



## 4. Digitally delivered trade

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This Handbook defines digitally delivered trade as “*all international trade transactions that are delivered remotely over computer networks*”. This chapter identifies data sources that can be used to collect information on digitally delivered trade, with the collection of data through business surveys being especially recommended.

## 4.1 Introduction

Digitally delivered trade, as defined in this Handbook, refers to

*“All international trade transactions that are delivered remotely over computer networks”.*

As is the case for digitally ordered trade, digitally delivered trade can involve participants from all institutional sectors, and covers deliveries made over the internet (including via mobile devices) and via private networks (e.g., via an extranet<sup>1</sup>). This Handbook adopts the convention that only services can be delivered digitally.

Unlike digital ordering, which is instantaneous, digital delivery can take place over a longer period and can involve a significant degree of interpersonal interaction. Digitally delivered services are not defined by a complete absence of human-to-human interaction in the delivery of the service, but when such interactions happen, they occur remotely through computer networks. As such, the range of technologies relevant to digital delivery is wider than for digital ordering; services delivered through video calls and manually typed emails, as well as voice calls, fax messages and any other digital communication devices, and through cloud networks, are included in digitally delivered trade<sup>2</sup>

For a trade transaction that is undertaken over multiple interactions (for example, an architectural firm might send information over email and also meet with a client to discuss a project) or on a continuous basis (such as for brokerage or insurance services), classification as a digitally delivered or not digitally delivered transaction should reflect the nature of delivery on an accrual basis according to how the service contract is fulfilled within the statistical period.

In practice, a significant share of digitally delivered services are likely to also be digitally ordered, especially downloadable and streamed products, such as software, music and video, and e-books. Nevertheless, not all digitally delivered services transactions are digitally ordered. Many large-scale transactions in digitally delivered services between firms, and within firms, fit this category. One example would be the procurement of communications or e-learning services by a corporation, where the features and prices are negotiated in person and agreed “on paper” between the corporation’s managers and the service provider prior to digital delivery across the various departments within the business.

Examples of various digitally delivered transactions are given in Annex B, along with guidance for their entry into the reporting template for digital trade set out in Chapter 2.

Measurement approaches have tended to focus on separately compiling estimates of total digitally ordered

trade and total digitally delivered trade. However, the fact that some digitally delivered services are also digitally ordered creates an overlap between these two components, and therefore, adding them together without adjusting for that conceptual overlap would over-estimate total digital trade. To avoid such double counting the reporting template on digital trade (see Chapter 2, Table 2.1) includes a separate item for digitally ordered and digitally delivered services, which is to be subtracted when calculating the total. For more information on measuring the value of trade that is both digitally ordered and digitally delivered, see Chapter 3, Section 3.3.

## 4.2 Sources for measuring digitally delivered trade

Any digitally delivered trade transaction involves two main parties: a buyer and a seller. These roles may be filled by any combination of businesses, households, government bodies or non-profit institutions serving households (NPISHs).

Some digitally delivered transactions also involve a digital intermediation platform (DIP) acting as an intermediary. The DIP’s role often includes facilitating digital delivery by providing the necessary online tools to the buyer and seller. For example, telehealth services often provide features to enable online consultations to take place directly through the service. See Chapter 5 on measuring transactions involving DIPs.

No single data source can offer a holistic measure for digitally delivered trade for the whole economy. Figure 4.1 maps potential sources of data on digitally delivered trade by institutional sector and direction of trade (exports or imports), in accordance with the reporting template for digital trade set out in Chapter 2. As few countries are likely to have all these potential data sources in place, a key purpose of Figure 4.1 is to support compilers in identifying potential sources and considering the coverage they can offer individually and collectively. The section references given in Figure 4.1 indicate where further details on each source can be found in this chapter, while Table 4.6 gives a complementary overview of the strengths and limitations of each data source for measuring digitally delivered trade. Non-survey data sources can offer the potential to avoid the cost and burden associated with surveys, but they can necessitate compromises on the coverage of institutional units or trade flows, the availability of reporting items, or on alignment with the digital delivery concept.

As digitally delivered trade is a subset of services trade transactions, international trade in services (ITS) surveys, already in place in many countries, are a natural starting point for measuring digitally delivered trade (UN et al., 2010b). However, while ITS surveys are an effective source for measuring digitally delivered

trade by businesses, households can also directly purchase (import) digitally deliverable services from abroad (such as by streaming videos or music). These transactions, often small in value at the individual level, can be separately captured through household surveys or in a country's International Transaction Reporting System (ITRS), depending on the application of reporting thresholds.

As illustrated in Figure 4.1, it may be necessary to combine information from different sources to obtain statistics representing the whole economy. Linking trade data from ITS surveys with responses from business ICT surveys may help in identifying both exporting businesses which make at least some digital deliveries and businesses which imported at least some digitally delivered services (or to estimate the propensity that

a trading business with given characteristics has to do either). With the total imports and exports of these businesses known from services trade sources, further information gathered through ICT surveys or from other suitable sources could be applied to estimate the portion of those trade flows that is digitally delivered.

As a first step towards compiling digitally delivered services trade, this chapter recommends measuring *digitally deliverable services* (Section 4.3). Section 4.4 builds on this by outlining the use of expert judgment estimates and measures based on business surveys, including ICT surveys, to focus in on the portion of digitally deliverable services trade that is actually digitally delivered. Section 4.5 gives an overview of the other sources listed in Figure 4.1. Section 4.6 sets out recommendations for compiling statistics on digitally delivered services trade

**Figure 4.1: Institutional sector and conceptual coverage of digitally delivered trade sources**

	Businesses				Households		All institutional sectors					
	ITS Surveys <sup>1</sup>		Business ICT surveys <sup>1,2</sup>		Household surveys <sup>3</sup>		Travel surveys <sup>4</sup>		International Transaction Reporting System (ITRS) <sup>5</sup>		VAT data <sup>6</sup>	
Section reference	4.4.2		4.4.2		4.5.3		Box 4.3		4.5.1		4.5.2	
Exports (X) / Imports (M)	X	M	X	M	X	M	X	M	X	M	X	M
<b>Digitally delivered trade</b>												
<i>of which: via DIPs</i>												
<b>Digitally ordered and digitally delivered trade</b>												
<b>Digitally deliverable services</b>												
Legend:	Partial coverage / conceptual alignment (see notes)											
	Comprehensive coverage / conceptual alignment (depending on survey design)											

**Notes:**

- 1 Excludes digitally deliverable services which may be consumed while travelling (Mode 2 service supply).
- 2 While business ICT surveys can be used to collect these reporting items, their sample design can be less well suited to delivering measures of trade flows than ITS surveys. In practice, it may be best to combine detail collected from ICT surveys with trade values from ITS surveys.
- 3 While households/individuals can report expenditure on digitally delivered services, they can have great difficulty in delineating international transactions.
- 4 Covers only digitally deliverable services which may be consumed while travelling (Mode 2 service supply).
- 5 In practice, ITRS is most likely to be useful for measuring transactions involving large enterprises that are known to predominantly provide digitally delivered services (and indeed to identify such large enterprises, possibly to be targeted via other collection mechanisms). One reason is that minimum transaction value thresholds may be applied, below which transactions are not reported.
- 6 Covers services imports subject to VAT.

Section references indicate where further details on each source can be found in this chapter.

**Source:** IMF, OECD, UNCTAD and WTO.

and presents a table summarizing the strengths and limitations of different sources.

