



**United Nations Conference
on Trade and Development**

Trade and Development Board
Intergovernmental Group of Experts
on E-commerce and the Digital Economy
Working Group on Measuring E-commerce and the Digital Economy
Third meeting
Geneva, 28-29 November 2022 (hybrid)
Item 4 of the provisional agenda
Defining the digital economy for statistical purposes

Forthcoming OECD-WTO-IMF-UNCTAD Handbook on Measuring Digital Trade
Draft of Chapter 3. Digitally ordered trade

This draft is circulated in the context of the on-going revision of the Handbook on measuring digital trade, which is being undertaken through collaboration between the OECD, WTO, IMF, and UNCTAD. Delegates to the third meeting of the UNCTAD Working Group on Measuring E-commerce and the Digital Economy are encouraged to provide feedback at the meeting or in writing to ecde@unctad.org.

3. Digitally ordered trade

The Handbook defines digitally ordered trade as the *international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders*. This Chapter describes how existing enterprise and household surveys targeting e-commerce provide a basis for measuring digitally ordered trade. Nevertheless, it highlights the significant measurement challenges that survey respondents (especially households) can face in identifying international transactions, particularly when they pass through digital intermediation platforms. Examples of how additional data sources can help estimate components of digitally ordered trade are also provided, along with guidance on improving estimates of *de minimis* transactions.

3.1. Measuring digitally ordered trade

Digitally ordered trade, as defined in this Handbook, comprises:

“The international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders”.

This definition (and clarifications) is aligned with the OECD (2009) definition of e-commerce, though with international transactions as the focus. Consequently, it is supported by several accompanying clarifications. These include that the payment and ultimate delivery of the goods or services do not also have to be conducted online. Transactions can involve participants from all institutional sectors, and cover orders made over the Internet, extranet or via EDI. Orders made by phone, fax, or manually typed email are excluded. Several other supporting clarifications are set out in [Chapter 2](#).

There have been efforts over the last decade to measure the scale and value of e-commerce transactions. In some countries, additional detail is collected which provides insights on cross-border e-commerce. This offers an example and foundation for those starting to measure digitally ordered trade.

Each e-commerce transaction involves two main parties – a buyer and a seller. These roles may be filled by any combination of businesses, households, government bodies, or NPISHs. The most common, and widely analysed e-commerce flows are business-to-business (B2B) and business-to-consumer (B2C) transactions. One implication of this is that measures of businesses’ e-commerce revenues and households’ e-commerce expenditure will partially overlap because of businesses selling to consumers in the same economy. This is not the case in the international trade context, though, because the buyer or seller is always abroad. Surveying businesses and households in the same economy about their online sales to, and purchases from, parties abroad will yield results that are mutually exclusive and additive.

A considerable minority of e-commerce transactions involve a third party, with a digital intermediation platform (DIP) acting as an intermediary. This does not change the over-arching principle that digitally ordered trade consists of e-commerce transactions where the seller (buyer) is resident in the domestic economy and the buyer (seller) is resident abroad. DIPs can create several complicating factors, though. Firstly, the presence of a third party in the transaction may make it harder to assess whether the buyer and seller are resident in the same country - especially for survey respondents, who may believe they are purchasing from the DIP itself. This might lead to cases where a transaction between domestic parties is reported as international e-commerce because the DIP is a foreign resident (or indeed where a cross-border e-commerce purchase is not reported as trade because the DIP is resident in the same country as the buyer). Secondly, in facilitating the transaction, the DIP itself produces digital intermediation services provided to both the seller and buyer, these should be recorded as digitally ordered and digitally delivered trade in cases where the DIP is resident in a different economy from the buyer/seller (even when the buyer and seller are resident in the same country). See [Chapter 5](#) for more on measuring and recording transactions involving DIPs.

To this point, most efforts to measure the value of e-commerce have focused on businesses and households at the whole economy level. Survey sources can ask businesses about their sales revenues from e-commerce transactions, and also about their expenditures on purchases (e.g., of inputs, services, etc.) via e-commerce. Given the primary role of households as consumers, household surveys have focussed more on measuring their spending via e-commerce, though there are experiences on measuring households’ online income from selling items (such as crafts or second-hand items) and/or services (e.g., accommodation, transport, delivery services, etc.). Yet, challenges remain in using surveys and other data sources to measure digitally ordered trade (OECD, 2019^[1]) (pp130-131). This Handbook attempts to propose pragmatic and innovative solutions, but it cannot be overstressed that the current chapter only reflects a step in that direction, with the expectation that significant additional guidance will be added as national and international efforts mature.

This chapter further describes relevant existing and potential developments in data sources and methods for measuring digitally ordered trade.

3.2. Survey sources

The alignment between the definition of digitally ordered trade transactions and the definition of e-commerce transactions (where the only difference is that the former is confined to transactions between residents and non-residents), means that surveys used to measure e-commerce offer a foundation from which to measure digitally ordered trade.

That said, in operationalising the OECD definition of e-commerce, the UNCTAD Manual for the Production of Statistics on the Digital Economy 2020, (UNCTAD/DTL/STICT/2021/2, 2021^[2]) states that “to take into account the different levels of technological development in countries, the Partnership [on measuring ICT for development] recommends [prioritising] collecting data on orders received or placed over the Internet, including by email”.

Accordingly, countries may vary in the inclusion or exclusion of orders by manually typed emails in e-commerce surveys. Orders placed by manually typed emails (or other equivalent means such as via messaging apps) are most likely to be of relevance in certain industries and especially in developing countries. That said, several OECD members include orders via email in their published e-commerce sales figures (UNCTAD, forthcoming). This highlights the importance that all aspects of survey coverage (both in terms of concepts and statistical population) are clearly recorded and communicated to users to allow proper interpretation and comparison of the resulting statistics. In cases where manually typed emails are included within the scope of e-commerce, the value of these transactions should ideally be measured separately from those through other e-commerce channels. If that is not possible (e.g., due to respondent burden) it is desirable to at least specifically ask respondents if the amounts reported include orders (or purchases) via email as this will give an indication of the prevalence of email ordering and the potential scale of transactions involved. An example of this is available in the UNCTAD model questionnaire for business surveys on the use of ICT (see (UNCTAD/DTL/STICT/2021/2, 2021^[2]), Annex 2).

In the vast majority of cases, the Internet will be the “computer network” facilitating digital ordering. Nevertheless, e-commerce orders may also take place through private networks, such as direct network connections between (usually large) companies and their customers. Statistical compilers should take steps to ensure any economically significant digitally ordered trade flows are adequately captured.

Enterprises are a natural starting point when using surveys to measure e-commerce. Businesses exist to produce and sell goods and services – and e-commerce is a way for them to make those sales. For this reason, and based on the evidence presented in Box 3.1, it is reasonable to assert that businesses account for the significant majority of e-commerce sales by value. By extension, they would also be expected to underpin the majority of digitally ordered exports.

Furthermore, of e-commerce where the seller is a business, it is estimated that in around 80% of transactions (by value) the buyer is also a business (UNCTAD, 2021^[3]). Thus, enterprise surveys also have the potential to collect information on a significant portion of digitally ordered imports (those purchased by businesses).

Digitally ordered trade involving businesses should therefore generally be the highest measurement priority. Nevertheless, situations will vary across countries and compilers of statistics should assess the prevalence and importance of cross-border e-commerce transactions involving government units, non-profit institutions serving households, and especially households to establish priorities and ensure the statistics produced are sufficiently exhaustive and representative.

Box 3.1. Evidence on businesses and households in e-commerce

On average across OECD countries, nearly 30% of businesses received orders over computer networks in 2020. In the same year, around 20% of individuals sold goods or services online. Nevertheless, a typical household selling online might be expected to make much less money overall than a business doing the same. For example, in Canada, 12% of persons aged 15 years or older reported earning money online in 2020. The average earning from online activities was CAD 2,700 (around USD 2,000). By comparison, in the following year businesses made almost CAD 400 billion in e-commerce sales in total with an average e-commerce take of CAD 3.7 million across all businesses and over CAD 500 thousand for small enterprises (Statistics Canada, 2022^[4]).

In Japan in 2021, it is estimated that business-to-business (B2B) e-commerce transactions amounted to over YEN 370 trillion, business-to-consumer (B2C) e-commerce to almost YEN 21 trillion, and consumer-to-consumer (C2C) e-commerce to just YEN 2.2 trillion (Ministry of Economy, Trade and Industry, (METI), Japan, 2022^[5]). In 2013, C2C e-commerce accounted for only 1% of the total value of e-commerce sales in Korea (Statistics Korea, 2014^[6]).

The next section sets out how enterprise surveys can be used to measure business e-commerce exports and imports. The following section looks at using Household Surveys to provide additional coverage of international e-commerce transactions.

Enterprise surveys

The most widely adopted vehicle for measuring business e-commerce is surveys of ICT usage in business. Including similar but more specific “business e-commerce surveys”, it is estimated that nearly 80 countries worldwide have undertaken such collections (UNCTAD, forthcoming). Annual business ICT surveys are legally mandated in European Union Member States and also take place in other countries participating in the European Statistical System (Bosnia and Herzegovina, Iceland, Montenegro, North Macedonia, Norway, Serbia, Türkiye)¹. Annual or biennial surveys are also carried out in most other OECD countries and in Brazil, which also submits statistics to the OECD database on ICT access and usage by businesses². The frequency of business ICT surveys in other economies is more variable but there are many examples of regular collections, especially in Asia, including in China, Indonesia, Malaysia, Thailand, and the Philippines. Statistics from such countries can be found in the UNCTAD database of core indicators on ICT usage in business³.

Alongside monitoring a wide range of ICT uses, these surveys have long been used to ask businesses whether they make sales or purchases through e-commerce (UNCTAD/DTL/STICT/2021/2, 2021^[2]). As a result, the percentages of businesses engaging in e-commerce are among the Core ICT indicators⁴ established by the Partnership on Measuring ICT for development in which UNCTAD and the OECD are active partners, along with various other regional and international organisations⁵. The core indicators have been officially adopted by countries through endorsement at the UN Statistical Commission (most recently in 2016). Even so, and although information on the *uptake* of e-commerce among businesses is useful for analytical and policymaking purposes, measuring the monetary *value* of e-commerce transactions, including those taking place across borders, are crucial next steps which will allow e-commerce to be integrated into frameworks for economic statistics, including trade statistics.

