

The 37th Voorburg Group Meeting on Services Statistics
22 September 2022

Singapore's Experience in Developing Online Marketplaces SPPI

for

Cross-cutting topic on data gaps and measurement issues with
online intermediary platforms (Air BnB, Uber, etc.)

Edwin Boey

Singapore Department of Statistics

CONTENTS

I INTRODUCTION.....	3
II CLASSIFICATION.....	3
III MARKET CONDITIONS.....	6
IV DEVELOPMENT OF SPPI FOR ONLINE MARKETPLACES.....	8
V POSSIBLE DATA GAPS AND MEASUREMENT ISSUES.....	11
VI CONCLUSION.....	12

Singapore's Experience in Developing Online Marketplaces SPPI

for

Cross-cutting topic on data gaps and measurement issues with
online intermediary platforms (Air BnB, Uber, etc.)

I INTRODUCTION

The Singapore Department of Statistics (DOS) has been compiling the Computer Consultancy and Information Services Price Index¹ (CISPI) since 2016. In the rebasing of the CISPI from base year 2016 to base year 2021², DOS included online marketplace services into the index structure, after incorporating classification changes in the Singapore Standard Industrial Classification 2020³.

Online marketplaces⁴ are intermediary platforms that facilitate orders for goods or services between buyers and sellers usually on a fee or commission basis, without taking ownership of the goods or providing the services that are being sold through their online platforms (e.g., website, mobile application).

This paper summarises Singapore's experience in the classification and development of a SPPI for online marketplace services.

II CLASSIFICATION

The Singapore Standard Industrial Classification 2020 (SSIC 2020) adopts the basic framework of the International Standard Industrial Classification of All Economic Activities Revision 4 (ISIC Rev.4) for international comparability, with appropriate modifications and updates to account for changes in Singapore's economy and users' requirements.

In the SSIC 2020, a new three-digit group 632 'Online Marketplaces' was created under Section J 'Information and Communications', with new five-digit Sub-classes. See Table 1 below on the comparison between SSIC 2015 (ver 2018), SSIC 2020 and ISIC Rev.4. The title description 'Information Service Activities' for the two-digit division 63 was amended to 'Information Service Activities and Online Marketplaces' to reflect the expanded coverage, Class 6312 'Web Portals' in the previous edition was split into 6312 'Internet Search Engines' and other relevant codes in SSIC 2020.

¹ The quarterly SPPI report can be found at: www.singstat.gov.sg/publications/economy/services-producer-price-indices

² The information paper on the rebasing of the Computer Consultancy and Information Services Price Index (base year 2021 = 100) can be found at: www.singstat.gov.sg/media/files/publications/economy/ip-e51.ashx

³ The SSIC 2020 can be found at: www.singstat.gov.sg/standards/standards-and-classifications/ssic

⁴ The term 'Online Marketplaces' was adopted in SSIC 2020 instead of 'Intermediation services' as it was more commonly known in Singapore's context.

Table 1: SSIC 2015, SSIC 2020 and ISIC Rev.4 Codes and Titles under Division 63⁵

SSIC 2015 (ver 2018)	SSIC 2020	ISIC Rev. 4
63: Information Service Activities	63: Information Service Activities and Online Marketplaces	63: Information Service Activities
6311: Data Processing, Hosting and Related Activities	6311: Data Analytics Processing, Hosting and Related Activities	6311: Data Processing, Hosting and Related Activities
6312 – Web Portals	6312: Internet Search Engines	6312 – Web Portals
	6320: Online Marketplaces <ul style="list-style-type: none"> • 63201 – Online marketplaces for goods (including food) • 63202 – Online marketplaces for health services • 63203 – Online marketplaces for education services • 63204 – Online marketplaces for travel services • 63205 – Online marketplaces for real estate services • 63209 – Online marketplaces for services n.e.c. 	