### 4.3 Digitally deliverable services

While all types of goods and services can potentially be digitally ordered, all goods and some services cannot be delivered digitally. As such, *certain services are the only products that are digitally deliverable*. The first step in measuring digitally delivered trade is therefore to identify services which, at the time of writing, can be delivered through computer networks (most often the internet) – referred to as “digitally deliverable services”.

Many services are only practical to trade internationally (or are only traded as much as they are) because digital delivery can be used to bridge the physical distance between the service producer and consumer. For example, most cross-border provision of distance learning services would not be possible without online delivery of educational content, tests, etc.

In some cases, although the technology exists for a given service to be digitally delivered internationally, it may sometimes still be delivered physically. As a result, the delivery of some classes of services, when traded internationally, may be a mixture of digital and non-digital delivery. For example, computer networks allow not only for international telehealth consultations, teleradiology and remote second opinions, where physical interventions are less relevant, but also the digital delivery of more advanced health services,

**TABLE 4.1: DIGITALLY DELIVERABLE SERVICES IN THE EXTENDED BALANCE OF PAYMENTS SERVICES CLASSIFICATION (EBOPS 2010)**

	SDMX-BOP DSD <sup>4</sup> components	EBOPS 2010 components
<b>Digitally deliverable services supplied cross-border (Mode 1)</b>		
Insurance and pension services	SF	6
Financial services	SG	7
Charges for the use of intellectual property n.i.e.	SH	8
Telecommunications, computer and information services	SI	9
Research and development services	SJ1	10.1
Professional and management consulting services	SJ2	10.2
Architectural, engineering, scientific and other technical services	SJ31	10.3.1
Trade-related services	SJ34	10.3.4
Other business services n.i.e.	SJ35	10.3.5
Audio-visual and related services	SK1	11.1
Health services	SK21	11.2.1
Education services	SK22	11.2.2
Heritage and recreational services	SK23	11.2.3
<b>Digitally deliverable services consumed abroad (Mode 2)</b>	<i>Recorded <u>within</u> item SD (Travel)</i>	<i>Recorded <u>within</u> item 4 (Travel)</i>

**Notes:**

Items included under “SDMX BOP DSD” refer to the data structure definition codes used for EBOPS 2010 items (see also [https://sdmx.org/?page\\_id=1747](https://sdmx.org/?page_id=1747)).

“n.i.e.” = not included elsewhere.

For easier identification of digitally deliverable services consumed abroad (Mode 2) and recorded in Travel (SD), it is recommended that countries use the alternative breakdown of “Travel” by product rather than by purpose (see Box 4.3).

An expanded version of Table 4.1 is available in Annex C.

**Source:** IMF, OECD, UNCTAD and WTO.

such as tele-surgery, where there is still a strong physical delivery component. It should also be noted that, although a service may be considered digitally deliverable given the current technology, if that technology is not available to both the service supplier and the consumer, then digital delivery is not possible.

With those caveats in place, Table 4.1 sets out a list of digitally deliverable services, i.e., services which can be delivered remotely over computer networks. It incorporates and builds upon the list of “potentially ICT-enabled services” identified by the UNCTAD-led Task Group on Measuring Trade in ICT Services and ICT-enabled Services (TGServ) in 2015,<sup>3</sup> which assessed descriptions of Central Product Classification Version 2.1 (CPC Ver 2.1) and Extended Balance of Payments Services classification (EBOPS 2010) products against the definition of ICT-enabled services (“services products delivered remotely over ICT networks”, where “ICT networks” are synonymous with “computer networks”).

Several additional categories of services are included, given the potential that they may be digitally deliverable, namely “health services” and “heritage and recreational services” (e.g., gambling services). Additionally, “trade-related services” includes the fees paid for intermediation services provided by digital intermediation platforms (among other intermediation services). References in Table 4.1 to “Mode 1” and “Mode 2” refer to the General Agreement on Trade in Services (GATS) modes of supply as outlined in Box 2.2 of Chapter 2.

Services which are inherently digital in nature, such as software downloads, cloud computing services, streaming media, online gaming (including purchases of virtual “real estate” or “items” in online spaces such as in games or in the Metaverse), digital communication services and datasets (when traded as products) are mainly recorded in “Audio-visual and related services” and in “Telecommunications, computer and information services”. Digital intermediation services are included within “Trade-related services”.

The other services categories listed include many activities where in-person interactions are being replaced with interactions online (e.g., through voice/video calls or manually typed messages) and/or where the physical delivery of documents is being supplanted by delivery in the form of digital outputs (e.g., digital files). Illustrative examples include “legal services” (recorded within “professional and management consulting services”), “education services” (e-learning) and “health services” (telehealth).

In some cases, services that were previously mainly provided through in-person interactions are now commonly accessed and supplied through online interfaces. For this reason, transactions in most insurance services (notably, the core service of risk management) and financial services (such as liquidity provision and transformation, risk management, underwriting, safekeeping, record-keeping and payment services) are in scope for digitally delivered trade, even though the underlying service being

### Box 4.1: Mobile money and digital trade

Mobile money is a digital medium of exchange and store of value which is usually offered by a mobile network operator (MNO). Unlike mobile banking and mobile wallets, which are linked to traditional bank accounts, mobile money allows access to financial services with just a mobile phone (Shirono, Das, Fan, Chhabra and Carcel-Villanova, 2021).

Mobile money is commonly used for personal remittance transactions but can also be used to pay for the cross-border provision of goods and services.

A typical mobile money transaction will involve several actors: the buyer/donor, the seller/recipient, the MNO of the buyer/donor and the MNO of the seller/recipient (the latter two possibly being the same entity). In addition, local mobile money agents typically convert cash to credit in the buyer/donor country and credit back to cash in the seller/recipient country. Both the MNOs and the local mobile agents will normally charge fees for their services.

If mobile money is used in the context of an import (or export) transaction, this does not imply that the product imported (exported) is either digitally ordered or digitally delivered, since the means of payment does not determine whether a transaction should be considered digital trade.

However, the fee payments to the MNO and between the MNOs are recorded as international trade in services if the buyer/donor is resident in a different economy than the MNO, or if one MNO pays fees to another MNO in a different economy when the two parties to the transaction are resident in different economies. This applies regardless of whether the underlying event is a trade transaction, a remittance payment or a domestic transaction. These fees are payments for financial services provided by telecom companies (MNOs) and should be recorded as digitally delivered services trade. Pilot surveys to record these services were conducted in 2017-18 in Uganda, Botswana and the Philippines (Bank of Uganda, 2018).

**Source:** IMF, OECD, UNCTAD and WTO.

provided is not determined by its ability to be digitally delivered. Box 4.1 looks more specifically at mobile money and digital trade.

There are various cases where a service is delivered in the form of a report, design, blueprint, or the like. Examples include business accounting services, management consultancy services, research and development services and architectural services. Where, in the past, these would have been provided as physical items, they can now be delivered as digital files transmitted via computer networks. Indeed, this move has led to various innovations and advancements: for example, an architect may now deliver a “digital twin”<sup>5</sup> instead of (or as well as) a blueprint or architectural design for a building. Design files also play a crucial role in trade related to 3D printing (see Box 4.2).

Although some additional service categories could include digitally delivered components, such as manufacturing services, repair and maintenance services, or construction, these activities are inherently physical in nature. Given that the value of digitally delivered transactions is generally likely to be small compared to the overall value recorded for these services items, they are not included in the list of digitally deliverable services set out in Table 4.1.<sup>6</sup> Additionally, non-fungible tokens (NFTs - i.e. digital records hosted on a blockchain that are associated with a digital or physical asset)<sup>7</sup> are not included in the EBOPS 2010 based list of digitally deliverable services in Table 4.1.