To investigate the *value* of business e-commerce, a logical enhancement is to ask each business that does e-commerce about the resulting income and/or associated expenditure on e-commerce purchases. These can either be requested directly as monetary values, or as a percentage of the business’ total sales income / expenditure. A majority of countries that have business ICT surveys have collected at least some value information. For example, EU countries have collected data on the value of turnover from e-commerce

orders since 2012. However, only a relatively small number have published monetary figures on the value of e-commerce sales or purchases (UNCTAD, forthcoming).

In many cases, the traditional questions on whether or not businesses make sales via e-commerce have been accompanied by questions seeking further details - most commonly about the customers the responding enterprise sells to (businesses, government units, consumers), and the sales channels used (own websites/apps, third party websites/apps/marketplaces, EDI messages). Another common follow-on question asks whether the business has made e-commerce sales to customers in the same country and/or abroad. An extension of this asks for a percentage (or monetary amount) breakdown of the total value of e-commerce sales into these two components. From this, the business' digitally ordered exports can be derived.

Box 3.2 presents an example of this approach, from the Department of Statistics Malaysia. This illustrates how the total value of e-commerce sales can either be collected directly as a monetary value, or as a percentage of the business' total sales revenue. This example also illustrates the common practice of favouring the former over the latter. Finally, it shows how respondents are requested to provide the breakdown into e-commerce sales to customers domestically and abroad in the form of shares summing to 100%.

Also notable in this example is the guidance given to responding enterprises – such as DIPs – which receive Internet orders on behalf of other organisations. In these cases, the DIP is instructed to enter only the commissions or fees earned on the transaction. This avoids the risk of double counting where the sale of accommodation services, for example, is reported once by the seller (e.g., hotel) and within the value of transactions reported by the DIP (e.g., hotel booking platform). For more information on the measurement and recording of transactions involving DIPs, see Chapter 5.

Many countries request more geographical detail on sales abroad. For example, in EU surveys, responding businesses have been asked to provide percentage shares of e-commerce sales going to customers: i) in the respondent's own country; ii) in other EU Member States; and iii) in the Rest of the World (see Box 3.3). This was included as a mandatory breakdown for the first time in 2021 (2020 reporting year for e-commerce questions), having been optional in 2019 and 2017. Importantly, though, the EU surveys do not collect a total value for e-commerce sales but separate (sub)totals for “web sales” (sales through web sites and apps, including DIPs) and “EDI-type sales”⁶. The cross-border breakdown was only collected for web sales, which in 2020 comprised an average of 7% of the turnover generated by businesses with 10 or more persons employed across the EU27 Member States. By comparison, EDI-type sales accounted for almost double this share – 13% of turnover on average. Results from this breakdown of web sales turnover were not released as part of the 2021 Eurostat value of e-commerce sales database.

Several countries go further toward the model of measuring bi-lateral digitally ordered trade flows. Box 3.4 presents an example from Statistics Canada, which collects information on the shares of e-commerce sales revenue coming from different geographic regions and, in some cases specific countries. Canada has also collected a breakdown of the total value of e-commerce (though not specifically international e-commerce) by product types. In 2021, 62% of private sector firms' gross sales conducted over the Internet were sales of physical goods, 18% digitally delivered services, and 20% other services (Statistics Canada, 2022^[7]). This information offers a basis for estimating the conceptual overlap between digitally ordered exports and digitally delivered exports, in order to derive an estimate of total digital exports by businesses.

Box 3.2. Measuring international e-commerce sales in Malaysia

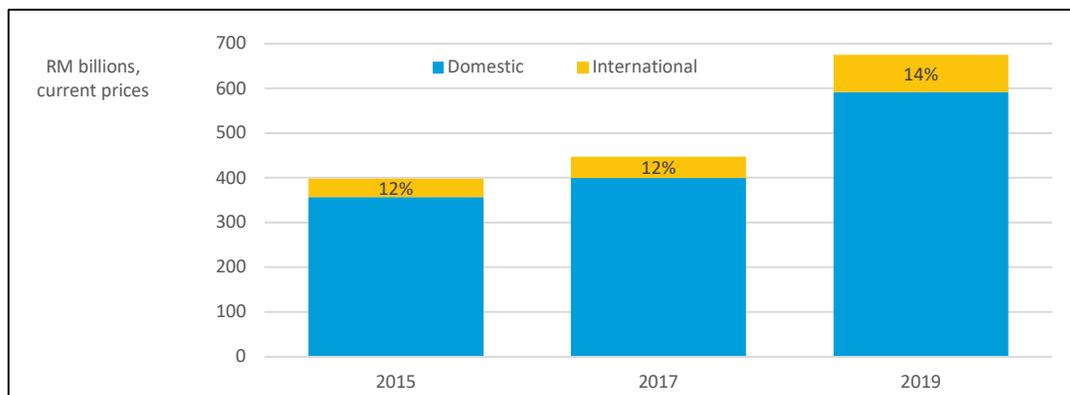
The following questions are extracted from the Survey on Usage of ICT and E-commerce by Establishment, 2020.

4.2	Jumlah pendapatan (Merujuk kepada jumlah hasil kendalian / perolehan / jualan dan hasil lain) <i>Total income (Refers to operating revenue / turnover / sales and other revenue)</i>	RM	080089
6.5	Sila nyatakan jumlah pendapatan yang diterima daripada jualan barangan atau perkhidmatan menggunakan e-dagang <i>Please indicate the total income that receive orders from sales of goods or services via e-commerce</i>	RM	3100
44			
	Jika tuan tidak dapat membekalkan nilai, <i>If you can't provide the value,</i>		
	Sila nyatakan anggaran peratusan jumlah pendapatan yang diterima daripada jualan barangan atau perkhidmatan menggunakan e-dagang <i>Please indicate an estimate of the percentage of total income that receive orders from sales of goods or services via e-commerce</i>	45	(%)
<p>Nota / Notes: Bagi pesanan internet yang diterima bagi pihak organisasi lain, sila lapor hanya yuran atau komisen yang diterima <i>For internet orders received on behalf of other organisations, include only fees or commissions earned</i></p>			
6.8	Sila nyatakan peratusan pendapatan e-dagang mengikut jenis pasaran <i>Please indicate the percentage of e-commerce income by types of market</i>		3100
(a)	Tempatan <i>Domestic</i>	54	(%)
(b)	Antarabangsa <i>International</i>	55	(%)
	JUMLAH TOTAL	100	(%)
<p>Nota / Notes: Jika peratusan pendapatan antarabangsa e-dagang diisi, sila ke Soalan 6.9 <i>If the percentage of e-commerce international income is filled, please go to Question 6.9</i></p>			

Source: Department of Statistics Malaysia, Survey on Usage of ICT and E-commerce by Establishment 2020, https://www.dosm.gov.my/v1/uploads/files/2_Censuses%26Surveys/Services/ICTeC/2020/Borang-ICTeC-2020.pdf

Figure 3.1. Business e-commerce sales by customer location, Malaysia

The results published show the total value of business e-commerce sales increasing rapidly over time, while the share of sales going to customers abroad also increases.



Source: Malaysia Digital Economy

https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=489&bul_id=c1FiaHRCQnlRdkxzUUFkNFJncWtEQT09&menu_id=b0pIV1E3RW40VVRTUkZocEhyZ1pLUT09

Box 3.3. Questions on geographical breakdown of turnover from received orders placed via a website or apps in the European Community Survey on ICT Usage and E-commerce in Enterprises 2021

Question B2. What was the value of your web sales?

(WEB sales: the customer places the order on a website or through an app)

- a) What was the value of your web sales of goods and services in 2020? _____ (National currency, excluding VAT)

OR

- b) What percentage of total turnover was generated by web sales of goods or services, in 2020? _____ %
If you cannot provide the exact percentage an approximation will suffice

Question B8. What was the percentage breakdown of the value of web sales in 2020 to customers located in the following geographic areas?

(Please refer to value of web sales you reported in B2)

If you cannot provide the exact percentages an approximation will suffice.

- | | | |
|-----|--------------------|---------|
| (a) | Own country | _____ % |
| (b) | Other EU countries | _____ % |
| (c) | Rest of the world | _____ % |
| | Total | 100 % |

Source: Eurostat Community Survey on ICT Usage and E-commerce in Enterprises, 2021: <https://circabc.europa.eu/ui/group/4f80b004-7f0a-4e5a-ba91-a7bb40cc0304/library/f9dc8b66-a429-49e2-ae01-f7424ec389f0/details>

Box 3.4. Measuring international e-commerce sales by trading partners in Canada

The following questions are extracted from the Survey of Digital Technology and Internet Use, 2021.

Question 21. What was this business's total gross sales conducted over the Internet in 2021?

(If precise figures are not available of the year is not yet complete, please provide your best estimate in Canadian dollars)

_____ Rounded to the nearest CAN\$

OR

Don't know

Question 22. In 2021, what percentage of the value of this business's gross sales was made over the Internet?

_____ %

OR

Don't know

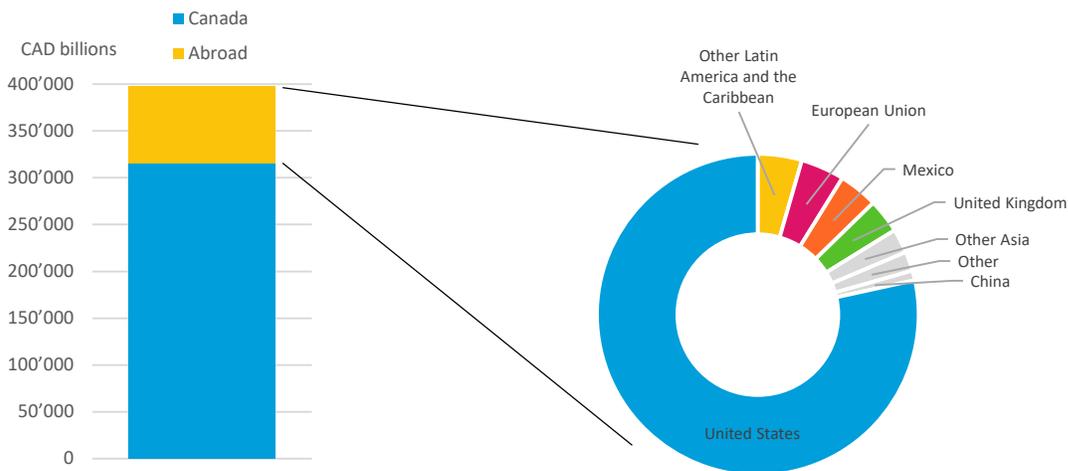
Question 26. What percentage of the value of this business's gross sales conducted over the Internet were obtained from each of these regions in 2021?

