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**NOTA
TEKNIKAL**
TECHNICAL NOTES



PENGGUNAAN ICT & E-DAGANG OLEH PERTUBUHAN 2022

1. INTRODUCTION

This report provides information on usage of ICT and e-commerce by establishment for reference year 2021. The data were collected and compiled from Annual Economic Survey 2022.

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 Survey on the Use of ICT and E-Commerce by Establishment is conducts 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 covers registered establishments in the Agriculture, Mining & Quarrying, Manufacturing, Construction and Services sectors.

*The survey coverage for the overall economic activity encompass of **1,122** industries at 5-digit level according to the Malaysian Industrial Classification Standards (MSIC), 2008 Version 1.0.*

The details by sectors are as follows:

Sector	Number of Industries
Agriculture	140
Mining & quarrying	56
Manufacturing	259
Construction	72
Services	595
Total	1,122

4. SOURCE OF FRAME

The main source of information for the frame was the Companies Commission of Malaysia (SSM). Apart from SSM, information on the frame also updated from other sources such as the Malaysian Industrial Development Authority (MIDA), Ministry of Agriculture and Agro-based Industry, Construction Industry Development Broad, Malaysia (CIDB), Minerals & Geosciences Department, Malaysia (JMG), Energy Commission, various businesses and trade associations, newspaper advertisements and websites.

The frame is updated every year to take into account new establishments and to record any changes in the status of the establishments such as closed down, not in operation, change in activity and location 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), Rev. 4, published by United Nations Statistics Division, with modifications to suit local conditions.

6. CONCEPT AND DEFINITION

The definition adopted in this publication based on the recommendations of the MSIC 2008 Ver. 1.0. The 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 utilisation of plants and animals natural resources.

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 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. 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.

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, mollusks and other marine organisms and products. Aquaculture refer 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.

6.2.1 **Mining** is defined as the extraction, dressing and beneficiating of minerals occurring naturally as solids, such as coal and ores; liquids, such as crude oil; or gases, such as natural gas. Mining also includes underground and surface mines, quarries and wells and all supplemental activities for dressing and beneficiating ores and other crude minerals such as crushing, screening, washing, cleaning, grading, milling, flotation, melting, pelleting, topping and other preparations needed to render the material marketable. Mining activities are classified into groups on the basis of the principal mineral produced.

6.2.2 **Quarrying** refers to activity of extraction from a mine or quarry, and also dredging of alluvial deposits, rock crushing and the use of salt marshes. The products are used most notably in construction (e.g. sands, stones, etc.), manufacture of materials (e.g. clay, gypsum, calcium, etc.), manufacture of chemicals, etc.

It includes quarrying, rough trimming and sawing of monumental and building stone such as marble, granite, sandstones, etc., quarrying, crushing and breaking of limestone, mining of gypsum and anhydrite, mining of chalk and unclaimed dolomite, extraction and dredging of industrial sand, sand for construction and gravel, breaking and crushing of stone and gravel, quarrying of sand and mining of clays, refractory clays and kaolin.

Activities of It also include mining of chemical and fertilizer minerals, extraction of peat, extraction of salt, etc.

6.2.3 **Petroleum & natural gas** refers to the production of crude petroleum, the mining and extraction of oil from oil shale and oil sands and the production of natural gas and recovery of hydrocarbon liquids. This includes the overall activities of operating and/ or developing oil and gas field properties, including such activities as drilling, completing and equipping wells, operating separators, emulsion breakers, desilting equipment and field gathering lines for crude petroleum and all other activities in the preparation of oil and gas up to the point of shipment from the producing property.

It also includes support activities for petroleum and gas extraction, such as oil and gas field services, performed on a fee or contract basis, oil and gas well exploration and test drilling and boring activities.