It is recommended that efforts to measure digital trade should first target the services items listed in Table 4.1. This approach has the benefit of keeping the scope of services considered relevant for digitally delivered trade as a subset of those identified as relevant for cross-border (Mode 1) services supply (UN et al, 2010a). This is important because the bulk of digitally

delivered trade is deemed to take place through cross-border supply (i.e., Mode 1, concerning remote delivery), with the services supplier and the services consumer located in their respective economies of residence. In addition, Table 4.1 acknowledges that digitally deliverable services can also be consumed abroad. This arises when services are delivered digitally from a producer to a consumer visiting from another country (i.e., through Mode 2, “consumption abroad”). For example, this would apply when a person falls ill while travelling abroad and has a telehealth consultation with a doctor in the visited country. While such transactions are not delineated in most trade data sources, measuring the consumption of digitally delivered services outside the home country is an area of ongoing exploration (see Box 4.3).

Nevertheless, countries are encouraged to assess the extent to which digital delivery may be relevant for further services categories, and research and experimentation related to measuring these is desirable as a basis for potential extensions of the recommended coverage in future editions of this Handbook.

The list of digitally deliverable services in Table 4.1 provides a starting point for compiling statistics on exports and imports of digitally deliverable services. Furthermore, because they are incorporated within that list, the efforts that several countries have made to measure “potentially ICT-enabled services” (see section 4.3.2) are synonymous with measuring digitally deliverable services trade (though they do not cover all of the services set out in Table 4.1) and can be built upon.

Collecting sufficient product detail is, however, a prerequisite for accurately delineating digitally deliverable services within wider international trade in services statistics. As an example, the United States Bureau of Economic Analysis has published statistics on trade in digitally deliverable services (see Box 4.4).

### Box 4.2: 3D printing and digital trade

3D printing involves loading a 3D design file into a machine capable of using plastic, resin, concrete, metal or other materials to print 3D structures in layers added one on top of the other (hence the alternative term “additive manufacturing”).

The act of 3D printing is inherently physical, no different from two-dimensional printing or indeed from various manufacturing processes in which machines translate a digital design into physical outputs (e.g., the use of computer numerical control machines to automate the production of parts from wood, metal, plastic, glass, etc.). Printing services are physically, not digitally, delivered, and the resulting objects are physical goods.

Nevertheless, digital delivery plays an important role in 3D printing. The design files containing the instructions which tell a 3D printer how to place the layers of material to construct the object are easily traded internationally through the internet. Online services offer design files available for paid download – similar to services offering images or documents for sale in digital form. Such transactions should be recorded as trade in digitally delivered services.

**Source:** IMF, OECD, UNCTAD and WTO.

### Box 4.3: Measuring digitally deliverable services consumed abroad (Mode 2)

The “travel” component in the balance of payments is a transactor-based item which covers any goods and services consumed by non-residents in the economy that they visit (UN et al, 2010a). This corresponds to Mode 2 of service supply, concerning consumption of services abroad.

Some services supplied via Mode 2 are digitally delivered, for instance telecommunication services provided by a local operator (e.g., via an e-sim), digital guides (i.e., museum or city tours) or personal services, such as medical consultations and e-learning courses (provided remotely).

It is challenging to identify digitally delivered services as part of a travel item. Surveys of households and individuals are often used to compile travel transactions. These could be amended to specifically ask whether a service was digitally delivered. Even then, however, respondents may not have a clear idea of the counterpart country (e.g., when they download a mobile application or make use of a streaming service).

A first step to tackle this issue would be a more widespread adoption of the EBOPS “alternative presentation for travel” broken down by product, rather than by purpose (see UN et al., 2010a, Annex I). This consists of the following components and, with the removal of the goods category, allows for the identification of Mode 2 services transactions:<sup>8</sup>

- 4a.1 Goods
- 4a.2 Local transport services
- 4a.3 Accommodation services
- 4a.4 Food-serving services
- 4a.5 Other services (Of which: 4a.5.1 Health services, 4a.5.2 Education services)

The presentation by product can greatly facilitate the measurement of digital trade. Indeed, goods, local transport, accommodation and food-serving services cannot be digitally delivered. The last category (4a.5), which covers all other services and includes health and education, could potentially encompass some digitally delivered services and thus provide an upper bound estimate, although it seems reasonable to assume that only a small share of the “other services” are digitally delivered.

**Source:** IMF, OECD, UNCTAD and WTO and Bank of Italy.

In addition, cross-country comparisons and recent global trends can be drawn from international trade in services databases, such as the WTO-UNCTAD common dataset on international trade in services (covering 200 economies) and the OECD EBOPS 2010 Trade in Services by Partner Economy database (see Box 4.5).<sup>9,10</sup>

## 4.4 Towards measures of digitally delivered services

Identifying a service as *digitally deliverable* does not mean it is always delivered digitally when traded. As a result, the total value of services that are digitally deliverable will be greater than (or equal to) the total value of services that are *actually digitally delivered*.

UNCTAD, in collaboration with three member countries – Costa Rica, India and Thailand – found that a high proportion of exports of many digitally deliverable services appear to be actually digitally delivered (UNCTAD, 2018b). Nevertheless, in India it was found that up to one-fifth of digitally deliverable exports were

still delivered by non-digital means – demonstrating that there can be a considerable difference between trade that is *digitally deliverable* and that which is *digitally delivered*.

Thus, trade flows in digitally deliverable services can only be regarded as giving an *upper-bound estimate of digitally delivered trade*. While these estimates can be insightful and are likely to provide a useful first measurement step, they do not get sufficiently close to measuring actual digitally delivered trade. This is reflected in their treatment as an addendum item in the reporting template in Chapter 2.

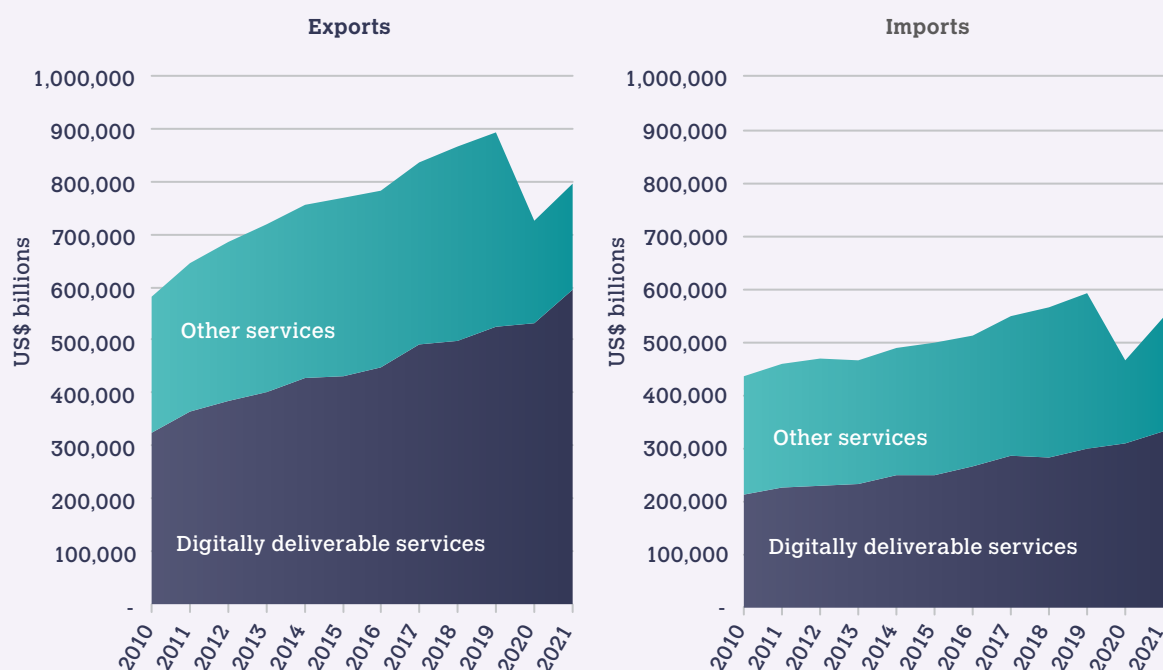
For this reason, the next step is to explore ways to delineate services that are *actually* digitally delivered, in order to measure digitally delivered trade more closely.