Intermediaries that do not facilitate orders for goods and services mainly through online platforms are excluded from SSIC 6320 'Online Marketplaces'. For instance, contractors that carry out wholesale trade on a fee or commission basis not through online platforms are to be classified in SSIC 46100 'Wholesale on a fee or commission basis (excluding online marketplaces)'.

Table 2 shows the correspondence table between the 'Online Marketplaces' five-digit SSIC 2020 codes and the relevant partial ISIC four-digit codes and titles under ISIC Rev.4.

⁵ Codes under SSIC/ISIC 639 and some 5-digit codes from the listed SSIC 2015/2020 4-digit codes are not displayed, as the paper's focus is on online marketplaces.

Table 2: Correspondence between SSIC 2020 and ISIC Rev.4

SSIC 5-digit	ISIC 4-digit	ISIC Title (Partial)⁶
63201	4610	Wholesale on a fee or contract basis
63201	4791	Retail sale via mail order houses or via internet
63201	4799	Other retail sale not in stores, stalls or markets
63201	5819	Other publishing activities
63202	5819	Other publishing activities
63202	8690	Other human health activities
63203	5819	Other publishing activities
63203	8550	Educational support activities
63204	5819	Other publishing activities
63204	7911	Travel agency activities
63204	7912	Tour operator activities
63204	7990	Other reservation service and related activities
63205	5819	Other publishing activities
63205	6820	Real estate activities on a fee or contract basis
63209	4390	Other specialised construction activities
63209	5819	Other publishing activities
63209	6910	Legal activities
63209	6920	Accounting, bookkeeping and auditing activities; tax consultancy
63209	7710	Renting and leasing of motor vehicles
63209	7729	Renting and leasing of other personal and household goods
63209	7730	Renting and leasing of other machinery, equipment and tangible goods
63209	7810	Activities of employment placement agencies
63209	7820	Temporary employment agency agencies
63209	8121	General cleaning of buildings
63209	8129	Other building and industrial cleaning activities
63209	9529	Repair of other personal and household goods
63209	9609	Other personal service activities n.e.c.

Classifying Online Marketplaces under Division 63

Given the growing importance of different forms of online marketplaces and in the absence of international guidance on classifying such intermediaries at the time of our review in 2019-2020, DOS explored several options during the stakeholder consultations with data source and policy agencies before deciding to create a new code for 'Online Marketplaces' under Division 63 in Section J 'Information and Communications'. Other options explored included:

1. Classify all online marketplace activities under SSIC 6312 'Web Portals' in Section J.

⁶ SSIC 5-digit codes in Table 2 correspond to parts of the ISIC codes

2. Classify to existing/ appropriate SSIC codes based on the industry the online marketplaces are supporting (e.g., wholesale, retail) and create new codes under each SSIC section, where appropriate for all other intermediation services.

The nature of a digital intermediation firm is distinct from its non-digital counterpart because such digital service involves computer programming, digital infrastructure, data analytics and information processing, which are essentially “Information and Communication” services activities. These firms generally do not own the goods or services sold through their online platforms and instead receive a fee or commission for their intermediation services. Some of them may even venture out across different industries (e.g., from transport to food). Hence, the current treatment to place online marketplaces under Section J ‘Information and Communications’ was adopted with sub-classes created according to very broad types of goods and services supported by the intermediaries and this approach also provides some flexibility for future SSIC revisions to align to the next ISIC revision.

III MARKET CONDITIONS

Table 3 below shows the number of establishments, operating revenue and value-added within the Information and Communications industry for 2020⁷. Despite having slightly over 1,000 establishments, the Information Services sector contributed 49.5% and 34.0% of the total operating revenue and value added respectively in 2020.

