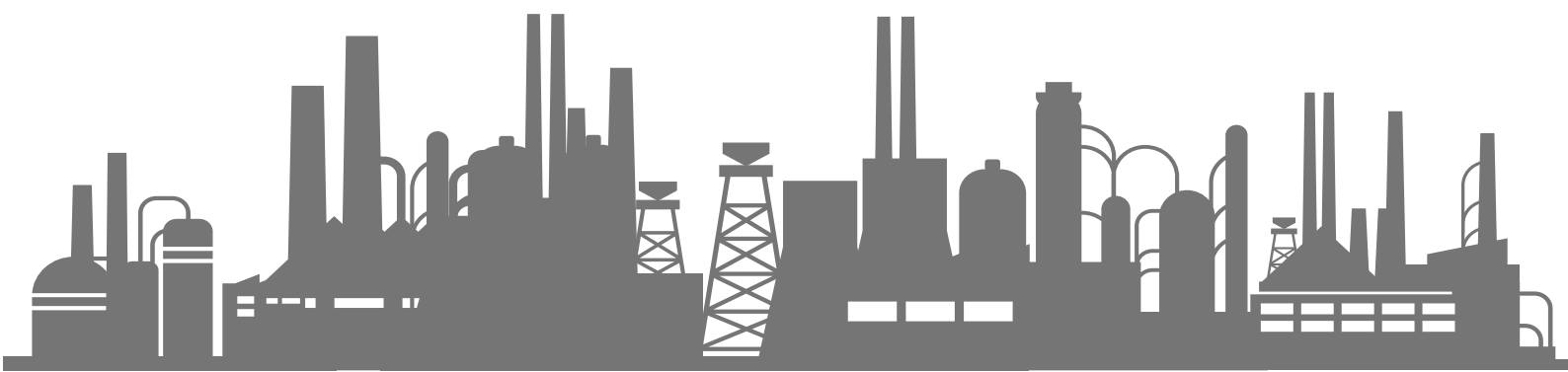


NOTA TEKNIKAL

TECHNICAL NOTES

3



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1. Scope and Coverage

This publication used data from Annual Economic Survey 2022 (reference year 2021). The survey covered all registered establishments engaged in Manufacturing as main activity. Overall coverage of the survey for Manufacturing sector consists of 71 industries at 3-digit level according to Malaysia Standard Industrial Classification (MSIC) 2008 Ver. 1.0. The complete list of industries covered as shown in the Appendix (page 63).

2. Statistical Frame

The statistical frame of this survey is from the Malaysia Statistical Business Register (MSBR). 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 (PBT) 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 (JKDM), the Inland Revenue Board of Malaysia (LHDNM) and PBT.

The frame is updated 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/ correspondence address to ensure the frame is at the 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 MSIC 2008 Ver. 1.0. The 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. Concept and Definition

4.1 *Concepts and definitions used are based on the recommendations of the International Recommendations for Industrial Statistics, United Nations Statistical Division. The definition of Manufacturing used in this survey follows the MSIC 2008 Ver. 1.0.*

4.2 *Manufacturing is defined as:*

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 sub-sector consists of 24 Divisions namely:

- 4.2.1. *Manufacture of food products;*
- 4.2.2. *Manufacture of beverages;*
- 4.2.3. *Manufacture of tobacco products;*
- 4.2.4. *Manufacture of textiles;*
- 4.2.5. *Manufacture of wearing apparel;*
- 4.2.6. *Manufacture of leather and related products;*
- 4.2.7. *Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials;*
- 4.2.8. *Manufacture of paper and paper products;*
- 4.2.9. *Printing and reproduction of recorded media;*
- 4.2.10. *Manufacture of coke and refined petroleum products;*
- 4.2.11. *Manufacture of chemicals and chemical products;*
- 4.2.12. *Manufacture of basic pharmaceuticals, medicinal chemical and botanical products;*
- 4.2.13. *Manufacture of rubber and plastics products;*
- 4.2.14. *Manufacture of other non-metallic mineral products;*
- 4.2.15. *Manufacture of basic metals;*
- 4.2.16. *Manufacture of fabricated metal products, except machinery and equipment;*
- 4.2.17. *Manufacture of computer, electronics and optical products*
- 4.2.18. *Manufacture of electrical equipment;*
- 4.2.19. *Manufacture of machinery and equipment n.e.c;*
- 4.2.20. *Manufacture of motor vehicles, trailers and semi- trailers;*
- 4.2.21. *Manufacture of other transport equipment;*
- 4.2.22. *Manufacture of furniture;*
- 4.2.23. *Other manufacturing; and*
- 4.2.24. *Repair and installation of machinery and equipment.*

5. Survey Year

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

6. 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 at least six (6) months in the reference year.

The data for this sector in the year of 2018 to 2020 was prepared using an estimation method based on secondary data sourced from short-term surveys in DOSM and administrative data in other related agencies.

7. Method of Collection

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

7.1 Data collection method via online method through the e-AES 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 the DOSM.

8. Sampling Design

Sampling design of the survey is a one-stage stratified random sampling. Categories of three (3) 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 (4) 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 micro, small and medium enterprise (MSME) categories.