Efforts to progress the measurement of services trade by mode of supply can directly contribute to this. Cross-border (i.e., Mode 1) transactions imply physical distance between the buyer and seller during the service delivery as they are on different sides of an international border. For those services which can be digitally delivered, it is reasonable to assert that digital technology will generally be used to bridge that

### Box 4.4: ICT and digitally deliverable services trade in the United States

The United States Bureau of Economic Analysis (BEA) introduced statistics on trade in certain digitally deliverable services in 2016, as a supplement to the main trade in services statistics. These are calculated by aggregating existing trade in services categories, so compilation did not require modifications to data collection instruments or methodologies. The complementary statistics (summarized in Figure 4.2), which have received positive feedback from users, provide insight into the extent to which ICTs may be facilitating trade in services.

**Figure 4.2: Trade in digitally deliverable and other services, United States, 2010-21**



**Note:** Covers a subset of the services in Table 4.1: “Insurance Services”; “Financial Services”; “Charges for the use of intellectual property n.i.e.”; “Telecommunications, computer and information services”; “Potentially ICT-enabled services within other business services”; and “Potentially ICT-enabled services within personal, cultural and recreational services”.

**Source:** United States Bureau of Economic Analysis. For more information, see Grimm (2016) and Nicholson (2016).

Nevertheless, publishing these measures has also posed challenges. Key among these is possible misinterpretation: classes aggregated from trade in services products reflect services that *can be* digitally delivered, rather than measuring services that are *actually* digitally delivered. To support user understanding, clear titles are used for the statistics published, while a complementary report describes how the statistics are compiled and presents the total alongside its individual components to make clear what services products these statistics include.

**Source:** United States Bureau of Economic Analysis.

distance to deliver the service. Furthermore, as Mode 1 delivery accounts for the majority of trade in digitally delivered services, *measures of the portion of digitally deliverable services imported and exported by Mode 1 (cross-border supply) offer reasonable estimates for the bulk of digitally delivered trade.*

There are two main approaches for delineating the portion of digitally deliverable services supplied via Mode 1, and hence for measuring the bulk of digitally delivered trade: estimates based on research and

expert judgement shares; and measures collected through business surveys. The following sub-sections look at each of these.

#### 4.4.1 ESTIMATES BASED ON EXPERT JUDGEMENT

A potential first step in deriving estimates of digitally delivered trade is to apply shares based on expert judgement to the products identified in Table 4.1.



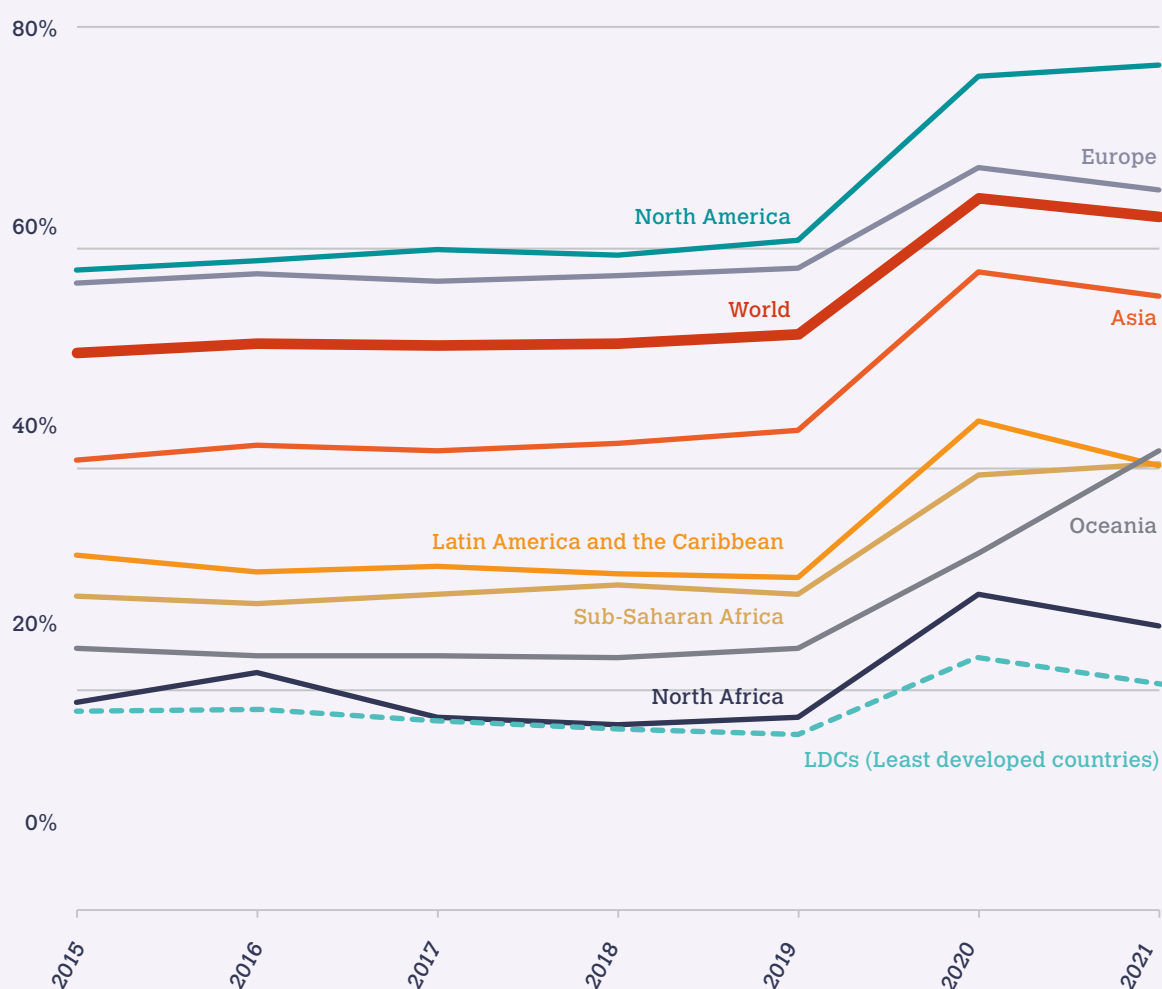
### Box 4.5: Global trends in digitally deliverable services trade

Digitally deliverable services exports can be compiled by aggregating the relevant products available in the WTO-UNCTAD common dataset on international trade in services (to the extent that data on the relevant products are available). This can be done for individual economies and for regions/country groupings.