(a)	Canada	_____ %
(b)	United States	_____ %
(c)	Mexico	_____ %
(d)	Other Latin America and the Caribbean	_____ %
(e)	China	_____ %
(f)	Other Asia	_____ %
(g)	The European Union	_____ %
(h)	The United Kingdom	_____ %
(i)	Other regions	_____ %
	Total	100 %

Note: The published results show that 20% of e-commerce sales by businesses in Canada were to customers abroad, with over three quarters of these orders (by value) going to customers located in the United States.

Source: Statistics Canada, https://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=assembleInstr&lang=en&Item_Id=1317562

Figure 3.2. Business e-commerce sales by customer location, Canada, 2021



Source: Statistics Canada, https://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=assembleInstr&lang=en&Item_Id=1317562

The United Kingdom Office for National Statistics (ONS) 2021 Digital Economy Survey takes a somewhat similar approach, asking respondents to breakdown e-commerce turnover by geographic regions. However, this detail and others are nested within an over-arching question on the business' turnover from sales to customers outside the United Kingdom. This approach has two potential benefits, in principle. Firstly, respondents can break down their turnover into that coming from abroad vs domestic customers, even if they are unable to provide further details. Secondly, it allows the *turnover from e-commerce sales to customers abroad to be broken down in additional ways*.

A breakdown into turnover from e-commerce sales of goods, non-digitally delivered services, and digitally delivered services should yield an estimate for the overlap between digitally ordered trade and digitally delivered trade (i.e., of digitally delivered services ordered via e-commerce). Shown as item 2.2.a in the reporting template for digital trade (see [Chapter 2, Table 2.1](#)), this is crucial to avoid double counting in compiling a measure of total digital trade. Box 3.5 looks in more detail at this and other options for estimating the overlap.

Additionally, a separate breakdown isolating the turnover via “online marketplaces” (i.e., DIPs), the survey collects information relevant to measuring reporting template items 2.1.a (digitally ordered trade in goods via DIPs) and 2.2.b (digitally ordered trade in services via DIPs).

The ONS example (Box 3.6) illustrates that business ICT surveys can be used to gather extensive detail on business' digitally ordered exports and therefore provide a basis for completing a significant part of the reporting template for digital trade. Nevertheless, each additional detail collected adds burden for respondents and may potentially contribute to lower overall response rates. As is always the case, statistical compilers will need to balance the competing need for detailed information with the need to manage respondent burden and response rates. In this regard, it is important to note that the reporting template offers flexibility, allowing countries to report key items such as total digitally ordered trade and the sub-component relating to digitally delivered services without imposing the need to collect all breakdown items.

The ONS example also illustrates how business ICT surveys can be used to gather information on a key component of *digitally ordered imports* – namely the value of goods and services ordered, via e-commerce, by domestic businesses from suppliers abroad. Spain's Instituto Nacional de Estadística provides another example of this and accompanying results (Box 3.7).

Box 3.5. Estimating the overlap between digitally ordered and digitally delivered trade

To be completed.

Box 3.6. Selected questions on international e-commerce sales and purchases, United Kingdom 2021 Digital Economy Survey

During 2021, what was your business's turnover from e-commerce sales to customers located outside the UK?
(pounds sterling)

How much of the value of the turnover from e-commerce sales to customers located outside the UK came from the following areas?

- (a) European Union countries _____ £
- (b) Other European countries (excluding UK constituent countries) _____ £
- (c) Africa _____ £
- (d) Australasia and Oceania _____ £
- (e) Asia _____ £
- (f) The Americas and the Caribbean _____ £

How much of the value of turnover from e-commerce sales to customers located outside the UK came from each platform?

- (a) Turnover from e-commerce sales via your business's own website or app _____ £
- (b) Turnover from e-commerce sales via your business's own social media _____ £
- (c) Turnover from e-commerce sales via an online marketplace _____ £
- (d) Turnover from e-commerce sales via EDI _____ £
- (e) Turnover from e-commerce sales via other platforms _____ £

How much of the value of the turnover from e-commerce sales to customers located outside the UK came from the following?

- (a) Turnover from e-commerce sales of goods _____ £
- (b) Turnover from e-commerce sales of digitally delivered services _____ £
- (c) Turnover from e-commerce sales of non-digitally delivered services _____ £

During 2021, what was your business's expenditure on e-commerce purchases from suppliers located outside the UK?

How much of the value of expenditure on e-commerce purchases from suppliers located outside the UK was spent in the following areas?

- (a) European Union countries _____ £
- (b) Other European countries (excluding UK constituent countries) _____ £
- (c) Africa _____ £
- (d) Australasia and Oceania _____ £
- (e) Asia _____ £
- (f) The Americas and the Caribbean _____ £

How much of the value of expenditure on e-commerce purchases from suppliers located outside the UK was on the following?

- (a) Expenditure on e-commerce purchases of goods _____ £
- (b) Expenditure on e-commerce purchases of digitally delivered services _____ £
- (c) Expenditure on e-commerce purchases of non-digitally delivered services _____ £

How much of the value of expenditure on e-commerce purchases from suppliers located outside the UK, was spent on each platform?

- (a) Expenditure on e-commerce via a business's website or app _____ £
- (b) Expenditure on e-commerce purchases via other platforms _____ £

Source: "2021 Digital Economy Survey: survey questions":

<https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/2021digiteconomysurveysurveyquestions#e-commerce-sales>

Box 3.7. Business e-commerce purchases from abroad, Spain

A.3 Amount of total purchases of foreign goods and services made by the company in 2020

Net purchases of goods and services represent the value of all goods and/or services purchased during the reference year, either for resale or for consumption, in the production process or in the ordinary course of business. These purchases must be valued at the acquisition price in net terms.

Total amount of purchases of foreign goods and services (excluding VAT) _____€

K.2 Purchases by Electronic Commerce in 2020

E-commerce purchases through the web or mobile applications: These are purchases made through a store online or through forms on a company website, extranet or via mobile applications.

Purchases by electronic commerce through EDI: These are purchases made through Electronic Data Interchange type messages, understanding the term EDI as a standard format suitable for automated processing (e.g., EDI (e.g., EDIFACT), XML (e.g., UBL)...).

Orders by messages or emails written manually are excluded.

Purchases of goods or services include the value of goods and services purchased during the accounting period for resale or consumption in the production process excluding the consumption of capital goods which is recorded as consumption of fixed capital.

K.2.2 Indicate, as an estimated percentage of the total amount of purchases made, the amount of purchases corresponding to orders/reservations of goods or services performed through web pages or mobile applications in 2020 (excluding VAT) ___%

K.2.3 Break down, as an estimated percentage, of the amount of purchases made through web pages or mobile applications in 2020 by geographical area (excluding VAT)

(a)	Spain	___ %
(b)	Other EU countries	___ %
(c)	Rest of the world	___ %
	Total	100 %

K.2.5 Indicate, as an estimated percentage of the total amount of purchases made, the amount of purchases corresponding to orders/reservations of goods or services made through EDI messages or similar in 2020 (excluding VAT) ___%

K.2.6 Break down, as an estimated percentage, of the amount of purchases made through EDI messages or similar in 2020 by geographical area (excluding VAT)

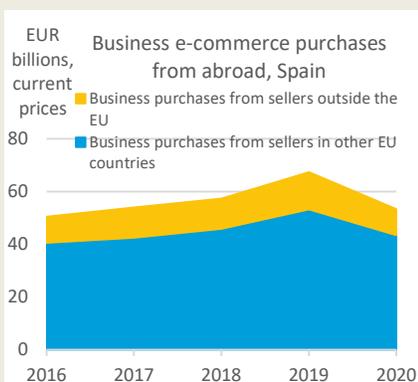
(a)	Spain	___ %
(b)	Other EU countries	___ %
(c)	Rest of the world	___ %
	Total	100 %

In total, business e-commerce purchases amounted to EUR 222 billion in 2020, (for comparison, in Spain total business e-commerce sales were EUR 275 billion the same year). Spending via e-commerce amounted to 23% of purchases across all businesses, and 45% of purchases by businesses which used e-commerce to buy goods and services.

Almost a quarter of these e-commerce purchases by businesses in Spain, EUR 53 billion in 2020, were from sellers/suppliers abroad, with the vast majority being in other EU countries outside Spain (see figure).

Source: UNCTAD based on https://www.ine.es/metodologia/t09/eticce1_20.pdf,

https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736176743&menu=ultiDatos&idp=1254735576692



Overall, business ICT surveys can offer a valuable, and often already existing, vehicle with which to measure digitally ordered exports and imports by businesses. Typically these can be expected to make up the bulk of digitally ordered trade flows. Their use in this regard is recommended.

It is important to note, however, that business ICT surveys can vary significantly in their coverage of industries and small firms. In EU countries it is usual for surveys to exclude firms with fewer than 10 persons employed while surveys in many other countries include such microenterprises. It is common (though not always the case) for Agriculture, forestry, and fishing (ISIC Rev.4 section A) as well as Mining and Quarrying (B), and also Public Administration and Defence (O) to be omitted. Under the EU model, Finance and Insurance (K); Education (P); Human Health and Social Work (Q); Arts, entertainment, and recreation (R); and most of Other service activities (S) are also outside scope. This will impact the exhaustiveness, and thus the comparability, of business e-commerce figures across economies (UNCTAD, forthcoming). For this reason, statistical compilers are recommended to ensure that the coverage of business ICT surveys, and the methods and estimations applied to the responses gathered, are sufficient to derive digitally ordered trade estimates that are representative all businesses. In any case, it is crucial that any exclusions and limitations in terms of representativeness are communicated to users.

Additionally, it is recommended that questionnaires should be designed with additional guidance or other means of managing cases where there is a risk that the same transaction will be reported twice (in part or in whole), such as the guidance given to respondents receiving orders on behalf of other firms in the Malaysian questionnaire (Box 3.2). It may also be beneficial to provide additional explanations and support to respondents in industries where e-commerce concepts may be difficult to apply, such as financial services.

