital Economy by the G20 Digital Economy Task Force*. <https://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf>

Trade Union Advisory Committee.(2016). *TUAC Discussion Paper on the Digital Economy*. https://tuac.org/wp-content/uploads/2017/09/1606_Discussion-1.pdf

United States Bureau of Economic Analysis, Economic and Social Council of the United Nations. (2019). *Defining and Measuring the Digital Economy*.https://unece.org/fileadmin/DAM/stats/documents/ece/ces/ge.20/2019/mtg1/Item_7_Defining_and_Measuring_the_Digital_Economy.pdf

Bukht & Heeks. (2017). *Conceptualising and Measuring the Digital Economy* https://www.researchgate.net/publication/327356904_Defining_Conceptualising_and_Measuring_the_Digital_Economy

Klaus Schwab. (2016).*The Fourth Industrial Revolution: what it means, how to respond*. <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

Organisation for Economic Co-operation and Development. (2005). *Guide to Measuring the Information Society*.

United Nations Conference on Trade and Development. (2020). *Manual for the Production of Statistics on the Digital Economy 2020*. <https://unctad.org/publication/manual-production-statistics-digital-economy-2020>

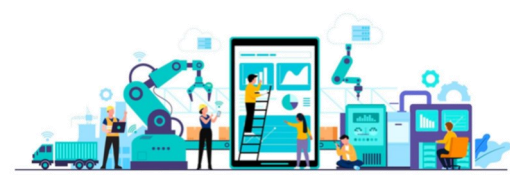
Organisation for Economic Co-operation and Development/International Labour Organisation/ European Union. (2023). *Conceptual Framework, Concepts and Definitions, in Handbook on Measuring Digital Platform Employment and Work*, OECD Publishing, Paris.

Chapter 1

Department of Statistics, Malaysia.(2023). *Information and Communication Technology Satellite Account 2022*.Putrajaya: Department of Statistics, Malaysia

Chapter 2

Department of Statistics, Malaysia. (2023). *Economic Census 2023 - Information and Communication Services* . Putrajaya: Department of Statistics, Malaysia



Chapter 3

Department of Statistics Malaysia. (2023). *Economic Census 2023 - Usage of ICT and E-Commerce by Establishment*. Putrajaya: Department of Statistics, Malaysia

Chapter 4

Department of Statistics Malaysia.(2023). *ICT Use and Access by Individuals and Households Survey Report 2023*. Putrajaya: Department of Statistics, Malaysia

Department of Statistics Malaysia. (2023). *Economic Census 2023 - Usage of ICT and E-Commerce by Establishment* . Putrajaya: Department of Statistics, Malaysia

Organisation for Economic Co-operation and Development. (2011). *OECD Guide to Measuring the Information Society 2011*, OECD Publishing. <http://dx.doi.org/10.1787/10.1787/9789264113541-en>

Organisation for Economic Co-operation and Development. (2012). *OECD Internet Economy Outlook 2012*. Paris: OECD Publishing. <https://doi.org/10.1787/9789264086463-en>.

Chapter 5

Malaysian Communications and Multimedia Commission, MCMC. (2023). *Facts and Figures - Interactive Dashboard* <https://www.mcmc.gov.my/en/resources/statistics/facts-and-figures-interactive-dashboard>

Chapter 6

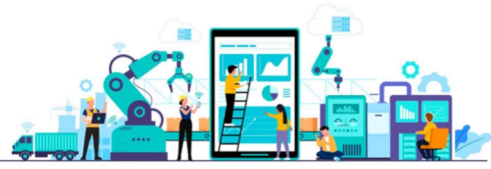
Malaysia Digital Economy Corporation (2023). *National E-Commerce Strategic Roadmap 2021-2015*. Cyberjaya: Malaysia Digital Economy Corporation, Malaysia

Minister of Investment, Trade and Industry (2023). *New Industrial Master Plan 2030*. Kuala Lumpur: Minister of Investment, Trade and Industry, Malaysia

General

Ministry of Finance, Malaysia. (2019). *Unlocking The Potential of The Digital Economy*. Retrieved from <https://www.treasury.gov.my/index.php/en/gallery-activities/speech/item/5105-speech-unlocking-the-potential-of-the-digital-economy.html>

Organisation for Economic Co-operation and Development. (2017). *OECD Digital Economy Outlook 2017 Spotlight on Korea*. <https://www.oecd.org/korea/digital-economy-outlook-2017-korea.pdf>



Organisation for Economic Co-operation and Development. (2020). *OECD Digital Economy Outlook 2020*. <https://www.oecd.org/digital/oecd-digital-economy-outlook-2020-bb167041-en.htm>

Organisation for Economic Co-operation and Development. (2020). *Roadmap Toward a Common Framework for Measuring the Digital Economy by the G20 Digital Economy Task Force*. <https://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf>

Trade Union Advisory Committee, TUAC & Organization for Economic Cooperation and Development, OECD. (2016). *Discussion Paper on the Digital Economy, prepared for the OECD Ministerial Meeting, 2016*. <https://www.oecd.org/>

United Nations Conference on Trade and Development. (2017). *Information Economy Report 2017 Digitalization, Trade and Development*. https://unctad.org/en/PublicationsLibrary/ier2017_en.pdf

United Nations Conference on Trade and Development. (2019). *Digital Economy Report 2019 Value Creation and Capture Implications for Developing Countries*. https://unctad.org/system/files/official-document/der2019_en.pdf

World Bank Group. (2016). *World Development Report 2016 Digital Dividends*. <http://www.worldbank.org/>

World Bank Group. (2018). *Malaysia's Digital Economy: A New Driver of Development*. <https://www.worldbank.org>

World Economic Forum, WEF & Kearney, A.T. (2018). *Report on Readiness for the Future of Production Report 2018*. http://www3.weforum.org/docs/FOP_Readiness_Report_2018.pdf

World Bank Group. (2018). *Malaysia's Digital Economy: A New Driver of Development*. <https://www.worldbank.org>

World Economic Forum, WEF & Kearney, A.T. (2018). *Report on Readiness for the Future of Production Report 2018*. http://www3.weforum.org/docs/FOP_Readiness_Report_2018.pdf

This page is deliberately left blank