The share of digitally deliverable services in total services exports varies significantly across regions (see Figure 4.3). A key reason for this is differing access to digital technologies including fast, stable and affordable internet and digital devices. Differences in the prevalence of digital skills are also important (UNCTAD, 2022b).

**Figure 4.3: Digitally deliverable services exports by region, 2015-21**

Share in total services exports



**Notes:** Figure 4.3 includes some non-digitally deliverable services as included in "other business services" aggregate and excludes "health services", "educational services", and "heritage and recreational services", as the EBOPS 2010 sectors for these digitally deliverable services are not available for enough countries. Excludes expenditure on digitally deliverable services recorded within "Travel" (i.e., Mode 2 concerning consumption abroad of digitally deliverable services).

**Source:** UNCTAD (2022e), based on WTO-UNCTAD common dataset on international trade in services.

In principle, such assessments should be made on a country-by-country basis to account for factors such as the state of digitalization of different industries and their role in trading digitally deliverable products, the prevalence of digital technologies and skills among the population, the countries traded with, etc. Furthermore,

these judgements should be regularly updated to reflect technological advancements. However, not all countries have the resources to undertake such a bespoke exercise. In these cases, standard allocation shares established internationally can be of use in deriving initial estimates, as illustrated in Box 4.6.

### Box 4.6: Global estimates of digitally delivered services exports

The Manual on Statistics of International Trade in Services 2010 (MSITS 2010) (UN et al., 2010a) includes a framework to measure the international supply of services according to four modes of delivery according to the (see Chapter 2, Box 2.2). As a starting point, it suggests applying a simplified allocation approach, which basically identifies the most likely mode(s) used to supply services for each balance of payments item.

The WTO Trade in Services by Mode of Supply<sup>11</sup> (TiSMoS) methodology,<sup>12</sup> which enhances and operationalizes the MSITS 2010 (UN et al., 2010) simplified allocation approach, can be used to produce first estimates on Mode 1 service delivery, which – for services that are digitally deliverable – is equivalent to digitally delivered services trade. In TiSMoS, each service sector in EBOPS 2010 is allocated to one dominant mode (that is, Mode 1, 2 or 4) or, where there is no single dominant mode, allocation shares are applied. In 2019, TiSMoS enabled the production of the first global dataset of trade in services by mode of supply.

In late 2021, Eurostat and the WTO developed a consolidated standard model, the Eurostat-WTO model, building on the two organizations' previous efforts. The consolidated Eurostat-WTO model is included in Annex D (Eurostat, 2021a).

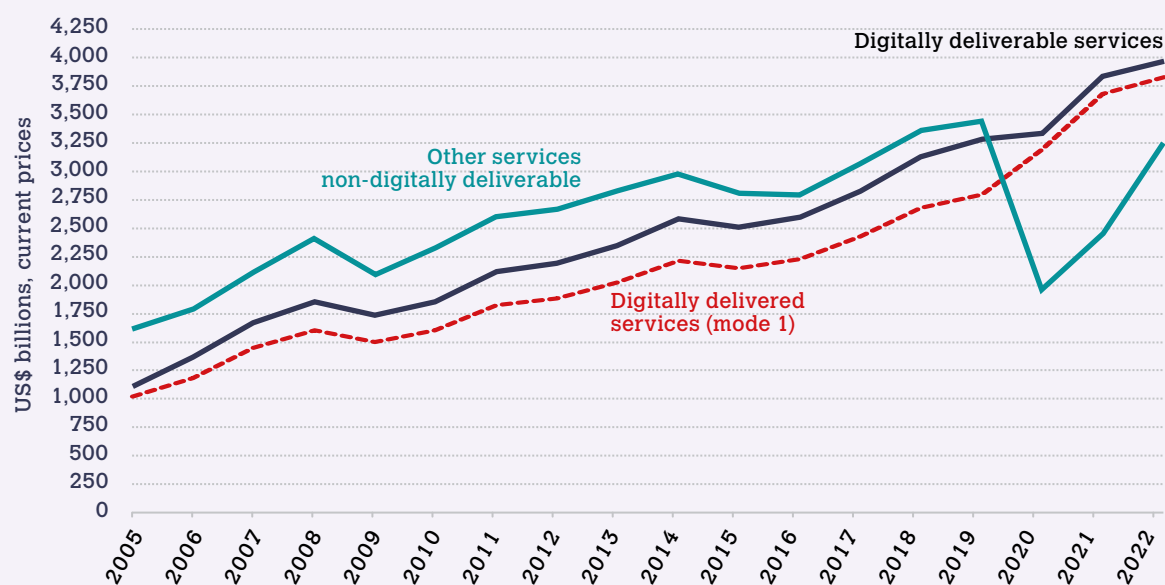
In 2023, the WTO produced a global dataset on digitally delivered services, based on the Eurostat-WTO model and taking into account the impact of the pandemic on services trade, as well as available countries' survey results. Allocation shares were modified accordingly.

Figure 4.4 shows that services which are digitally deliverable are increasingly delivered via Mode 1 (i.e., digitally delivered). The COVID-19 pandemic boosted digitalization and increased the delivery of services through computer networks, while other services, non-digitally deliverable, such as transport, accommodation and food serving services, dropped.

According to these estimates in 2022, “Other business services”, including “research and development services” and “professional services”, such as “legal and management consulting services”, accounted for 40 per cent of global exports of digitally delivered services through Mode 1, followed by “computer services” (20 per cent), “financial services” (16 per cent) and “charges for the use of intellectual property n.i.e.” (12 per cent). The contribution of “personal, cultural, and recreational services”, which include music and video streaming services, was estimated at 3 per cent.<sup>13</sup>

**Figure 4.4: Global exports of digitally deliverable services and digitally delivered services (Mode 1 – cross-border supply), 2005-22**

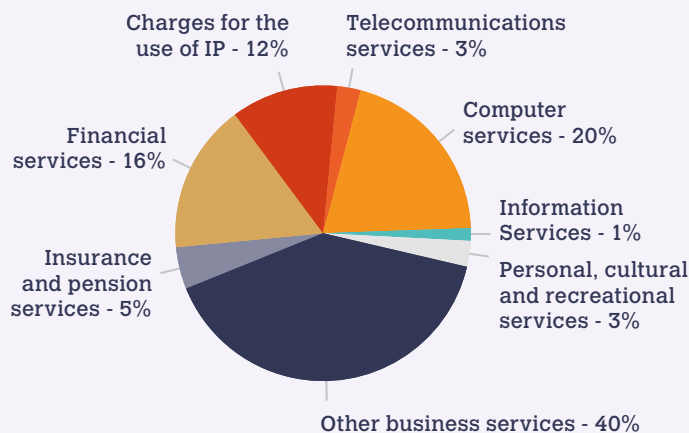
Exports in US\$ billions, current prices



Source: WTO (2023).

**Figure 4.5: Global exports of digitally delivered services (Mode 1 – cross-border supply) by broad EBOPS 2010 sector**

2022, share in total exports of digitally delivered services through Mode 1



Source: WTO (2023).

#### 4.4.2 MEASURES COLLECTED THROUGH BUSINESS SURVEYS

##### COMPILING DIGITALLY DELIVERED TRANSACTIONS USING INTERNATIONAL TRADE IN SERVICES SURVEYS

International trade in services (ITS) surveys, which cover businesses, provide the best means for obtaining more precise estimates of digitally delivered services trade. By enhancing these surveys with supplemental questions, the share of exported and imported services that were delivered digitally can be measured in a way that is integrated with the sources and methods used to measure overall services trade.