Table 3: Establishments, Revenue and Value-added for 2020

SSIC	Description	No. of Establishments	Operating Revenue (\$Mil)	Value Added (\$Mil)
58	Publishing	2,063	12,319	3,724
59 & 60	Motion Picture, Radio & TV	2,077	6,465	1,289
61	Telecommunications	917	14,578	4,681
62	Computer Programming & Consultancy	12,843	31,542	7,622
63	Information Services	1,177	63,636	8,934
	Total	18,717	128,539	26,250

⁷ Information on the table 3 and figures 4 & 5 can be found at: <https://www.singstat.gov.sg/modules/infographics/information-and-communications>

Figure 4 & 5 below show the year-on-year growth rate of operating revenue and value added between 2019 and 2020.

Figure 4 : Year-on-Year Growth Rate of Operating Revenue Between 2019 & 2020

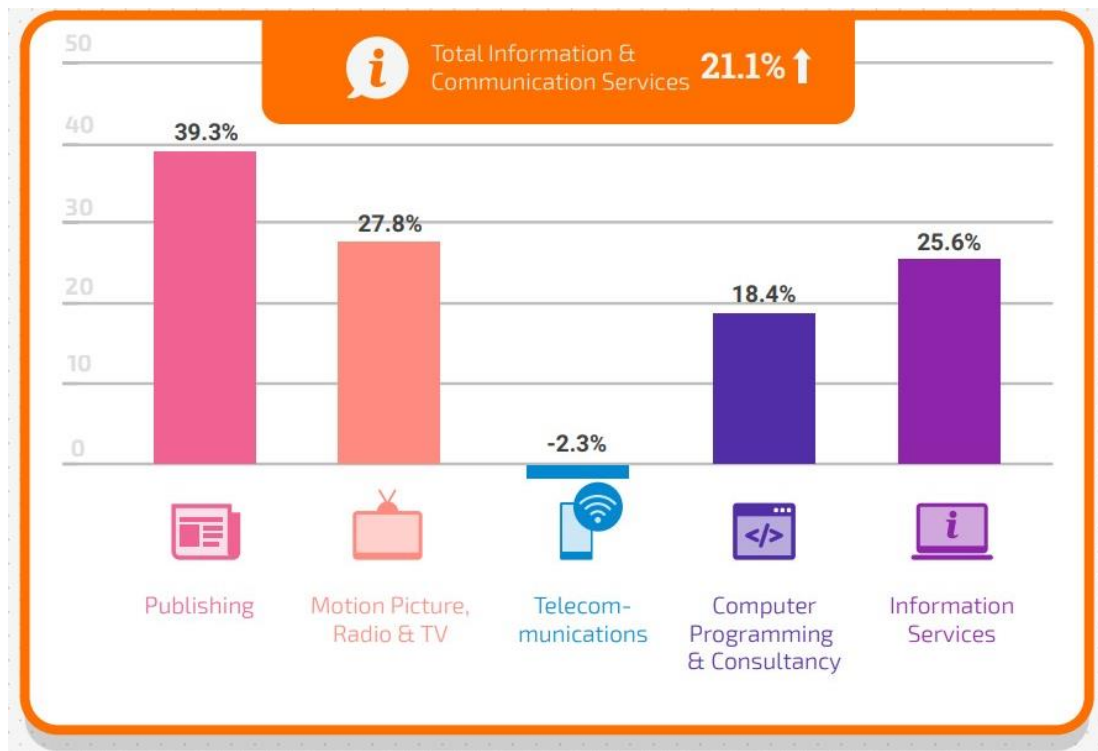
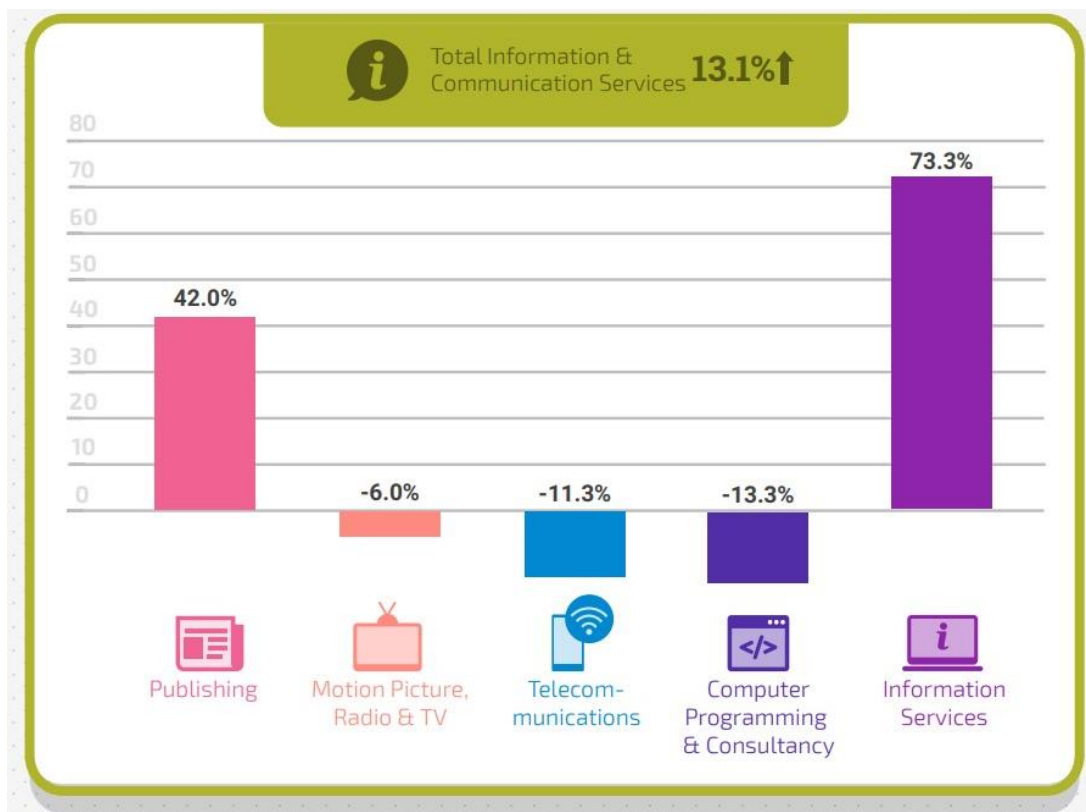