Mainstreaming enterprise-based surveys of digitally ordered goods and digitally ordered services

Most of the current attempts to estimate digitally ordered transactions reflect complements (often ad-hoc) to traditional e-commerce surveys. Nevertheless, some countries use regular business activity surveys to measure the total value of e-commerce. For example, the Annual Survey of Philippine Business and Industry was used to measure “sales from e-commerce transactions”, broken down by ISIC Rev.4 Industry sections (Philippine Statistics Authority, 2020^[9]). In Singapore, the Annual Services Industry Survey has been used to measure “e-commerce revenue of the services sector” with breakdown by industry and customer type (business or consumer) (Statistics Singapore (SingStat), 2021^[9]). In the United States, the Census Bureau measures e-commerce sales through the annual surveys of manufacturers, services, retail and wholesale trades. Together, these offer a fairly comprehensive overall value for business e-commerce sales (United States Census Bureau, 2021^[10]).

None of these measure international e-commerce transactions. But information from questions on the total value of e-commerce may be combined with information collected on imports and exports by these businesses to give a first approach to international e-commerce transactions. And such collections could, in principle, be built upon in a similar vein to that outlined for business ICT surveys above – by requesting further breakdowns. In so doing, routine business activity surveys could become a vehicle for measuring digitally ordered trade. This approach could offer some benefits, including wider coverage of different industries and firm sizes and closer integration of the resulting measures with major economic aggregates such as gross value added of the business sector and GDP.

Mainstream enterprise surveys that gather headline information on digitally ordered sales and purchases can also be used alongside more detailed ICT surveys. This approach would combine the benefits of population coverage of the mainstream surveys with the more detailed breakdowns that can be collected in the ICT survey.

It could also be considered to add questions on digital ordering to international trade in services surveys. While these surveys do not cover digitally ordered goods, this could be a useful approach for collecting further information on digital ordering directly integrated into the key sources for data on services trade transactions.

Given the emphasis placed on better understanding the digital economy more generally, and digital trade in particular, statistical compilers should explore whether additional relevant questions could be mainstreamed in core business surveys used to derive structural business statistics and/or in international trade in services surveys. Such questions could take the questions and experiences with business ICT surveys, along with the recommendations above as a starting point.

Household surveys

Like business surveys, surveys of ICT access and usage in households and by individuals have been used to measure the proportions of individuals purchasing and selling goods and services online. Also similar to the situation with business surveys, it is less common that information on the value of e-commerce transactions by individuals, and furthermore of cross-border transactions, has been collected.

In principle, the information needed from households is equivalent to that needed from businesses, though as households are primarily consumers rather than producers, efforts have tended to focus more on measuring households' e-commerce expenditure.

Recalling that every e-commerce transaction involves at least two parties, it can be noted that some of the e-commerce expenditure reported by households will overlap with e-commerce sales reported by businesses (B2C e-commerce transactions between domestic parties). However, when it comes to the international transactions relevant to measuring digital trade, there is no overlap since the sale is always made to, or purchase made from, a party abroad (i.e., a non-resident).

Several different forms of survey questions have been used to measure individuals'/households' spending online; the sub-component of this involving international purchases would equate to digitally ordered imports by households.

In the model Survey on the Use of ICT in Households and by Individuals developed by EU/ESS member countries, respondents are asked to provide their estimated total purchases made via websites or apps⁷ over the three months prior to being surveyed, or to indicate it in the form of spending bands (see Box 3.8). Countries may vary in their implementation of this question by offering either or both of these response options.

Box 3.8. Questions on the value of orders placed via a website or apps in the European Community Survey on the Use of ICT in Households and by Individuals, 2021

Only for respondents who answered “yes” to “[buying or ordering goods or services for private use over the Internet] within the last 3 months” in question D1

Estimate how much money you have spent in total on your purchases via a website or app for private use in the last 3 months.

_____ national currency

Or (tick one)

Less than 50 euro

50 to less than 100 euro

100 to less than 300 euro

300 to less than 500 euro

500 to less than 700 euro

700 to less than 1000 euro

1000 euro and more

Don't know

From whom did you buy the mentioned goods via a website or app in the last 3 months? Include online purchases from enterprises or private persons. (tick all that apply)

- a) National sellers
- b) Sellers from other EU countries
- c) Sellers from the rest of the world
- d) Country of origin of sellers is not known

Source: <https://circabc.europa.eu/ui/group/4f80b004-7f0a-4e5a-ba91-a7bb40cc0304/library/c3ee2f7a-7cbe-454a-ae74-09a633da7dc1/details>

The 2020 Canadian Internet Use Survey adopted a different approach, asking respondents for the specific amounts they spent on various online purchases of goods and services (Box 3.9). This has the benefit of allowing the e-commerce transactions to be categorised into those relating to goods, digitally delivered services, and other services – which would be of use to avoid double counting of transactions that are both digitally ordered *and* digitally delivered when calculating total digital imports.

Box 3.9. Questions on the value of online orders in the Canadian Internet Use Survey 2020

The following questions are about your online orders of digital goods and services, physical goods and other services, including what you personally ordered online for yourself, your household and other people. Your answers should relate to your use from any location, and exclude business-related use. Include only orders where the commitment to buy was made online.

During the past 12 months, how much did you spend on the following digital goods or services?

Music downloads or streaming subscriptions	_____ \$
Video downloads or streaming subscriptions	_____ \$
E-books, audio books or podcast books	_____ \$
Video or audio podcasts, excluding podcast books	_____ \$
Online newspapers or magazines	_____ \$
Digital gift cards purchased online, for online redemption	_____ \$
Online gambling	_____ \$
Online gaming, gaming applications, game downloads or in-game purchases	_____ \$
Online data-storage services	_____ \$
Online courses or learning	_____ \$
Other applications, software or online subscriptions	_____ \$
Other digital goods or services ordered over the Internet	_____ \$

During the past 12 months, what is your best estimate of the amount you spent on physical goods ordered over the Internet?

If precise figures are not available, please provide your best estimate in Canadian dollars.

_____ \$

OR

Of the following ranges, what would you estimate to be the amount you spent on physical goods ordered over the Internet during the past 12 months? (tick one)

- 1: Less than \$200
- 2: \$200 to less than \$500
- 3: \$500 to less than \$1,000
- 4: \$1,000 to less than \$5,000
- 5: \$5,000 or more

[During the past 12 months,] what is your best estimate of the total amount that you personally spent on [peer-to-peer] accommodation services [such as Airbnb and Flipkey]?

_____ \$

During the past 12 months, what is your best estimate of the amount you spent on other services ordered over the Internet?

_____ \$

OR

Of the following ranges, what would you estimate to be the amount you spent on other services ordered over the Internet during the past 12 months? (tick one)

- 1: Less than \$200
- 2: \$200 to less than \$500
- 3: \$500 to less than \$1,000
- 4: \$1,000 to less than \$5,000
- 5: \$5,000 or more

Source: Adapted from https://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=assembleInstr&lang=en&Item_id=1289522#qb1290266

However, neither of these examples incorporates an international dimension to the measurement of online spending. In the EU survey, respondents are asked to indicate whether they bought from sellers domestically, in other EU countries, or elsewhere, but this is not directly linked to the value measure.

In the 2018 iteration of the Canadian Internet Use survey, respondents were asked if their online orders of physical goods were “delivered from” merchants in Canada, in the United States, from other countries, or from “merchants of unknown county of origin”. They were also asked about spending inside and outside

Canada on “peer-to-peer ride services such as Uber and Lyft” and “peer-to-peer accommodation services such as Airbnb and Flipkey”. However, results from these questions were not published and the questions were not retained in the 2020 edition of the survey. One reason for this is that survey respondents had difficulty identifying such cross-border transactions. For example, an order placed on Amazon.ca might be reported by some respondents as an order from a local business (“Amazon Canada”), especially when the product concerned is shipped from a warehouse in Canada. But others would report it as an international transaction due to Amazon being “American” or due to an awareness that the products were made in other parts of the World. Nevertheless, such efforts could provide valuable experience and a basis from which to build by developing and testing additional options to seek to capture the value of cross-border e-commerce spending by households.

In some cases, household surveys have also been used to measure the money made online by individuals/households. For example, the 2020 Canadian Internet Use Survey included this among questions on “online work” (see Box 3.10). Again, there is no international dimension to the information collected and so these results cannot be used directly to measure digitally ordered exports by households. As is the case with household online spending, though, questions capturing online income could be built upon with complementary questions aiming to distinguish money earned online from domestic and international sources.

Finally, it should be noted that most, if not all, e-commerce sales by individuals/households would not be possible without DIPs. For more information on measuring and recording transactions involving DIPs see [Chapter 5](#).

Box 3.10. Questions on the value of online earnings in the Canadian Internet Use Survey 2020

The following question is about money that you personally earned online in the past 12 months. Please remember that your answers will be kept strictly confidential.

During the past 12 months, how much did you personally earn by doing the following activities online?

Selling physical goods online that you built or created	_____	\$
Selling services via online bulletin boards	_____	\$
Providing platform-based peer-to-peer accommodation services	_____	\$
Providing platform-based peer-to-peer ride and delivery services	_____	\$
Providing other platform-based peer-to-peer services	_____	\$
Online freelancing	_____	\$
Crowd-based microwork	_____	\$
Earning income through online advertisements and sponsored content	_____	\$
Other activities	_____	\$

The average earning from online activities was CAD 2,700 (around USD 2,000). By quite some margin, the most common ways of earning money online were “selling physical goods online that you built or created” (7% of those aged 15 or over in Canada, with average earnings of almost CAD 1.7k) and “selling services via online bulletin boards [such as eBay or Kijiji]” (4%, CAD 1.5k), while the highest earnings were generated through “online freelancing” (0.7%, around CAD 10k on average) and “other activities” (2.3% and around CAD 19k on average). These questions will be collected again in the 2022 survey.

The extent to which some of these would count as earnings from e-commerce sales is unclear. Income from selling accommodation, ride and delivery, or other services through online platforms, would clearly meet the definition of digital ordering. It is likely that many online sales of physical goods also take place through digital intermediation platforms such as eBay or Etsy although there may be a significant portion sold via manually typed emails in response to advertisements placed on online bulletin boards. Manually typed emails or other forms of written messages may also be important for the other activities listed. Canada does not include orders placed via manually typed emails in e-commerce.

Source: Adapted from https://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=assembleInstr&lang=en&Item_Id=1289522#qb1290266.

Results available at: <https://www150.statcan.gc.ca/n1/daily-quotidien/210622/dq210622b-cansim-eng.htm>

This Handbook could make recommendations similar to those included for business surveys, i.e., to include a series of additional questions that are able to provide a view of the value of international digitally ordered transactions. However, such recommendations would ignore the fact that the survey questions and methods in this area are still at an early stage of development and further design, testing, and experimentation is needed to identify the best ways to gain meaningful results.