Supplemental questions need only be asked for services that can be delivered digitally (though such questions are not necessary for services that are digitally delivered by nature, such as streaming media subscriptions). To reduce respondents' reporting burden, the supplemental questions could be asked on a less frequent basis than the routine ITS questionnaires (often being conducted on a quarterly basis), since the share of digitally delivered exports and imports is not expected to vary rapidly at the level of the individual firm. Alternatively, such questions could be targeted at the main exporters/importers of relevant digitally deliverable services products.

In reflection of the relationship between digitally delivered services and Mode 1 supply, the United States Bureau of Economic Analysis (BEA) and the United Kingdom Office for National Statistics (ONS) have begun to develop methods that provide estimates of digitally delivered trade using the same survey

questions that are used to delineate services trade by modes of supply (Mann and Cheung, 2019).

To encompass both digital delivery and Mode 1 service delivery, the BEA and ONS have been asking respondents about remotely delivered exports and imports (see Boxes 4.7 and 4.8 respectively). Building on these two experiences, Statistics Canada also produced estimates of digitally delivered trade in a similar fashion (see Box 4.9). Remote delivery includes delivery of services by post as well as digital delivery. However, in these countries, the share of services that are remotely delivered but via non-digital means is judged to be marginal.<sup>14</sup> Therefore, cross-border remotely delivered services are considered to provide a meaningful estimate of digitally delivered trade.

The approach used was to ask respondents to estimate, for various product classes, the share of trade that was remotely delivered, by selecting from pre defined percentage ranges (with the option of "unknown" in the United Kingdom case). As for the selection of sectors to consider, the BEA, ONS and Statistics Canada adopted slightly different approaches. The BEA requested information on Mode 1 delivery only for service sectors which it expected would not be supplied exclusively through Mode 1. This approach has the advantage of lowering the burden on respondents.

The ONS and Statistics Canada did not restrict the enquiry to services products judged *ex ante* to be deliverable remotely. Consequently, some Mode 1 transactions were reported for some further services items (e.g., maintenance and repair services, construction). This suggests that, for a future version

### Box 4.7: Measuring digitally delivered transactions using ITS surveys in the United States

The United States Bureau of Economic Analysis (BEA) has taken steps to compile digitally delivered transactions using the ITS survey, originally as an offshoot of an effort to measure services supplied by the four modes of supply. More recently, BEA has planned to collect data on digitally delivered services as a primary objective.

In its initial efforts to compile statistics on trade in services by mode of supply, BEA introduced questions on its Benchmark Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons for 2017 to collect data on the Mode 1 delivery share of trade in certain services.

BEA considered and tested several versions of a question set before arriving at a final design. A first version collected information on Modes 1, 2, and 4, but feedback from respondents indicated that this approach would be excessively burdensome and impractical because most accounting systems do not track services by mode of supply.

A second version asked respondents to provide the predominant mode through which services are supplied. Feedback indicated that this would not be overly burdensome. However, BEA concluded that the information would be of limited use because BEA expected that companies would report that Mode 1 was predominant for most service types. Relying only on the knowledge that Mode 1 is the predominant mode, and given that what was not supplied through Mode 1 could be supplied by Mode 2, Mode 4, or both, BEA would be left with a wide range of possible values for the percentage of those services that were supplied through Mode 1 (between 33 and 100 per cent).

BEA instead collected the share delivered by Mode 1 of certain services within percentage ranges, an approach that respondents indicated would not be too burdensome yet might provide reliable measures. Mode 1 information was asked only for those service types which it conjectured would not be supplied exclusively through Mode 1. This approach has the advantage of reducing reporting burden.

The survey questions targeted Mode 1 transactions by requesting shares for the portion of sales corresponding to services “performed remotely from the [supplier’s] offices...via internet, email, text, telephone, or other means.” Reporters were told to exclude services “performed on-site in the country of the purchaser” (Mode 4) or performed for a “customer temporarily located” in the country of the seller (Mode 2).

**TABLE 4.2: FORMAT OF BEA’S SURVEY QUESTIONS TO COLLECT SALES AND PURCHASES OF SERVICES REMOTELY PERFORMED**

Transaction type (1)	Did you report exports/imports of this service? (Check yes or no)		For each “Yes” response, check the appropriate percentage range. (Check one)						This information provided is based on (Check one)	
	Yes	No	Less than 25%	25-49%	50-74%	75-89%	90-99%	100%	Accounting records	Recall/general knowledge of operations
...	...	...	...	...	...	...	...	...	...	...

**Notes:**

1. This question applies to the following 13 transaction types, which are expected to have Mode 1 transactions, which may be digitally delivered: “accounting, auditing, and bookkeeping services”; “advertising services”; “other computer services”; “education services”; “architectural services”; “engineering services”; “surveying, cartography, certification, and technical inspection services”; “legal services”; “market research services”; “public opinion and polling services”; “other management, consulting, and public relations services”; “provision of customized and non-customized research and development services”; and “other research and development services”.

The table below contrasts the share of certain services delivered by Mode 1 based on the results of the survey with the corresponding shares derived via the Eurostat-WTO simplified allocation outlined in Annex D (which involves allocating the services to modes based on assumptions of how services are most likely supplied).

**TABLE 4.3: MODE 1 (CROSS-BORDER SUPPLY) COMPARISON BETWEEN THE EUROSTAT-WTO MODEL AND ESTIMATES FROM THE INTERNATIONAL TRADE IN SERVICES SURVEY, PERCENTAGE**

	Eurostat-WTO model (Annex D)	Survey-based	
		Exports	Imports
Accounting, auditing, and bookkeeping services	75	51	66
Advertising, market research, and public opinion polling services	75	78	70
Computer services	75	80	56
Architectural and engineering services	75	61	53
Education services	75	37	32
Legal services	75	80	91
Management consulting and public relations services	75	77	68
Research and development services	90	59	81

**Source:** IMF, OECD, UNCTAD and WTO; Mann and Cheung (2019); Eurostat (2021).

For its 2022 Benchmark Survey, BEA refocused this set of questions to target digitally delivered trade by excluding supply by postal service or private delivery. Expanded instructions also explicitly include services provided via extranet, fax and video conference. BEA still intends to use the data collected to produce statistics on both digitally delivered trade and trade by mode of supply, but it has prioritized collecting the former as accurately as possible.

BEA is also collecting more detail on the 2022 survey. Based on the strength of responses on its 2017 survey, for 2022, BEA is requesting a point value for the share of trade digitally delivered, rather than a percentage range. The 2022 survey continues to collect information only for those service types which BEA conjectures would not be exclusively remotely performed, but the number of services has increased from 13 to 18 (the additional service types are “news agency services”; “installation, alteration, and training services”; “operational leasing”; “trade-related services”; and “health services”).

**Source:** United States Bureau of Economic Analysis. For more information see Mann and Cheung (2019).

of this Handbook, further research will be necessary to identify whether other items may be included in the list of digitally deliverable services as set out in Table 4.1.

Overall, these country experiences point to high levels of digital delivery for the digitally deliverable services identified in Table 4.1. Nevertheless, the measured shares of remote delivery for imports and exports are markedly below 100 per cent, further illustrating the importance of moving beyond measures of digitally deliverable services to focus more closely on what is actually digitally delivered.