Figure 5 : Year-on-Year Growth Rate of Value Added Between 2019 & 2020



Within Information Services, the total revenue of all online marketplaces (SSIC 632) increased more than 40% from 2019 to 2020. The table below shows the distribution of operating revenue (OR) within the SSIC five-digits of Online Marketplaces in 2019 and 2020. With 2020 being a unique year due to the lockdowns imposed by countries to blunt the spread of Covid-19 virus, the revenue for travel services (online marketplaces) declined 20 percentage points. In contrast, online marketplaces for goods increased 22 percentage points.

Table 6 : Distribution of Operating Revenue by SSIC 5-Digit Codes

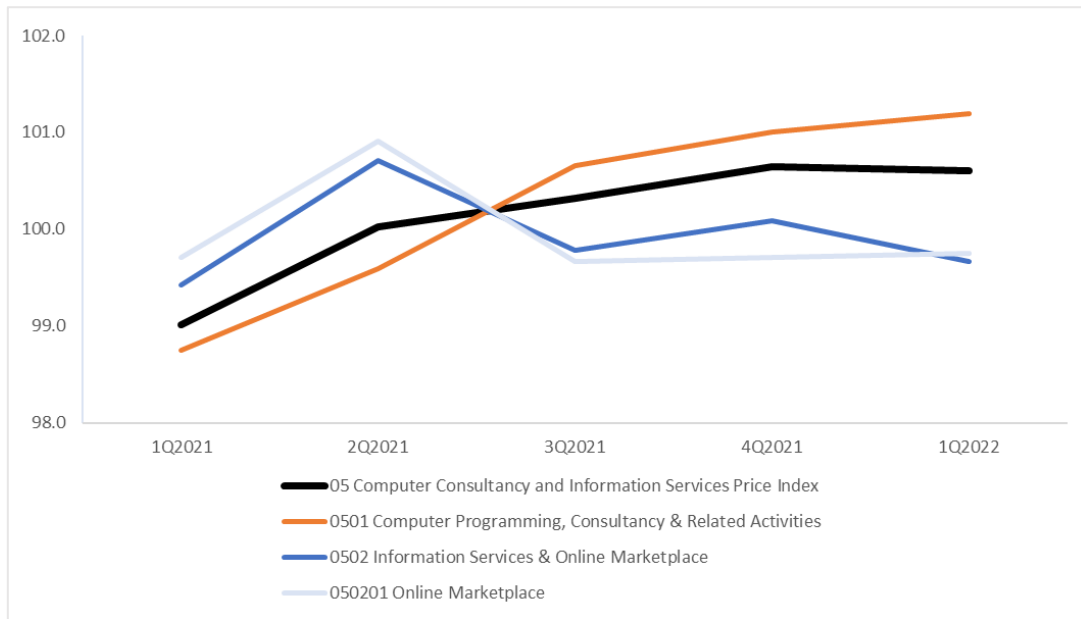
SSIC	Description	2019 OR (%)	2020 OR (%)
63201	Online marketplaces for goods (including food)	62%	84%
63202	Online marketplaces for health services	<1%	<1%
63203	Online marketplaces for education services	<1%	<1%
63204	Online marketplaces for travel services	30%	10%
63205	Online marketplaces for real estate services	<1%	<1%
63209	Online marketplaces for services n.e.c.	7%	5%

IV DEVELOPMENT OF SPPI FOR ONLINE MARKETPLACES

General Framework

Planning and research work started in early 2020 with internet research on online marketplaces' business models. An industry survey covering 900 establishments (sampled from DOS's business register) was conducted in 2H2020 to collect the breakdown of OR by business activities within SSIC 62 and 63 for calendar year 2019 (which is the weight reference year). Firms which had operating revenue from online marketplaces were further sampled in 2H2021 and 1Q2022 to collect service products and monthly prices for calendar year 2021 (price reference year). During this period, respondents were contacted to clarify on the survey returns and refinements were made to the survey form to ensure that the products and prices collected were representative. After analysing the survey returns, the list of establishments and service products were finalised for routine price collection (via online web extraction or half-yearly price surveys). The weights assigned to the establishments were based on the revenue contribution of the establishment for online marketplaces. Within an establishment, the weights were evenly distributed within the service products. Note that the service products were aggregated together and there was no differentiation by SSIC 5-digit code. The online marketplace price index is compiled on a quarterly basis and aggregated together with other price indices on data centres, hosting activities, etc and released as the CISPI in the quarterly SPPI report. Figure 7 shows the CISPI and relevant sub-indices from 1Q2021 to 1Q2022.

Figure 7 : CISPI and relevant sub-indices from 1Q2021 to 1Q2022



Determining Online Marketplaces' Business Model and Pricing Method

Based on internet research⁸, there are five different types of business models adopted by online marketplaces, namely the commission model, subscription model, freemium model, listing model and featured ad placement.