The evidence suggests that meaningful results can be achieved on the share of digital ordering in overall household expenditure and on the income that households earn by making sales online. However, the Canadian experience also revealed that many households were not able to accurately determine if a transaction was international. This is, in no small way, complicated by the fact that while many platforms or online sellers appear to have a domestic presence (i.e., have a “.ca” website, show prices in Canadian dollars, French/English text, etc.), the transactions are in fact routed and processed by non-resident businesses, with the resident domain site merely serving to advertise products.

At this point, what can be recommended is that the value of household e-commerce spending and earnings should be measured in total (both domestic and international transactions), to gauge the extent of these transactions in comparison to business e-commerce, and thereby gain some insight into the potential economic significance of digitally ordered imports and exports involving households. Ideally, additional information would be collected on the products purchased and sold where this can give insights relevant to measuring digital trade. Breaking down household e-commerce spending according to the products

purchased – goods, digital services, other services – may yield useful information. For example, if there are no major domestic suppliers of products such as music streaming services, e-books and audio books, online gambling, online gaming, online storage, spending on such products implies imports of digitally ordered digitally delivered services. Indeed, such details are one area where household surveys may also prove useful for measuring expenditures on digitally delivered products (see [Chapter 4](#)).

Details can be useful with respect to online earnings too. For example, in economies with limited domestic tourism, earnings from providing platform-based peer-to-peer accommodation will mainly imply digitally ordered exports. Such product details will not give the full picture on digitally ordered trade involving households but may give a meaningful portion of it.

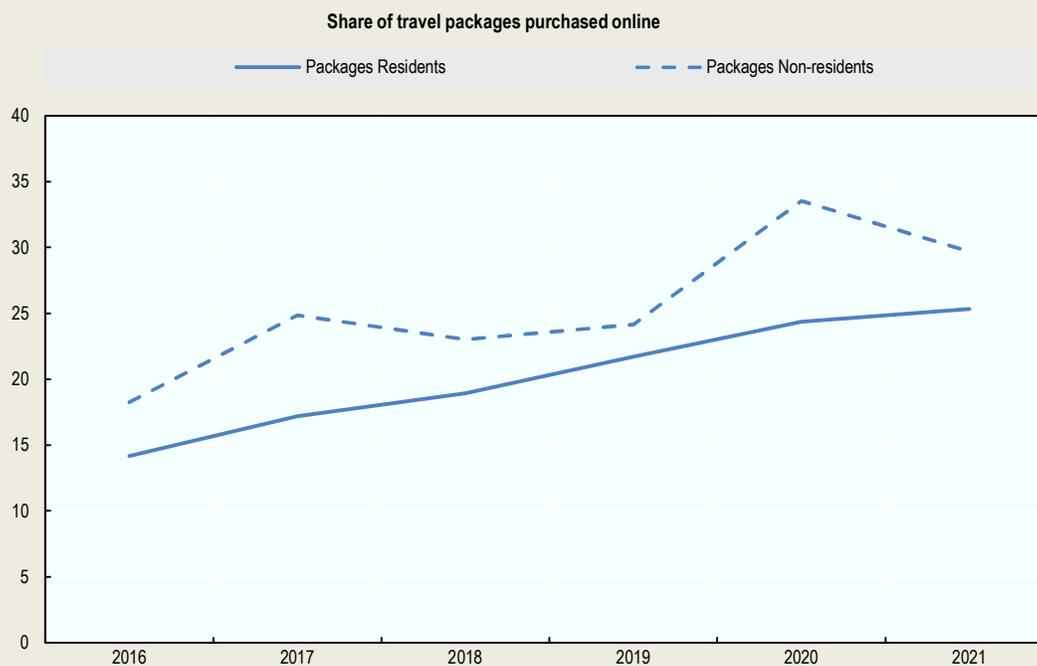
Finally, another potential area where household surveys could be exploited concerns expenditures abroad and tourist expenditures in the compiling economy. Specific questions could be added to either conventional household expenditure surveys or international travel surveys to identify the share of expenditures on accommodation and (separately) travel services purchased abroad that were digitally ordered, which may help to identify and quantify potential underestimates in these areas (see also Box 3.11). Similarly, conventional household income surveys could be used to ask households if they provided (and the value of) short-term accommodation services via digital intermediation platforms. Whilst such questions would not be able to differentiate (at least initially) between accommodation services provided to residents and those provided to non-residents, it would provide an order of magnitude (and upper-bound estimate, notwithstanding potential deliberate under-recording⁸).

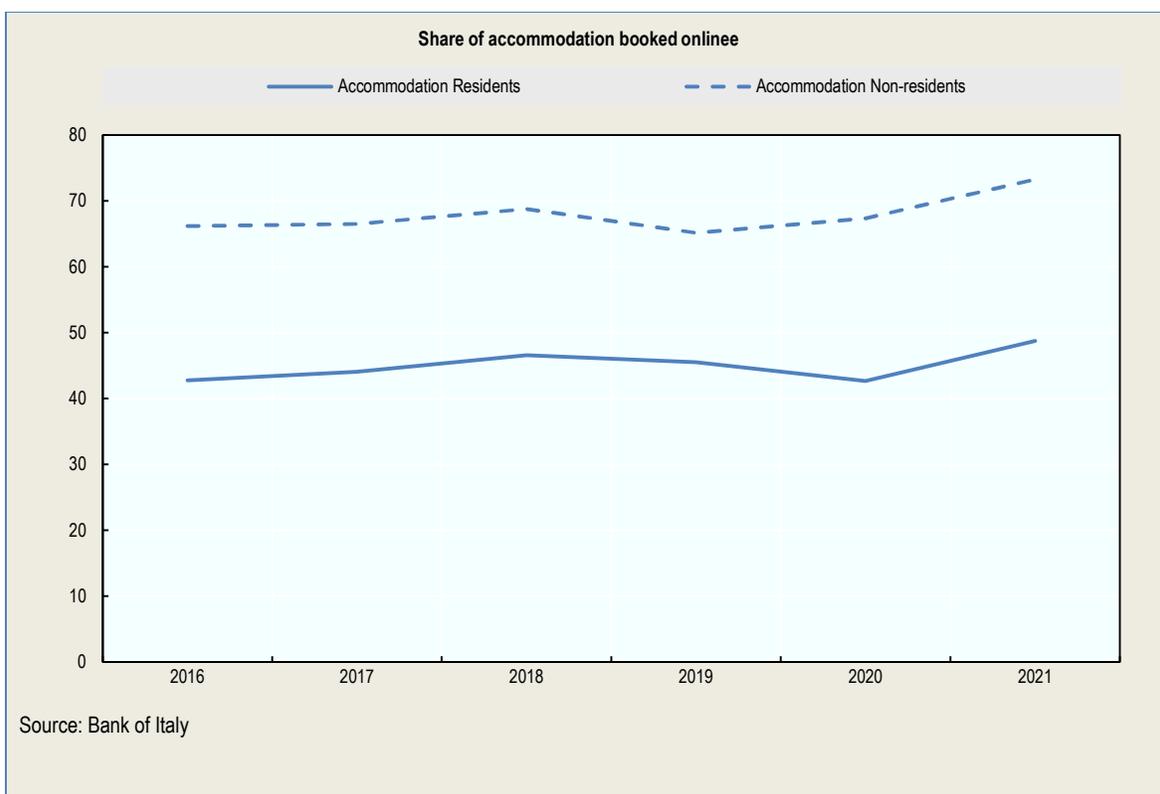
Box 3.11. Compiling digitally ordered travel transactions in Italy

The Bank of Italy (BoI) has been running an extensive (face-to-face) border survey since 1996 providing information on various features of Italy's inbound and outbound international tourism, such as the number and characteristics of visitors and visits, the number of night stays, the means of payment used, etc. Since 2016, specific questions have been added to gather information on the use of online tools for booking or buying travel services. Travellers are asked about: a) online purchases of "all inclusive" travel packages; b) online booking of accommodation; and c) the channel used to book the accommodation online. In the period 2016-2021, expenditure on "all inclusive" trips purchased or booked online increased from 14% to 25% for residents in Italy, and from 18% to 30% for non-residents. Online booking of accommodation, in the same period, increased from 43% to 49% (for residents) and from 66% to 73% (for non-residents).

Source: Bank of Italy

Figure 3.3. Italy – Share of travel packages and accommodation booked online





Surveys of government units and NPISHs

As noted in section 3.1, all kinds of institutional units can engage in e-commerce and digitally ordered trade as buyers or sellers. As a result, exhaustive measures should cover purchases and sales by government units and Non-Profit Institutions Serving Households (NPISHs) – though in some cases the latter may be covered in business surveys.

There are few examples of surveys of ICT usage in these institutional sectors, and those have tended to focus on the digitalisation of processes such as e-procurement rather than on the value of transactions involved. As such, it will likely be necessary to use other sources, such as government budgetary management reporting systems, to collect relevant information.

In most cases, though, it is likely that business and household transactions make up the significant majority of digitally ordered trade flows. Coverage of government and NPISHs may therefore be a lower priority. However, also as acknowledged in section 3.1, the situation in some economies will vary; statistical compilers should consider the potential for these sectors to be engaged in statistically significant volumes of digital trade and adapt the coverage of surveys (and other sources) accordingly.

3.3. Non-survey sources

Although surveys are a promising source for the most complete and representative figures on digitally ordered trade, various other sources can provide measures for key components of digitally ordered exports and imports. The following sub-sections set out examples.

Card payment data

An area being explored by many countries, especially with respect to B2C international transactions, concerns the use of card payment data (also referred to as “credit card data”). This refers to data on individual purchases paid using cards (credit cards, debit cards, etc.) issued by providers in a given economy. These data, or summary aggregates, may be made available to statistical compilers under agreements reached with card issuers, as outlined in Box 3.12, Box 3.13 and Box 3.14.

Typically, card payment data are able to differentiate between two main modes of transaction – those where the card was present at the place where the transaction was processed and those where the card was not present. The latter applies when a card is used online to pay for an order and offers a meaningful proxy for transactions that were digitally ordered (although it should be noted that card-absent transactions can arise in some other cases, such as when ordering by phone). This offers a relatively simple means to arrive at an estimate for overall household expenditure on digitally ordered purchases – at least in countries where payment by other means such as money transfer or cash on delivery are not common.