In some cases, there is a considerable discrepancy between the Mode 1 shares proposed in the

Eurostat-WTO model (Eurostat, 2021a) and the shares measured through surveys. This reflects the fact that the Eurostat-WTO shares were finalised in 2021 and therefore account for some of the accelerated digitalisation which took place during the COVID-19 pandemic. This affected industries differently depending on their pre-existing degree of digitalisation, with sectors such as education and health services rapidly adopting digital delivery. The latest results obtained in Canada and the United Kingdom, covering 2020, are generally relatively close to the Eurostat-WTO standard shares. Nevertheless, the shares observed in any given economy and industry may deviate from the average shares given in the model. This emphasizes the importance of building upon estimates based on expert judgement

### Box 4.8: Measuring digitally delivered transactions using ITS surveys in the United Kingdom

The approach adopted by the ONS was very similar to that taken by the BEA except that it included the response category “unknown” in addition to the 6 percentage ranges adopted by the BEA.

In the initial phase work, a sample of 100 businesses were selected to test the survey questions in September 2018. The results indicated little change in the response rate among the pilot sample and most businesses were able to respond with the information needed. As a result, new questions were added to the 2018 annual ITS survey of 5,000 businesses known to engage in international trade in services. The approach also integrated figures derived via the proportional allocation method developed by Eurostat (see Annex D).<sup>15</sup>

The ONS questionnaire did not restrict the enquiry to services products judged ex ante to be deliverable remotely. As a result, respondents identified Mode 1 delivery of a number of products that are not typically considered as being remotely deliverable given the inherent physicality associated with the products concerned, including manufacturing services, maintenance and repair, and construction.

This suggests that more research may be needed to understand the types of transactions that respondents may consider to be, and report, as remotely delivered.

**TABLE 4.4: MODE 1 (CROSS-BORDER SUPPLY) COMPARISON BETWEEN THE EUROSTAT-WTO MODEL AND THE ONS ESTIMATES FROM THE INTERNATIONAL TRADE IN SERVICES SURVEY, PERCENTAGE**

Service type	Eurostat-WTO model (Annex D)	Exports		Imports	
		ITS survey (2020)	ITS survey (2018)	ITS survey (2020)	ITS survey (2018)
Insurance and pension services	100	91	84	66	71
Financial services	100	95	89	88	79
Charges for the use of intellectual property n.i.e.	100	80	83	87	87
Telecommunications, computer and information services	80	83	85	86	85
Other business services	80	89	65	78	65
Personal, cultural, and recreational services	75	76	43	77	29
Travel	–	0	0	0	0
Manufacturing services on physical inputs owned by others	–	51	49	76	37
Maintenance and repair services n.i.e.	–	51	49	76	37
Transportation	90	65	65	80	80
Construction	–	63	47	62	23
Government goods and services n.i.e.	10	75	75	75	75

**Source:** Office for National Statistics (2023); Mann and Cheung (2019); Eurostat (2021).

by including questions on trade in services surveys to gain a more accurate picture of digitally delivered exports and imports for a given country and the evolution over time.

UNCTAD collaborated with Costa Rica, India, and Thailand to develop a stand-alone survey to measure exports of “ICT-enabled services” (UNCTAD, 2015). These are defined as “services products that are

### Box 4.9: Measuring digitally delivered transactions using ITS surveys in Canada

Statistics Canada has moved from estimating digital trade in services via a simplified allocation approach to direct measurement of enterprise activity in Canada (Statistics Canada, 2020).

This advance leveraged the existing Annual Survey of International Transactions in Commercial Services by adding a single question on remote delivery of services exports. Based on discussions of best practices across BEA, ONS and Statistics Canada, the e-questionnaire would automatically populate this question with relevant services categories that the respondent had already reported exporting earlier in the survey module. The respondent was asked to indicate the share of each service product delivered remotely, using the six standard percentage ranges adopted by the three organizations.

**Revenues – Percentage of commercial services delivered remotely to foreign parties** Reset

9. For each of the following commercial services sold to foreign parties, what proportion of revenue comes from services **delivered remotely**?

Services **delivered remotely** are services where the Canadian supplier does not travel to the country of the foreign party to provide the service, nor does the foreign party come to Canada to consume the services. These services could be provided via Internet, email, telephone or other means, including services provided to foreign affiliates using the same network.

**Examples:**

- A Canadian law firm delivers legal advice by phone or the internet to a client in the United States
- A Canadian software company delivers software via the cloud or the internet to a client in Europe

Select the appropriate percentage range for each service category.

If this information is not available from your records, please provide estimates to the best of your knowledge.

**Note:** Press the help button (?) for additional information, including examples of services delivered remotely.

	0% - 10%	11% - 24%	25% - 49%	50% - 74%	75% - 89%	90% - 100%
d. Legal services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Computer services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

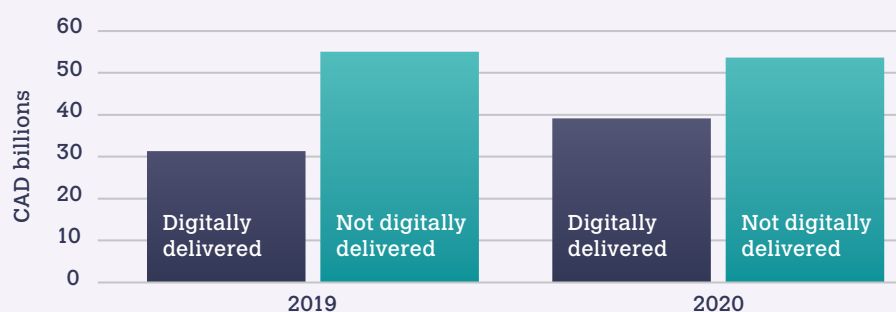
**Source:** Statistics Canada.

Results indicated that computer services producers in Canada digitally delivered 93 per cent of their computer services exports, a higher share than was considered to be the upper-bound limit under the simplified allocation approach. By contrast, education services were much more likely to be delivered in person, with 60 per cent of their export value arising from Canadian educators relocating to other countries to teach. In 2020 and 2021, the global COVID-19 epidemic and the associated restrictions on travel generated a significant rise in digitally delivered education services (Statistics Canada, 2022e).

Findings also indicate that digital delivery of services occurs in several industries mainly associated with physical outputs. Construction services were included in the most recent survey (2020 reporting year), with responses from many construction firms indicating digitally delivered services exports (though these comprise a low share of their total exports). In addition, analysis of digital delivery by the industry of the exporter, as well as other dimensions, such as size and multinational status, found that a high proportion of services exported by manufacturing industries are digitally delivered.

By classifying commercial services exports as digitally delivered or not digitally delivered at the enterprise level, it was found that digitally delivered exports grew 25 per cent from 2019 to 2020, while commercial services exports that were not digitally delivered registered a slight decline (Figure 4.6).

**Figure 4.6: Digitally delivered services exports, Canada, 2019-20**



**Source:** Statistics Canada (2022e).

### Box 4.10: Measuring digitally delivered services in Costa Rica

Costa Rica was among the first countries to leverage the assistance offered by UNCTAD to set up a data collection and compile statistics on services that were actually delivered remotely over ICT networks (i.e., ICT-enabled). In 2021, Costa Rica carried out the sixth annual measurement of these remotely channelled service transactions.

