

## Objective

The data presented in this report were compiled from the results of the Annual Survey of Services, 2018.

The objective of the survey is to gather information on the services sector for studying the structure and performance of various activities in the sector. The data are also used for the compilation of national accounts, input-output tables and other related studies. In addition, the results are used by policy makers, economic planners, academicians, the business community and other interested users in their work.

## Legal Authority

The survey is conducted under the Statistics Act (Chapter 317), which makes the submission of returns mandatory. Individual returns received are kept in confidence in accordance with the Statistics Act.

## Scope and Coverage

The survey covered establishments engaged in Wholesale Trade, Retail Trade, Transport & Storage, Accommodation & Food Services, Information & Communications Services, Business Services and Recreation, Community & Personal Services, as classified under Sections G, H, I, J, L, M, N, P, Q, R and S of the Singapore Standard Industrial Classification (SSIC) 2015 (version 2018). Establishments engaged in Financial & Insurance Services and Public Administration Activities are excluded. Taxi drivers, hawkers and stall-holders, independent artistes, self-employed persons operating private hire vehicles and other individual self-employed persons not registered with the Accounting & Corporate Regulatory Authority (ACRA) are also excluded.

## Sample Selection

The sampling frame is based on the list of 'live' establishments obtained from the Department's establishment database. The database is updated regularly using information obtained from administrative and survey sources.

The sampling method for the survey was based on stratified random sampling. All establishments in the sampling frame were first stratified by activity and within each activity, establishments were stratified by operating receipts into three size strata (large, medium and small). All establishments in the large size stratum were selected with certainty whereas the firms in the medium and small size strata were selected using simple random sampling without replacement. The Lavallée and

Hidiroglou method was used to determine the size stratum boundaries and sample sizes that minimise the total sample size required to achieve the target level of precision of estimation.

### **Data Collection**

Respondents could submit their survey returns via the internet and mail. Secured transmission of statistical information via the internet was enabled through a service known as E-Survey. Queries or clarifications with respondents on omissions and inconsistencies were conducted through telephone or email.

Respondents were given 6 weeks to complete and submit their returns. A reminder was sent to establishments which failed to respond without reasonable explanations. A second reminder was sent to establishments which did not respond to the first reminder.

### **Response**

The survey covered a total of 22,733 establishments. At the close of the survey, 1,343 establishments were excluded from the survey for one reason or another, such as those that had ceased, or were dormant, untraceable, not in operation yet or engaged in activities outside the scope of the survey. For compilation purpose, survey returns from 16,808 establishments were used. In addition, administrative data were used to supplement the survey data for final tabulation and analysis.

### **Data Processing**

All data of completed returns were computer-edited for code validity, completeness and consistency to detect errors and inconsistencies. The erroneous data were amended and re-processed. Tabulation was carried out only after all records had passed the computer editing.

### **Estimation Method**

Stratified (Horvitz-Thompson) estimator was used to estimate the population totals. For non-response cases, imputation was performed.

With the incorporation of more administrative data and updated survey returns, the estimated principal statistics for previous years have been correspondingly updated.

**Year of Reference**

The reference period is the calendar year 2018. However, for establishments whose accounting year differed from the calendar year, they were asked to report according to the accounting or financial year covering the major part of 2018.

**Type of Business Activity**

Type of business activity refers to the principal activity undertaken by the establishment. The principal activity is defined as the one in which the establishment devotes most of its resources or from which it derives most of its income. The classification of the principal activity of the establishment is based on the “Singapore Standard Industrial Classification, 2015 (Version 2018)”.

**DEFINITION OF TERMS**

<b>Depreciation</b>	This refers to the value, at current replacement cost, of reproducible fixed assets such as buildings, plants and machinery used during a period of time as a result of normal wear and tear, foreseen obsolescence and the normal rate of accidental damage.
<b>Establishment</b>	Defined as a business or organisation unit engaged in one activity and operating in a single location. Thus, for a multi-activity firm or organisation, units engaged in separate activities in the same location constitute distinct establishments. Similarly, each branch of a multi-branch organisation at a different location is conceptually a different establishment.
<b>Operating Expenditure</b>	This refers to all expenditure incurred by the establishment in its business, with adjustment for changes in inventory. It includes remuneration, purchases, indirect taxes, work given out, rental and maintenance of machinery and equipment, legal, accounting and other professional services, rental and maintenance of premises, depreciation, transport and travelling, utilities, advertisement, entertainment, stationery and printing, postage and telecommunications, fuel, freight charges and other expenses that are connected with the establishment's operation.
<b>Operating Receipts</b>	This refers to income earned from business operations, i.e. income from services rendered, sale of goods, commission fees and rental of premises, machinery and equipment.
<b>Operating Surplus</b>	This refers to the amount of operating receipts less operating expenditure plus depreciation of fixed assets. For non-profit organisations (i.e. entities which cannot distribute any surplus made to their shareholders) which mainly rely on funds (such as grants and donations) other than receipts from sales of goods and services rendered to cover their operating expenditure, operating surplus refers only to depreciation of fixed assets.
<b>Earnings-Expenditure Ratio</b>	This is defined as the ratio of operating surplus to operating expenditure.
<b>Profitability Ratio</b>	This is defined as the ratio of operating surplus to operating receipts. It shows the proportion of operating receipts that is converted to profits.