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 Manufacturing sector consists of 24 Divisions namely:

6.3.1 *Manufacture of food products;*

6.3.2 *Manufacture of beverages;*

6.3.3 *Manufacture of tobacco products;*

6.3.4 *Manufacture of textiles;*

6.3.5 *Manufacture of wearing apparel;*

6.3.6 *Manufacture of leather and related products;*

6.3.7 *Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials;*

- 6.3.8 *Manufacture of paper and paper products;*
- 6.3.9 *Printing and reproduction of recorded media;*
- 6.3.10 *Manufacture of coke and refined petroleum products;*
- 6.3.11 *Manufacture of chemicals and chemical products;*
- 6.3.12 *Manufacture of basic pharmaceutical;*
- 6.3.13 *Manufacture of rubber and plastics products;*
- 6.3.14 *Manufacture of other non-metallic mineral products;*
- 6.3.15 *Manufacture of basic metals;*
- 6.3.16 *Manufacture of fabricated metal products;*
- 6.3.17 *Manufacture of computer, electronics and optical products;*
- 6.3.18 *Manufacture of electrical equipment;*
- 6.3.19 *Manufacture of machinery and equipment n.e.c.;*
- 6.3.20 *Manufacture of motor vehicles, trailers and semi-trailers;*
- 6.3.21 *Manufacture of other transport equipment;*
- 6.3.22 *Manufacture of furniture;*
- 6.3.23 *Other manufacturing; and*
- 6.3.24 *Repair and installation of machinery and equipment.*

6.4 Construction:

New construction, renovation, repair and demolition. The installation of any type of machinery or equipment installed during the original construction is taken into account, as is the installation of machinery or equipment after the original construction but requires a structural change for its installation.

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 &

- 6.5.1 **Electricity, gas, steam & air conditioning** is defined as the activity of supplying electricity, natural gas, steam, hot water and the like through a fixed infrastructure (network) of lines, mains and pipelines. The dimensions of this network cannot be determined; also includes the distribution of electricity, gas, steam, hot water and the like in industrial areas or residential buildings. Therefore, this section includes the operation of electric and gas utilities that generate, control and distribute electricity or gas. Also includes steam supply and electric air conditioning.
- 6.5.2 **Water supply; sewerage, waste management & remediation activities** cover activities related to waste management including collection, treatment and disposal such as scheduled waste, solid waste and wastewater from industrial and household, including recovery materials & contaminated sites. The waste from the treatment process can be disposed off 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 and retail trade** includes wholesale and retail trade, sale and repair of motor vehicles & motorcycles;
- 6.5.3.1 **Wholesale trade** is defined as the resale (without modification) of new and used goods to locksmiths, industrial, commercial, institutional or professional consumers; or to other wholesalers; or sell merchandise to a person or company.
- 6.5.3.2 **Retail trade** refers to the resale (sale without transformation) of new and used goods to the general public for personal or household consumption or utilisation.
- 6.5.3.3 **Motor vehicles** refers to wholesale and retail sale of motor vehicles and motorcycles, either new or used, sale of motor vehicle parts and accessories, maintenance and repair of motor vehicles and motorcycles including washing, polishing as well as commission agents.

- 6.5.4 **Transportation & storage** includes all establishment provides land transport, freight transport by road other land transport, water transport, warehousing & support 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** comprised of motion picture, video & television program production, sound recording & music publishing activities, programming & broadcasting activities, telecommunication services, computer programming, consultancy & related activities and information services activities.
- 6.5.6 **Accommodation** refers to the provision on a fee of short-term lodging, whether open to the general public or restricted to members of a particular organization. It excludes rental of long term furnished accommodation which is classified in Real estate;
- 6.5.7 **Food & Beverage** refers to establishments that includes 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. Determinant is the fact that meals fit for immediate consumption are offered, not the kind of facility providing them
- 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 includes 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 building & landscape activities and 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 **Human health & social work activities** includes 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** includes 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.
- 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 and household goods and others 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. E-COMMERCE DEFINITIONS

Based on Organisation for Economic Co-operation and Development (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.

- (i) **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.
- (ii) **E-commerce expenditure** means the amount of expenses for establishments that have e-commerce transactions.
- (iii) **E-commerce by type of market**
 - (a) **Domestic** means e-commerce transactions sales/ purchase that conducted in Malaysia.
 - (b) **International** means e-commerce transactions sales/ purchase that conducted which involves international transaction.