9. 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:

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

where;

- n = Sample size
- N_i = Population size for stratum i
- S_i = Standard deviation for stratum i
- V = Desired variance

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

where;

- \hat{Y}_i = Estimated total revenues 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:

$$n_{hi} = \left(\frac{N_h S_h}{\sum N_h S_h} \right) n_i$$

$$h = 2, 3 \text{ and } 4$$

$$i = 1, 2, \dots, k$$

where;

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

$$N_h = \text{Population size for substratum } h$$

$$S_h = \text{Standard deviation for substratum } h$$

$$n_i = \text{Sample size for substratum } i$$

$$h = \text{Substratum}$$

$$i = \text{Stratum}$$

The optimum sample size for this survey is 12,397 establishments. Establishments of the large categories were fully covered while establishments of the second to fourth substratum were randomly selected using systematic random sampling.

10. Weighted

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:

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

where;

$$N_h = \text{Total population of substratum } h; \text{ and}$$

$$n_h = \text{Total sample of substratum } h$$

Non-response weight at substratum h as below:

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

where;

n'_h = Numbers of response 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:

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

where;

W_h = Sampling design weight at substratum h

NRW_h = Non-response weight at substratum h

11. Reporting Unit

The reporting unit used in the survey was the **establishment**. The 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 was assigned an industry classification based on its principal activity. In the case of a multi-activity entity, units engaged in separate activities in the same location constituted distinct establishments.

Thus, each branch of a multi-branch organization 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. The entity or enterprise was treated as a single reporting unit and allowed to submit a consolidated questionnaire covering all the units or branches.

12. Value of Gross Output

The value of gross output is defined as follow:

Value of sales of manufacturing products

- + *Value of goods sold in the same condition as purchased*
- *Cost of goods sold in the same condition as purchased*
- + *Capital expenditure on own construction*
- + *Income from industrial services rendered to others*
- + *Income from other industrial work done (e.g. construction, quarry, etc.)*
- + *Receipt from scrap, electricity, waste product, etc. sold to others*
- + *Receipt from commission and brokerage earned*
- + *All other output (such as receipt from non-industrial services, e.g. management fees received, income from rental of property, etc.)*
- + *Closing stocks of finished goods (own manufactured)*
- *Opening stocks of finished goods (own manufactured)*
- + *Closing stocks of goods-in-process*
- *Opening stocks of goods-in-process*
- + *Research and development expenditure (In-house)*

13. Value of Intermediate Input

The value of intermediate input is defined as follow:

Value of raw materials and supplies consumed

- + *Cost of industrial work done by others*
- + *Cost of packing materials and containers consumed*
- + *Electricity and water purchased*
- + *Value of fuel, lubricants and gas consumed*
- + *Cost of materials used for repairs and maintenance of assets (including payments to others for this work)*
- + *Payments for non-industrial services (including payments for carriage outwards of goods, traveling, management fees, information technology, advertising, bank charges, post, telecommunication, etc.)*
- + *All other input costs (including training and value of free wearing apparel provided for workers)*

14. Value Added

Value added is the difference between gross output and intermediate input. It is approximately equivalent to commercial profit, salaries and wages, depreciation and indirect taxes; plus, interest paid less interest received.

15. Persons Engaged

Number of persons engaged refers to all persons working during December or the last pay period of the reference year. The number persons engaged was classified under the following categories:

15.1 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, excludes silent and inactive partners.

15.2 Unpaid family workers

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

15.3 Paid Full-time employees

It refers to all paid workers who work for at least six (6) hours a day and for at least 20 days a month.

15.4 Paid Part-time employees

It refers to all paid workers who work for less than six (6) hours a day and/or less than 20 days a month.

16. Category of Skills

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

16.1 Skilled

Managers, professionals & researchers and Technicians & associate professionals;

16.2 Semi-skilled

Clerical support workers; Service & sales workers; Craft & related trade workers; and Plant & machine operators & assemblers; and

16.3 Low-skilled

Elementary occupations

17. Fixed Assets

Assets cover all goods, new or used, tangible or intangible, which have a normal economics life span of more than one year (e.g. land, building and structure, transport equipment, computer and peripheral equipment, computer software, other machinery, equipment and furniture and fittings). Value of assets as at the beginning and end of 2021 was based on net book value. Purchases,

alterations and major repairs or capital expenditure during the year were valued at actual costs incurred. Value of assets sold during the year refers to the actual value.

18. Rounding

The sum of components may not add up to the total in the tables presented in this publication due to rounding.

19. Annual Growth Rate

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

$$Y_{t1} = Y_{t0} (1 + r)^t$$

where r ,

$$r = \left[e^{\frac{1}{t} \ln \left(\frac{Y_t}{Y_0} \right)} - 1 \right] \times 100$$

where,

Y_{t1} = Value at current year

Y_{t0} = Value at previous year

t = Number of years, $t_t - t_o$

r = Annual growth rate

20. Symbols and Abbreviations

The following symbols and abbreviation have been used throughout the publication:

&	:	and
%	:	per cent
}	:	combine
etc.	:	et cetera
e.g.	:	for example
n.a	:	not applicable
RM	:	Ringgit Malaysia
n.e.c	:	not elsewhere classified
Ver.	:	Version
W.P.	:	Wilayah Persekutuan