Card payment data includes supplementary information alongside the transaction amount, the accounts money is going from and to, and whether the card was present or not. For example, for card-absent transactions the “merchant outlet country” (i.e., the country where the seller is based) is usually available. Combined with information on the country in which the card was issued, this gives a way to identify international transactions and thus a way to derive an estimate for digitally ordered trade.

However, the merchant outlet country will not always reflect the country in which the seller is actually located. For example, rules for payments through Visa, a major global card payment network, state that “A merchant must use its principal place of business as the merchant outlet location for card-absent transactions – that is the fixed location where the merchant’s executive officers direct, control, and coordinate the entity’s strategy, operations, and activities). A merchant may have only one principal place of business for it and its group subsidiaries. In the case of a corporate group, the merchant location is determined at the corporate group level (i.e., as a single entity). For example, this means that a multinational merchant must use its principal place of business as the merchant location, and may only use the country of a subsidiary if that country qualifies as an additional merchant location” (VISA Public, 2021^[11]). For this reason, the location information recoded in card payment data can reflect corporate structures and other distorting factors, rather than geographical reality - as illustrated in Box 3.13.

While this will be especially problematic if wanting to measure bi-lateral trade flows, if the aim is simply to identify how much money card holders in a given economy have spent via card-absent transactions with sellers abroad this will not necessarily pose a critical issue; all that matters is that the seller is outside the economy of the cardholder, not the specific country abroad in which they are located. For transactions routed through DIPs, if both the DIP and the ultimate seller are located abroad the transaction would in any case be correctly identified as digitally ordered trade. There are two cases where issues arise, though:

1. When a cardholder in country A makes a purchase from a seller also in country A, but through a DIP with its merchant outlet country somewhere abroad. In this case the purchase would be incorrectly labelled as an international transaction in entirety when only the fee for intermediation services provided by the DIP should be recorded in digitally ordered trade.
2. When a cardholder in country A makes a purchase from a foreign subsidiary of a company that has its headquarters, and hence its merchant outlet country, also in country A. In this case a digitally ordered trade transaction would be incorrectly labelled as a domestic transaction.

For the first case, it may be possible to work with the payment data provider to identify card payments made to popular DIPs for separate treatment. For example, in some cases payments to ride-sharing, food delivery, accommodation, etc., platforms made in the domestic currency might imply they are domestic transactions while payments in foreign currencies could be recorded in digitally ordered trade.

The second case is most likely to create measurement challenges in countries that host headquarters of multi-national corporations and/or DIPs. By contrast, card payment data might offer an especially promising approach for estimating digitally ordered imports in many developing countries.

Merchant category codes, another component of card payment data, can give an indication of the product that was digitally ordered. This may be of analytical interest and, potentially, a basis for trying to identify payments for digitally delivered services within the estimate of the value of digitally ordered transactions. That said, merchant they can only provide a partial view as they will only closely align with the product ordered for purchases from specialised merchants and platforms⁹.

Box 3.12. Using credit card data to measure cross-border online purchases in Israel

Benefitting from the legal framework in place allowing access to credit card information, and a memorandum drawn up with three major companies, the Israeli Central Bureau of Statistics (CBS) has started to develop more robust estimates of digitally ordered purchases from abroad by consumers.

Credit card companies provided monthly or quarterly data covering the period from 2012 onwards, and currently report approximately two weeks after the end of the quarter.

Data are separately available showing expenditures by Israeli tourists abroad (providing a measure of tourism expenditures) and expenditures by Israeli residents cleared through foreign websites, providing insights on digitally ordered trade (see main body of Chapter 3 for some of the challenges involved).

The data are classified according to the international classification of Merchant Category Codes (MCC) – a classification of businesses made by credit card companies – and relate to households only (business credit cards were excluded), and only those transactions where cards were not present (as these primarily refer to online purchases, although they may include purchases made by telephone or fax).

Source: Israel Central Bureau of Statistics

Notwithstanding the challenges involved (see Box 3.14), card payment data does appear to provide scope for meaningful estimates of household imports of digitally ordered trade, including for breakdowns of some categories of expenditure, such as accommodation services and travel.

Box 3.13. Using card payment data to measure cross-border online purchases in Spain

A collaboration between the OECD and the Spanish Bank BBVA provides an example of using card payment data to gain insights on cross-border transactions. Analysis of card payment transactions by BBVA customers in Spain provided novel insights into the consumption patterns of consumers online and the determinants of domestic and cross-border expenditure flows.

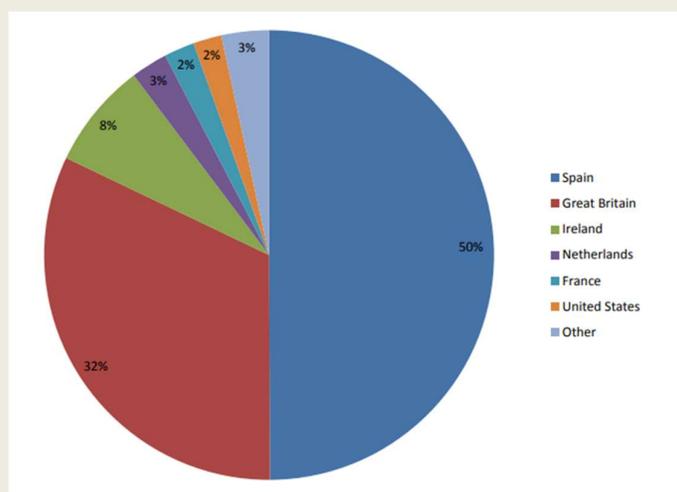
Online transactions are proxied by card not present transactions, implying that the payment card was not physically involved for the transactions. This is usually the case when a customer realises a purchase via a home computer or mobile device, i.e., when a product was paid for online. The data available for the analysis was limited to transactions taking place in 2015, though in principle the underlying data would allow the analysis to be repeated with even daily frequency.

The total number of online transactions recorded was 45.8 million in 2015, with a total transaction value of several billion euros. Business customers are excluded from the sample, close to 60% of the total transaction value are represented in the data analysed, which account for over 96% of all online transactions of private customers. About 50% of these transactions were outward-bound, to a total of 115 countries. It should be noted, though that country-specific legislation prevents certain countries from being identified in the data. These countries were excluded from the analysis but potentially account for a substantial part of online transactions. For instance, the data does not contain transactions to merchants in Germany.

Cross-border payments from Spain are highly concentrated in only a few countries, with Great Britain, Ireland and the Netherlands alone explaining about 85% of transactions involving foreign merchants. This distribution is partly explained by the fact that the data refers to monetary transactions rather than trade flows. Thus, in many cases, monetary transactions will be linked to the geographic location of merchants' fiscal headquarter and not resemble the actual shipping route.

Figure 3.4. Online card payments by destination country Spain, 2016

Share of total online payments (based on card-absent transactions)



Source: (OECD, 2019_[12]).

Box 3.14. Compiling travel transactions in the USA using credit card data

In the mid-2000s, the United States Bureau of Economic Analysis explored the use of credit card data to estimate trade in travel services as it offered several advantages over self-reported expenditure data, including that it did not rely on travellers' recall or expectations and they provided complete geographic coverage. BEA collected card data for transactions related to trade in travel via a quarterly survey of bank and payment card processors for 2008-2017.

BEA's original survey captured all cross-border purchases and cash withdrawals made with a card for both spending in the United States using cards issued by foreign banks and spending in other countries using cards issued by American banks. The survey collected a breakdown of total transactions for six broad categories of travel-related purchases as well as detail on total transactions by country. BEA's initial concerns with the survey data were that it appeared to include e-commerce transactions and that classifications by spending category varied across reporters, while transactions unrelated to travel spending were also being reported.

BEA attempted to address these concerns with a redesign of the survey in 2012. One of the most important changes included the separation of reported transactions by whether the card was or was not present at the time of the transaction. The vast majority of retail goods and services purchased without a card present were expected to represent e-commerce, and not in-person point-of-sale transactions thought to be typical of travel expenditures. E-commerce transactions could therefore be omitted from BEA's calculation of travel expenditures. The instructions were also modified to specify how each transaction's merchant category code (MCC) should be classified into the spending categories and to omit certain MCCs that did not correspond to the types of purchases made by travellers. In addition, transactions were collected by both spending category and country, which allowed for more detailed comparisons with alternative data sources.

The improvements to the survey were only partly successful because not all reporters could fully comply with the new instructions. In addition, survey reporters could only identify transactions by country based on the location of the bank that issued the card rather than by the country of residence of the traveller using the card. This identification not only affected the ability to correctly attribute transactions by country of the purchaser, but also whether transactions should be classified as resident/non-resident. Further, data from card transactions did not correspond with data from alternative sources on traveller counts and spending. When combined with traveller counts, the implied spending per person was significantly higher than self-reported spending from a survey of air travellers, even though it did not include purchases made without a card or international purchases channelled through entities in the country of residence of the purchaser (e.g., a resident of the United States booking a foreign hotel via an American website). Furthermore, the country-level estimates of implied per person spending revealed unrealistic levels of spending and unexpected differences in spending across countries that are geographically close to one another and have similar traveller demographics.

Another concern with the card transactions data was that certain relevant card transactions would be missed by the survey due to the structure of the card-processing and card-issuing industries. For example, reciprocal agreements may allow a foreign card processor to process a relevant transaction, and relevant card payments on closed-loop or digital wallet payment systems may not be captured by the survey. Also, the categorisation by MCC may not correspond to the goods or services purchased because merchants may have one or a few MCCs per retail outlet, which does not allow for a high level of disaggregation by product type. In BEA's analysis, the level and seasonal pattern of spending for categories thought to be well identified by MCC, such as lodging, were quite different from self-reported spending in the traveller survey.

Since not all spending is done with cards and some transactions related to travel may be booked via intermediaries resident in the same country as the traveller, BEA planned to account for transactions made by methods other than cross-border credit card transactions using data collected on a one-time companion sample survey of international travellers. The companion survey provided information on the portion of total spending attributable to cross-border card transactions, but there were concerns over the quality of the data collected and its associated cost, so it was not repeated. BEA ultimately decided that the credit card data it collected was not a reliable basis to estimate trade in travel and discontinued the survey of card processors.