(iv) **E-commerce by type of customers**

(a) **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.

(b) **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).

(c) **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.

8. ICT DEFINITION

Based on OECD 2015 definition:

(i) **Computer**

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

(ii) **Intranet**

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

Note.

* Malaysia including smartphone

(iii) **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.

(iv) **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.

(v) **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.

(vi) **Wide Area Network (WAN)**

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

(vii) **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.

(viii) **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.).

(ix) **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.

(x) **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).

(xi) **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).

(xii) **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).

(xiii) **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).

(xiv) **Management software**

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

(xv) **Collaborative online platforms**

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

9. SURVEY YEAR

Survey year refers to the year in which a survey was conducted.

10. REFERENCE YEAR

The reference year of the survey was the calendar year 2021. Establishments whose accounting year differed from calendar year were requested to report according to the accounting year or financial year covering the major part of the reference period.

11. METHOD OF DATA COLLECTION

This survey generally conducted through three (3) methods, namely:

- (i) **Data collection method via Online method through the e-AES portal:** *This method targets respondents who have used this method for previous routine surveys.*
- (ii) **Data collection method via e-mail/ post/ fax/ telephone:** *This method targets respondents who have used this method for previous routine surveys. Respondents were given a period of one (1) month to complete and return the questionnaire to DOSM.*
- (iii) **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 (2) methods above and this method also targets establishments that have never been involved in a routine DOSM survey.*

12. PUBLICATION AND DATA REVISION

The publication presents the revision of the estimation e-commerce income for the year 2021 until First Quarter 2023. The revisions were based on the latest data of annual surveys and account of company for the year 2021. For the latest year 2022 until First Quarter 2023, estimation was based on the quarterly data sources.

13. SAMPLING DESIGN

Sampling design of the survey is a one-stage stratified random sampling. Categories of industries at two (2), three (3), four (4) and five (5) digit MSIC at state level have been classified as stratum and the establishment as the sampling unit.

Each stratum (industry) has been set up to four substrata to ensure the distributed sample takes into account the economic characteristics of the industry. The main substratum is heterogeneous, was fully covered. Whereas, other substratum that are homogeneous were sampled.

Main substratum include large establishments that have a significant total revenue in the industry while for the second to fourth substratum are based on small and medium enterprise (MSME) categories.

14. SAMPLE SIZE

The main statistics used to estimate the sample size is the total revenue. The formula used in the estimation of the sample size for a stratum is as follows:

$$n = \frac{(\sum N_i S_i)^2}{V + \sum N_i S_i^2}$$

where;

n = Sample size

N_i = Population size for stratum i

S_i^2 = Variance for stratum i

V = Desired variance

$$V = RSE^2 \left(\frac{\hat{Y}_i}{Z} \right)^2$$

where;

\hat{Y}_i = Estimated total revenue for stratum i

RSE = Relative standard error

Z = Value of confidence level

Sample is distributed to substratum of the industry using Neyman Allocation method as follows:

$$n_{hi} = \left[\frac{N_h S_h}{\sum N_h S_h} \right] n'_i$$

h = 2,3,and 4

i = 1,2,... k

where;

n_{hi} = Sample size for substratum h of stratum i

N_h = Population size for substratum h

S_h = Standard deviation for substratum h

n_i = Sample size for stratum i

h = Substratum

i = Stratum

The optimum sample size for this survey is **109,506** establishments. Establishments of the large categories were fully covered while establishments of the second to fourth substratum were randomly selected using systematic random sampling.

15. WEIGHTS

Weighted analysis is done using sampling weight to ensure that the selected sample can reflect population survey. The weights required are the sampling design weight and non-response weight.