<b>Remuneration</b>	<p>Total remuneration comprises three components, namely, wages and salaries, employers' contribution to Central Provident Fund (CPF)/pension funds and other benefits.</p> <p><i>(i) Wages and Salaries</i></p> <p>This refers to gross emoluments paid to employees during the reference year, inclusive of commissions, bonuses, overtime pay and allowances before deduction of employees' contribution to CPF or any other deduction. For proprietors or partners, the item refers to amount paid to or withdrawn by them during the year. However, this amount is not included in the analysis and tables of the report.</p> <p><i>(ii) Employers' Contribution to CPF/Pension Funds</i></p> <p>This refers to the net amount contributed by employers towards their employees' CPF/pension funds. It does not include the amount paid to retired employees under company pension scheme.</p> <p><i>(iii) Other Benefits</i></p> <p>This comprises medical benefits, cost of food, accommodation and other benefits in kind provided by employers. Allowances given to unpaid family workers are also included here.</p> <p><i>(iv) Directors' Fee</i></p> <p>This item refers only to the amount paid to directors for attending board of directors' meetings. It does not include the fees paid to directors who are actively engaged in running the establishment.</p>
<b>Value Added (At Basic Price)</b>	<p>This comprises the value of operating surplus, remuneration and taxes (less subsidies) on production.</p>

## Sampling Errors

### Concept

Sampling errors arise when a sample survey is conducted instead of doing a complete enumeration of the entire population. The sampling error of an estimate refers to the difference between the estimated value obtained from a sample and its population value or true value if a census were to be conducted. Such errors are controlled through efficient probability sampling designs.

### Measures of Sampling Errors

The sampling error for a sample estimate is measured by its standard error (SE) which, for a probability sample, can be estimated from the sample results.

For comparison between surveys, the relative standard error (RSE) may be used. The RSE can be expressed as:

$$RSE = 100 * SE / T$$

where

*RSE* is the relative standard error of T in percentage term

*SE* is the standard error of T

*T* is the estimate of the population value

The standard error also provides the basis for the computation of confidence interval of an estimate, which is the estimated range that would contain the true population value of a parameter at a specified level of confidence.

### Sampling Errors of Key Indicators

The sampling errors of operating receipts and value added by broad industry group for the Annual Survey of Services 2018 are provided in Tables E1 and E2 respectively.

The relative standard errors for operating receipts and value added of the Services Sector 0.89 per cent and 0.74 per cent for the Annual Survey of Services 2018 sample. At industry-group level, the values were between 0.54 per cent to 3.99 per cent. Among the industry groups, the operating receipts estimate was the most precise for Transport & Storage (relative standard error was the lowest at 0.54 per cent) since a lower relative standard error would mean a smaller confidence interval (i.e. the range in which the true population value would fall into is narrower). For Transport & Storage, the range of the operating receipts estimate at 95% confidence level of \$152.2 billion to \$155.5 billion meant that there would be a 95% chance that this interval contained the true value of the industry group's operating receipts.

**Table E.1 Sampling Errors of Operating Receipts by Industry, 2018**

Industry	Grossed-up Sample Estimate (\$ Mil)	Standard Error of Estimate (Grossed-up) (\$ Mil)	Relative Standard Error of Estimate (%)	Range of Estimate at 95% Confidence Level	
				Lower (\$ Mil)	Upper (\$ Mil)
TOTAL	3,644,850	32,272	0.89	3,581,598	3,708,102
Wholesale Trade	3,146,870	32,082	1.02	3,083,989	3,209,752
Retail Trade	48,471	858	1.77	46,789	50,152
Food Services	10,959	594	5.42	9,795	12,123
Transport & Storage	153,851	837	0.54	152,210	155,491
Information & Communications	89,726	1,899	2.12	86,005	93,447
Business Services	143,881	2,572	1.79	138,840	148,923
Recreation, Community & Personal Services	43,891	402	0.92	43,103	44,678

**Table E.2 Sampling Errors of Value Added by Industry, 2018**

Industry	Grossed-up Sample Estimate (\$ Mil)	Standard Error of Estimate (Grossed-up) (\$ Mil)	Relative Standard Error of Estimate (%)	Range of Estimate at 95% Confidence Level	
				Lower (\$ Mil)	Upper (\$ Mil)
TOTAL	245,334	1,819	0.74	241,768	248,900
Wholesale Trade	80,597	903	1.12	78,826	82,367
Retail Trade	7,480	140	1.87	7,207	7,754
Food Services	3,779	177	4.68	3,432	4,125
Transport & Storage	28,954	436	1.50	28,101	29,808
Information & Communications	20,042	800	3.99	18,474	21,611
Business Services	69,426	1,237	1.78	67,001	71,852
Recreation, Community & Personal Services	30,808	286	0.93	30,249	31,368

Users have to be careful when making inferences using the relative standard error of the value added estimate. As the value added estimate would include positive and negative values, the aggregate estimate can be small. This can result in a large relative standard error.

### **Non-sampling Errors**

Non-sampling errors arise from non-response errors and errors in the collection, recording and processing of data (e.g. inaccuracies in reporting by respondents, errors in the recording and coding of data). Such errors can be controlled by the careful design of questionnaires, close supervision of data collection, and consistency checks during data processing, editing and verification.

In the Annual Survey of Services 2018, the following measures were taken to minimise non-sampling errors:

- (i) careful design of questionnaires;
- (ii) careful planning and implementation of operational procedures in data collection, processing and tabulation;
- (iii) standard procedures to follow up with respondents on the outstanding returns; and
- (iv) standardisation of concepts and definitions.