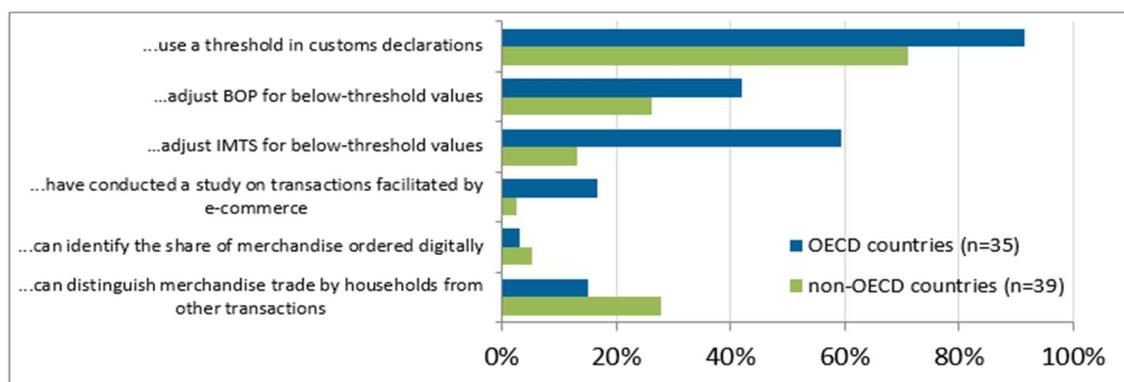
Source: United States BEA.

De minimis trade

Digital ordering is a key factor behind strong growth in international parcel shipments (Boffa, De Borba and Piotrowski, 2021^[13]). Many of these fall under *de minimis trade*: goods below the minimum weight or size for duties to be collected and which are therefore not directly recorded by customs and need to be separately estimated when compiling merchandise trade statistics. The 2017 International Post Corporation E-commerce Shopper Survey¹⁰ found that 84% of goods purchased online for international delivery weighed 2kg or less and two-thirds of them had a value of less than 50 euros. Moreover, while the number of online international orders is increasing, their average value is decreasing. This is not just because many of the goods digitally ordered by households are likely to fall into this category but also from some smaller businesses using ‘just in time’ inventory management systems.

An OECD-IMF Stocktaking Survey (conducted in 2016) showed that the *de minimis* thresholds currently in use vary widely across countries (Figure 3.5). For example, among OECD countries, the threshold ranges from GBP 15 (around USD 17) in the United Kingdom to USD 2,500¹¹ in the United States. Some countries also apply a volume threshold and these can vary for each tax or duty applied. Among the non-OECD countries surveyed, customs thresholds ranged from a minimum of about USD 25 (Belarus, Philippines, and Mauritius) to USD 2,000 (or less than 50kg) for imports and USD 5,000 for exports in Colombia. Seven countries also indicated having different thresholds for postal shipments or by type of transport, which applies different thresholds varying by mode of transport on duty-free imports by individuals (OECD, 2016^[14]).

Figure 3.5. Percentage of respondents to the OECD-IMF Stocktaking questionnaire that...



Note: It is likely that the lower number of non-OECD respondents making an adjustment to balance of payments figures compared to International Merchandise Trade Statistics is influenced by the organisations (central banks) answering the questionnaire.

Source: (OECD, 2016^[14]) and IMF calculations.

Around half of OECD countries, as well as several non-OECD countries, produce estimates of *de minimis* trade for balance of payments and international merchandise trade statistics purposes, using various sources, including: the national postal service, administrative reports from Customs, payment card information or estimation models (See Box 3.15).

In most cases, *de minimis* trade amounts to around 1-3% of total trade but can reach over 15%, for example in Azerbaijan in Q1 2017. Countries that do not produce *de minimis* estimates often cited limitations in source data or consider these flows as insignificant.

While there is likely to be a strong correlation between the growth in *de minimis* transactions and growth in digital ordering, it is important to note that not all *de minimis* trade will be digitally ordered, and so some care is needed in interpreting the data.

Box 3.15. Low-value trade estimations in the United States

Since the 1960s, the United States has promoted the reduction of trade flow processing costs by exempting low-valued transactions for both imports and exports from the burden of additional procedures and paperwork. The United States Census Bureau provides estimates for low-valued trade statistics below a threshold of USD 2,500.

Data for exports is based on the sum of two sources of information, gathered from small package courier company trade transactions and country-specific low-value trade estimates. Courier data is used to develop a "courier factor" based on the proportion of the low value trade to the total high value trade over several months. This factor is the same for all countries and is multiplied with the courier data to produce courier low value estimates. Non-courier data is estimated by using a country-specific factor multiplied by each country's trade from the prior (or current, if available) month to produce low value estimates. This is done for exports to all countries except Canada, which is separately generated under the United States-Canada Data Exchange. These two data components are summed, by country, to produce monthly low value estimates.

In contrast, imports data is typically based on available low value import data rather than estimates, with two main methodological features. The first is a summarisation or "roll up" of excess electronically filed data (comprising the majority of data) that is typically omitted from the original statistics, which increases the value of trade for certain commodities where lower valued trade is prevalent. The second is a revised low value estimation process with four components: 1) a low value total for electronically filed import data; 2) an estimate of low valued data filed via paper; 3) an estimate of courier low value data; and 4) a low value total for Foreign Trade Zone data filed either via paper or electronically. These four components are summed, by country, to produce monthly low value estimates.

Source: United States BEA.

Estimates based on information from postal delivery providers can provide relatively robust estimates of overall *de minimis* trade but only if the estimation process covers at least major postal and courier service providers, covering all transport modes.

Of course, such approaches are not able to identify the scale of digitally ordered transactions that fall under *de minimis* trade thresholds but card payment data can provide a useful complement for estimating digitally ordered trade below *de minimis* thresholds. Payment card companies can be asked to compile data showing the value of transactions below and above those thresholds, albeit with additional adjustments (assumptions) to avoid attributing expenditures to digital trade (or to the wrong partner country), especially when transactions pass through DIPs.

Digitally ordered goods trade directly from customs statistics

Systematic efforts that may deliver significant results on digitally ordered goods trade in the short to medium term, including on *de minimis* trade, are in development.

A key pillar of these efforts reflects work led by the WCO, in collaboration with large e-commerce enterprises¹², to better identify and monitor digitally ordered trade in customs records via improved electronic identification of origin/destination and content of packages, for example via the S10 bar code for postal items, or special (simplified) declaration forms for e-commerce.

The WCO's work is governed by its "Framework of Standards" on cross-border e-commerce (see Box 3.16), which offers, among other things, structural guidance on measuring e-commerce (digitally ordered) transactions, and aims to establish global standards in the e-commerce supply chain, including a harmonised approach to risk assessment, clearance/release, revenue collection, and border cooperation, from both trade facilitation and customs control perspectives.

China Customs, which is responsible for the publication of official international merchandise trade statistics in China, is making significant advances in this area, supported by government policy aiming to create an environment conducive to e-commerce development. The government is strengthening five areas of e-commerce policy, including: 1) customs clearance; 2) inspection and quarantine; 3) tax policy; 4) payment and settlement; and 5) financial support. Comprehensive test areas for cross-border e-commerce have been set up to pilot regulatory systems and policies, beginning in Hang Zhou.¹³

The most important data elements compiled from these sources include individual stock-keeping unit (SKUs) names and item numbers for the product, origin and destination, with breakdowns of the transaction price into its associated freight or other logistics costs and insurance fees, as well as firm-level information on the transacting enterprise, the e-commerce platform used, and the logistics or freight company transporting the product. In addition, China Customs also requests detailed contact information on the payer or consignee and specific product details such as its name, commodity classification code, dimensions and weight. This information provides a basis for compiling a variety of statistics on international merchandise trade (see Box 3.10).

Box 3.16. WCO Framework of Standards on cross-border e-commerce

The WCO's Framework on Standards is based on eight guiding principles for cross-border e-commerce outlined in the Luxor Resolution, (adopted at the 2017 WCO Policy Commission meeting) and includes a Standard (Standard 14: Mechanism of Measurement) based on one specific principle (V) on measurement and analysis:

- i. Establish a set of common terminologies and reliable mechanisms to accurately measure and analyse cross-border e-Commerce in close cooperation with international organisations such as the WTO, UNSD, OECD, UNCTAD, UPU, ICAO, WEF, World Bank Group, as well as with national statistical organizations and e-Commerce stakeholders;
- ii. Use Data Analytics (including “big data” modules) and the existing capabilities of international organisations, e-vendors/e-platforms, and other stakeholders, with a view to generating trends and analysis for evidence-based decision making to support the implementation of the Guiding Principles and the efficient and sustainable growth of cross-border e-Commerce;
- iii. Establish mechanisms, including supporting legal framework, to capture data at item level to facilitate the development of E-Commerce trade statistics, while implementing simplified clearance processes, for example the consolidated simplified summary declaration.

Standard 14: Mechanism of Measurement stipulates that: “Customs administrations should work with relevant government agencies in close cooperation with E-Commerce stakeholders to accurately capture, measure, analyse and publish cross-border E-Commerce statistics in accordance with international statistical standards and national policy, for informed decision making.”

The WCO E-Commerce Package provides Technical Specifications for this Standard.

Sources: (1) WCO (2018 and 2019): <http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/frameworks-of-standards/ecommerce.aspx>

(2) WCO (2017): http://www.wcoomd.org/-/media/wco/public/global/pdf/about-us/legal-instruments/resolutions/policy-commission-resolution-on-cross-border-ecommerce_en.pdf?la=en

Several countries, including China (see Box 3.18), Japan and Canada (see below) have already started to implement these systems:

Japan

Japan has a regulatory framework on the clearance system for low-value goods, which includes a simplified tariff, manifest-based clearance, *de minimis* regime, and inspection, at express service providers' premises when needed. Their initiatives include the exchange of advance electronic information for postal items and the promotion of paperless environment.

Canada

Canada has initiated a postal modernisation initiative (PMI) which includes advance electronic data on small parcels and related systems such as a postal operations support tool (POST) and international conveyor systems (ICS). The Courier Low-Value Shipment Programme is also designed to expedite the processing of imported non-prohibited, regulated or controlled goods worth less than CAD 2,500.

Box 3.17. Measuring cross-border merchandise e-commerce using customs data in China

In recent years, e-commerce has flourished in China, and China has become the world's largest e-commerce market where all forms of e-commerce (including for example B2B, B2C, C2C,) have developed rapidly. This growth has brought challenges for accurately measuring cross-border e-commerce involving goods, related to high-frequency and low-value transactions. As the institution responsible for producing official Chinese merchandise trade statistics, China Customs has developed new approaches to ensure the statistical coverage of these transactions, covering both B2C and B2B.