The sampling design weight for the establishment at stratum h is as follows:

$$W_h = \frac{N_h}{n_h}, n = 1, \dots, 4$$

where;

N_h = Total population of substratum h ; and

n_h = Total sample of at substratum h

Non response weight at substratum h as below:

$$NRW_h = \frac{1}{n'_h/n_h}, h = 1, \dots, 4$$

where;

n'_h = Numbers of respond sample size for substratum h

n_h = Numbers of sample size for substratum h

The method of calculating the sampling design weight after the survey (adjusted weight) on substratum h as below:

$$W'_h = W_h \times NRW_h, h=1, \dots, 4$$

where;

W_h = Sampling design weigh at substratum h

NRW_h = Non response weight at substratum h

16. USAGE OF ICT PERCENTAGE CALCULATION

(i) **Percentage of computer usage in businesses**

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

(ii) **Percentage of internet usage in businesses**

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

(iii) **Percentage of businesses having web presence**

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

(iv) **Percentage of computer usage in businesses by state**

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

(v) **Percentage of internet usage in businesses by state**

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

(vi) **Percentage of businesses having web presence by state**

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

(vii) **Percentage of owned website**

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

(viii) **Percentage of presence on another entity's website**

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

(ix) **Percentage of social media**

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

- (x) **Percentage of intranet in businesses**

$$= \frac{\text{Number of establishment used intranet}}{\text{Number of establishment operating using internet}} \times 100$$
- (xi) **Percentage of extranet in businesses**

$$= \frac{\text{Number of establishment used extranet}}{\text{Number of establishment operating using internet}} \times 100$$
- (xii) **Percentage of Local Area Network (LAN) in businesses**

$$= \frac{\text{Number of establishment used LAN}}{\text{Number of establishment operating using internet}} \times 100$$
- (xiii) **Percentage of Wireless Local Area Network (WLAN) in businesses**

$$= \frac{\text{Number of establishment used WLAN}}{\text{Number of establishment operating using internet}} \times 100$$
- (xiv) **Percentage of Wide Area Network (WAN) in businesses**

$$= \frac{\text{Number of establishment used WAN}}{\text{Number of establishment operating using internet}} \times 100$$
- (xv) **Percentage of others area network (Others) in businesses**

$$= \frac{\text{Number of establishment used others infrastructure network}}{\text{Number of establishment operating using internet}} \times 100$$
- (xvi) **Percentage of Fixed broadband in businesses**

$$= \frac{\text{Number of establishment used fixed broadband}}{\text{Number of establishment operating using internet}} \times 100$$
- (xvii) **Percentage of Mobile broadband in businesses**

$$= \frac{\text{Number of establishment used mobile broadband}}{\text{Number of establishment operating using internet}} \times 100$$
- (xviii) **Percentage of sending or receiving email**

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

(xix) Percentage of telephoning over the internet

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

(xx) Percentage of posting information or instant messaging

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

(xxi) Percentage of getting information about goods or services

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

(xxii) Percentage of getting information from government organisations

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

(xxiii) Percentage of interacting with government organisations

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

(xxiv) Percentage of internet banking

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

(xxv) Percentage of accessing other financial services

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

(xxvi) Percentage of providing customer service

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

(xxvii) Percentage of delivering products online

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

(xxviii) Percentage of internal or external recruitment

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

(xxix) Percentage of staff training (e-learning applications)

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

(xxx) Percentage of others

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

18. REPORTING UNIT

The reporting unit used in the survey was establishment. An establishment is defined as "an economic unit that engaged in one activity, under a single legal entity and operating in a single physical location". Each establishment was assigned an industry classification based on its principal activity.

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

19. ROUNDING

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

19. ANNUAL GROWTH RATE

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 = Compound annual growth rate

20. SYMBOLS AND ABBREVIATIONS

-	:	Nil
&	:	and
%	:	per cent
b	:	billion
etc.	:	et cetera
RM	:	Ringgit Malaysia
ISIC	:	International Standard Industrial Classification
MSIC	:	Malaysian Standard Industry Classification
Q	:	Quarter
QoQ	:	Percentage change quarter-on-quarter
YoY	:	Percentage change year-on-year
W.P.	:	Federal Territories

Q : *Quarter*

QoQ : *Percentage change quarter-on-quarter*

W.P. : *Federal Territories*

YoY : *Percentage change year-on-year*