Table 8 : Types of Business Models Adopted by Online Marketplaces

Model	Description	Examples
Commission	Commission is charged on each successful transaction. The platform operator then imposes either a fixed or variable fee on the product transacted	Amazon, eBay, Etsy, AirBnb
Subscription	Sellers and/or buyers are charged recurring fee to access the marketplace.	LinkedIn's B2B solutions
Freemium	Free of charge for usage for both buyers and sellers. Monetisation occurs by offering additional features, premium subscriptions, or cross selling other services	Unsplash
Listing	Sellers are charged for every offer they upload on the platform. Utilised when sellers list high-ticket items such as cars or houses	Trulia.com, Realtor.com
Featured Ad Placement	On top of other models such as commission or listing, seller can opt to pay an additional fee to have their listing displayed before others.	Classified division of eBay

⁸ <https://productmint.com/the-marketplace-business-model-a-complete-guide>

Product Listing/ Publishing Fees									
Unit Rate (Total Fee/Qty)									
Total Fee Charged									
Total Quantity Charged									
Currency									
Unit of Measurement									
Other Service Item 1									
Other Service Item 1: Please Specify									
Unit Rate (Total Fee/Qty)									
Total Fee Charged									
Total Quantity Charged									
Currency									
Unit of Measurement									
Other Service Item 2									
Other Service Item 2: Please Specify									
Unit Rate (Total Fee/Qty)									
Total Fee Charged									
Total Quantity Charged									
Currency									
Unit of Measurement									
Other Service Item 3									
Other Service Item 3: Please Specify									
Unit Rate (Total Fee/Qty)									
Total Fee Charged									
Total Quantity Charged									
Currency									
Unit of Measurement									
Remark									

The survey forms were subsequently streamlined and only the relevant data items were sent to the respondents for routine data collection.

V POSSIBLE DATA GAPS AND MEASUREMENT ISSUES

Definition/ Classification of Online Marketplaces

DOS followed closely the definition that online marketplaces are intermediary platforms which facilitate orders without taking ownership of the goods or providing the services that are being sold through their online platform. Hence, application stores and dating applications were also considered online marketplaces. Application stores allow developers to host their applications on the store and sell it to consumers, while earning a certain percentage of the payments that go through their platform. Dating applications do not provide the actual dating services, like planning for a date or facilitating venue bookings, but instead offer subscriptions to users to be matched with other users' profiles in its database.

Perhaps due to the reclassification of establishments partially from other SSIC codes to SSIC 632 initially, DOS identified during the initial survey that they were several wrongly classified establishments which could be better classified in other SSICs, e.g., internet search engines, travel agents. There were also other clear-cut establishments that had online marketplaces but were classified in other SSIC codes. For both scenarios, feedback were provided internally to the relevant DOS colleagues. In particular for the latter, the establishment(s) were not included in the survey, although DOS would internally explore if there was a need to split further to another SSIC code.

For other larger online marketplaces, it may also be possible that they derive part of their revenue from non-online marketplace activities, such as sale of own goods/ services via their online platforms. However, DOS is unable to distinguish this from the initial surveys and these

were not considered as materially impactful. Their total OR (and subsequently weights) were assumed to be derived from online marketplaces activities.

Data Collection / Compilation

For establishments on the commission model, some respondents provided the total commission fees received from a client (e.g., seller) in the survey form with monthly data. However, the fees vary drastically from month to month. Upon clarifications with the respondents, it was noted that the commissions were dependent on the products sold by the client, which may vary for different product categories (e.g., electronics, healthcare, fashion). Hence, it could not be used to capture price changes accurately. Hence, either the (i) generic commission rates by product categories or (ii) unit value was used. Discounts/surcharges provided to individual clients or products will not be captured using these methods. Figure 10 below illustrates an example of using commission rates by product categories.

Figure 10 : Generic Commission Rates by Product Categories

Category	Sub-category & Commissions	
Electronics	Mobile Phones	3%
	Televisions	3%
	Large Appliances	3%
	Small Appliances	5%
	Desktops & Laptops	3%
	Gaming Consoles	3%
	Cameras	5%
	Electronic Accessories	5%
	Mother & Baby	Diapers
Milk Powder		3%

VI CONCLUSION

DOS will monitor the existing products and prices, while looking towards engaging other online marketplace establishments to better understand their service products and onboard them on the price surveys. More service products and prices are needed over a longer period to improve the methodology/ quality of this index.