For the B2C cross-border e-commerce transactions, China Customs has established a specialised clearance system named Cross-border E-commerce Information System (CBEIS). Specific customs regime codes (9610, 1210 and 1239) help identify goods that are cleared via CBEIS. Customs allow the release of B2C cross-border e-commerce goods via a simple declaration which combines and cross-validates the original orders, logistics and payment data, while e-commerce platforms declares summarized data to Customs afterwards for statistics and other purposes.

Since e-commerce platforms typically have high quality data management systems to oversee the entire chain of transactions, logistics and payments, information is easy to collect and report. China Customs uses the information on orders provided by e-commerce platforms both within and outside China to develop statistical estimates on the overall scale of cross-border e-commerce. By also incorporating administrative records of cross-border logistics and cross-border payments, using big data methodologies, China Customs can compare and cross-validate the data to improve the accuracy of measurement. This approach delivers complete, accurate and timely statistical information.

For B2C goods cleared as mail parcels and courier deliveries rather than through CBEIS, China Customs and the postal agency have carried out a pilot survey, using sampling methods to determine the proportion of e-commerce postal parcels, to estimate the scale of cross-border e-commerce merchandise trade via postal channels.

For the B2B transactions, China Customs currently encourages importers and exporters to declare whether the goods are ordered via e-commerce. This information will be used for a future statistical survey to further estimate and validate these data.

Further detail can be found in a case study in [Chapter 6](#).

Source: China Customs.

Data linking and private data sources

Another avenue to explore in developing statistics on international digitally ordered transactions involves microdata linking, for example by integrating merchandise trade statistics with e-commerce enterprise surveys, albeit coupled with stylised assumptions relating to foreign/domestic e-commerce splits, or proportionality assumptions when applying the share of foreign sales that occurs via e-commerce equally to all products and trading partners. Further refinements could also be made in combination with Broad Economic Categories (BEC) classifications to provide estimates of the share of international sales that can be classified as B2B and as B2C.

New insights on international digitally ordered trade can also be derived from linking administrative data with private data sources (see Box 3.18)

Box 3.18. Measuring cross-border e-commerce from webshops in the Netherlands

To measure expenditure by Dutch consumers at non-Dutch webshops located in the EU, Statistics Netherlands (CBS) used the Dutch VAT returns filed by foreign EU companies, which are mandatory across Europe for all traders exporting more than a certain threshold (EUR 35,000 or EUR 100,000 per year, depending on the EU Member State) to another EU Member State. To identify webshops among these VAT returns, the information was first combined with data from Bureau Van Dijk's ORBIS database, to select those enterprises engaged in retail as their primary or secondary activity (and therefore to trade in goods only). In the absence of common identifiers, matching of records was done using company names. This process required significant editing to avoid false negatives due to e.g. differences in punctuation marks (dots, commas, dashes) or abbreviations (e.g. LTD versus LIMITED). In this process, CBS worked together with the University of Amsterdam and Leiden University to implement big data analytical techniques to achieve faster and more accurate linking.

Subsequently, this overview of companies was paired with internet data collected through web scraping to identify the websites of the shops through which products can be ordered online. Webpages were identified on the basis of the company name, with sites checked (automatically) for the display of a shopping cart. This identification of webshop features was checked manually for the largest foreign companies in terms of turnover size in the Netherlands. Through these manual checks, a rough estimate was made of the measurement errors in the algorithm, which was approximately 5 percent of turnover. With the help of manual check results, the next version of the algorithms can be 'trained' using machine learning in order to further reduce measurement errors.

The results indicate that Dutch consumers spent over 1 billion euros (excluding VAT) on products sold by foreign EU webshops in 2016, an increase of 25% relative to 2015, and a value six times higher than previously recorded with demand-side surveys among consumers. More than half of all online purchases were made at webshops located in Germany, followed by the United Kingdom, Belgium and Italy. Clothing and shoes were the main items that were purchased.

Source: Statistics Netherlands/University of Amsterdam/University of Leiden.

See <https://www.cbs.nl/en-gb/over-ons/innovation/project/over-1-billion-euros-spent-in-foreign-eu-webshops>,

<https://www.cbs.nl/en-gb/news/2018/30/spending-in-european-webshops-up-by-15-percent>.

(Meertens et al., 2019^[15])

3.4. Recommendations

This chapter has looked at both survey sources and non-survey sources to measuring digitally ordered trade. There is no single approach which offers easy and complete measurement of all digitally ordered exports and imports. Nevertheless, there are many relevant and inspiring examples available, based on which the following recommendations can be identified:

3.1. Digital ordered trade can involve businesses, households, government units, and NPISHs, as exporters or importers. Statistical compilers should assess the extent to which each of these are engaging in statistically significant volumes of digital trade and adapt measurement accordingly.

3.2. In most cases, transactions involving businesses as sellers (exporters) or buyers (importers) are likely to be the biggest single component of digitally ordered trade. In the absence of evidence to the contrary these transactions should be prioritised for measurement.

- 3.3.** Business ICT surveys can offer a valuable, and in many cases already existing, vehicle with which to measure digitally ordered exports and imports by businesses. Their use in this regard is recommended.
- 3.4.** It is recommended to measure the value of total business e-commerce sales and purchases, and to collect a breakdown of these into domestic transactions and digitally ordered exports/imports.
- 3.5.** Statistical compilers are recommended to ensure that the coverage of business ICT surveys, and the methods and estimations applied to the responses gathered, are sufficient to derive digitally ordered trade estimates that are representative of all businesses.
- 3.6.** Statistical compilers are also strongly encouraged explore whether additional relevant questions, along the lines of those used in business ICT surveys, could be mainstreamed in core business surveys used to derive structural business statistics and/or in International Trade in Services surveys. Also encouraged are hybrid strategies in which representative totals for the value of digitally ordered transactions are collected using core business surveys and combined with breakdown details available from business ICT surveys.
- 3.7.** In cases where manually typed emails are included within the scope of e-commerce, it is recommended that the value of these transactions should ideally be measured separately from those through other e-commerce channels. If that is not possible (e.g., due to respondent burden) it is desirable to at least specifically ask respondents if they received orders (or made purchases) via email as this will give an indication of the prevalence of email ordering and the potential scale of transactions involved.
- 3.8.** It is recommended that survey questionnaires should be designed with additional guidance or other means of managing cases where there is a risk that the same transaction will be reported twice (in part or in whole), such as for respondents receiving orders on behalf of other firms (e.g., operators of online marketplaces, which should only report the fees or commissions earned on the sale), and for respondents in industries where e-commerce concepts may be less straightforward to apply, such as financial services.
- 3.9.** In all cases, it is crucial to record and communicate the coverage of digitally ordered trade estimates in terms of concepts, firm sizes, industries, etc. to enable users to correctly understand the statistics and facilitate international comparisons.
- 3.10.** Statistical compilers should also seek to measure digitally ordered trade involving households as buyers (importers) and sellers (exporters). In absence of that, it is recommended that the value of household e-commerce spending and earnings should be measured in total (both domestic and international transactions), to gauge the extent of these transactions in comparison to business e-commerce, and thereby gain some insight into the potential economic significance of digitally ordered imports and exports involving households. Ideally, additional information would be collected on the products purchased and sold where this can give insights relevant to measuring digital trade.
- 3.11.** Household and/or international travel surveys should include questions asking respondents to identify the shares of residents' expenditures on accommodation and (separately) other travel services related to their foreign travel that were digitally ordered. Non-resident visitors could also be asked, in international travel surveys, for similar (digitally ordered) purchases from residents. In addition, to assist in providing an upper bound for exports of accommodation services provided by resident households, conventional household income surveys should also ask questions on short-term accommodation services they supplied that were ordered through digital intermediation platforms.
- 3.12.** Card payment data provides considerable potential to estimate the total value of digitally ordered expenditures by households. Whilst there are many challenges involved in identifying that part that is international trade and the type of product covered by the transaction, countries are encouraged to explore their potential, not least as they can be a cost-effective way of gathering data.
- 3.13.** Information from specialised payment companies (other than payment card companies) also provides considerable scope to estimate the total value of digitally ordered expenditures by households. Whilst there

are some challenges involved in identifying that part that is international trade, countries are encouraged to explore their potential, not least as they can be a cost-effective way of gathering data.

3.14. Countries should give greater priority to estimate de minimis transactions using a variety of sources. Information provided by postal and courier agencies can provide meaningful estimates as long as coverage of providers is high and all modes of transport are representatively covered. These efforts should be coupled with information from payment card companies (and other actors providing payment services) on transactions below de minimis thresholds (where these are valued in monetary terms) to gain insights on digitally ordered de minimis trade in goods but care (adjustments) is (are) needed to avoid incorrectly attributing all transactions that pass through DIPs located abroad as digital trade.

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Notes

¹ <https://ec.europa.eu/eurostat/web/digital-economy-and-society/data/database>

² https://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS

³ <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>

⁴ <https://www.itu.int/en/ITU-D/Statistics/Pages/coreindicators/default.aspx>

⁵ <https://www.itu.int/en/ITU-D/Statistics/Pages/intlcoop/partnership/default.aspx>

⁶ “EDI type sales: an EDI-type order message is created from the business system of the customer.”

⁷ EDI, while crucial for business e-commerce, is not used for consumer ordering and hence not relevant for households.

⁸ Reinforcing the importance that household surveys make regarding confidentiality of respondent’s data and its use for statistical purposes only.

⁹ Merchant Category Codes are used by the major credit card companies to identify the type of business in which a merchant is engaged. See, for instance, <https://www.citibank.com/tts/solutions/commercial-cards/assets/docs/govt/Merchant-Category-Codes.pdf>

¹⁰ www.Posti.com/globalassets/news/2018-attachments/online-shopper-survey-2017-ipc-pdf

¹¹ Note in this section that the estimates for ‘*de minimis*’ referred to above may reflect the thresholds actually used by statistics agencies to estimate small-parcel trade and not the de jure thresholds set by Customs authorities. For example, in the United States, the *de minimis* threshold is actually USD 800, one third the threshold used by the United States Census Bureau to estimate small parcel trade. Also, see Global Express Association for updated de Minimis on customs and VAT: https://global-express.org/assets/files/Customs%20Committee/de-minimis/GEA%20overview%20on%20de%20minimis_9%20March%202018.pdf

¹² Who, in turn, may benefit from more efficient customs procedures.

¹³ See (Hongfei, 2017_[15]) and http://www.gov.cn/zhengce/content/2015-03/12/content_9522.htm; http://www.chinadaily.com.cn/business/2016hangzhou2016-09/02/content_26675070.htm.