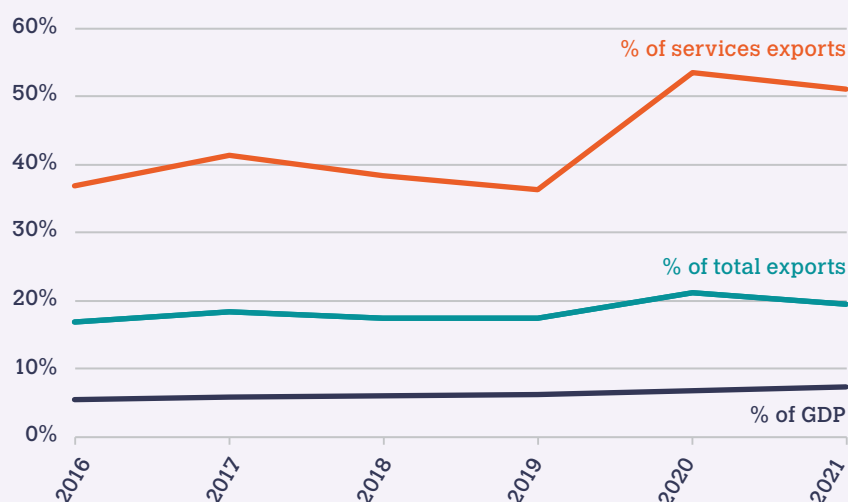
The survey targeted 220 enterprises exporting services included on the list of “potentially ICT-enabled services” developed by the UNCTAD-led Task Group on Measuring Trade in ICT Services and ICT-enabled Services (TGServ) (UNCTAD, 2015). The survey received 171 responses, of which 119 reported exporting services that were delivered digitally.

The results were “grossed up” to represent the entire population of firms exporting these services (digitally or not) – a total of 1,391 firms – using selected economic variables of the Central Bank of Costa Rica and other administrative records, including enterprise size, different trading regimes (i.e., special regime or free trade zone and final regime) and industry.

The results show that 90 per cent of those firms digitally delivered services internationally in 2021. Of all exports of the targeted services, 94 per cent were digitally delivered in 2021. This amounted to 51 per cent of total services exports and 20 per cent of total exports. As such, digitally delivered exports contributed 7.2 per cent to the gross domestic product (GDP) of Costa Rica in 2021. Over three-quarters of firms exporting ICT-enabled services were foreign-owned, with parent companies being predominantly from the European Union or United States.

Figure 4.7 plots the evolution of these exports over time and illustrates the contribution of digital delivery to export resilience during the COVID-19 disruption of 2020-21.

**Figure 4.7: Digitally delivered services exports, Costa Rica, 2016-21**



**Note:** Excludes health services, education services, heritage and recreational services, and trade-related services.

**Source:** Central Bank of Costa Rica.

delivered remotely over ICT networks” where, as noted in Chapter 2, ICT networks are equivalent to the “computer networks” referred to in the definition of digital trade. Furthermore, as indicated in Section 4.2, all services within scope for that exercise are included in the list of digitally deliverable services (see Table 4.1). As such, efforts to measure trade in ICT-enabled services are relevant to measuring digitally delivered trade.

Because it is easier to identify the narrower population of services exporting firms than that of importing firms, the *Model questionnaire on exports of ICT-enabled*

*services by businesses* (UNCTAD, 2021a), focuses on the former. The results demonstrated that, in the pilot countries, over 80 per cent of exports of the digitally deliverable services covered were actually digitally delivered (UNCTAD, 2018b). Box 4.10 gives further detail on the survey in Costa Rica.

The initiatives presented demonstrate that survey questions provide a feasible route for collecting information on digitally delivered trade from businesses. Furthermore, experience from these and other countries, including Spain (see also Chapter 6), has found that collecting information on remote delivery



on ITS surveys offers a meaningful improvement in the quality of the resulting measures relative to those derived using simplified allocation models.

Nevertheless, there are areas where care is advisable:

- Approaches that ask respondents only to identify their main mode of supply for a given service should be avoided, as they do not yield sufficient information from which to derive estimates of digitally delivered trade.
- As some respondents have difficulty in breaking down trade across modes of supply, clear instructions should be included in the questionnaire, and field/telephone agents should be trained to support respondents in this regard.
- Checks can be implemented to detect potential misreporting for follow-up, such as when the digital/remote delivery share reported is significantly different from that suggested in the simplified model.

It is worthy of note that some services that are not covered by the list of digitally deliverable services in Table 4.1 may be remotely deliverable (or may at least be considered to be so by respondents). In particular, there are examples of remote delivery being reported for manufacturing, maintenance, and repair, and construction, even though these are not identified as relevant for Mode 1 supply in the MSITS 2010 (UN et al., 2010a).

This has two potential implications. Firstly, care and guidance may be needed to ensure that respondents in certain industries correctly record their transactions in the relevant EBOPS 2010 classes and as remotely delivered or not. In particular, the outsourcing of a contract by a manufacturer or constructor to a third party (i.e., with the latter undertaking the production) should not be considered as digital remote delivery by the principal (respondent enterprise). Second, the range of services considered as digitally deliverable may need to be expanded in the future. However, at present the Handbook recommends that the range of products that should be considered as being in scope for digitally delivered trade remains consistent with those identified in Table 4.1 and the further detail specified in Annex C.

When compiling statistics on digitally delivered trade using ITS surveys, the propensity for digital delivery measured from sampled firms will be proliferated to other firms in the target population according to the norms applied in the compilers' methodology for sampling and "grossing up" to represent the target population. As such, the estimated values of digitally delivered exports and imports are likely to be determined by responses from a relatively small number of firms out of the overall sample. While digitally delivered trade by larger firms is likely to be well measured because these firms are routinely included in survey samples, the sheer number of unsurveyed small- and medium-sized firms for which imputations must be made when grossing up, as well as the uncertainty of any correlation in behaviour between seemingly similar firms, will affect the robustness of the

resulting estimates. This is particularly relevant when compiling Services Trade by Enterprise Characteristics (STEC)<sup>16</sup>. It is important to communicate the caveats and limitations of both the data used and methods applied in compiling statistics on digital trade to users and stakeholders.

In the longer term, it may be beneficial to develop, based on various relevant information sources, a flag in business registers/survey population lists that identifies "digitally-oriented firms" and can be used to help guide the selection of firms sampled for trade in services surveys.

Once the firms likely to engage in digitally delivered exports and imports have been identified, the central task is to measure or estimate the extent of digitally delivered trade for these enterprises. Where primary data have not been collected from a given unit, it may be possible to make use of responses gathered in previous periods (with appropriate adjustment) or information provided by other enterprises in the same enterprise group.

### COMPILING DIGITALLY DELIVERED TRANSACTIONS USING BUSINESS ICT SURVEYS

As set out in Chapter 3, business ICT surveys are a common source for information on digitally ordered trade and are carried out in EU countries, most OECD countries, and a considerable number of developing countries. Business ICT surveys have also been used to measure the overlap between digitally delivered and digitally ordered trade (see Chapter 1, Figure 1.3 and Chapter 3, Section 3.5.3).

It is feasible to use a business ICT survey to gather information on the responding firm's use of digital means of delivery for its products. In particular, in cases where it is not possible to add questions on remote/digital delivery to trade in services surveys (e.g., due to budgetary constraints or response burden concerns), business ICT surveys may offer room for greater flexibility. Indeed, details derived from business ICT services may also be combined with information from trade in services sources to achieve nationally representative estimates and to benefit from the product and geographic detail available from trade sources.

Relevant questions that could be included in business ICT surveys are along the following lines:

1. [During the reporting period] did your business use digital means to deliver services products to customers? yes/no.
2. If yes: what was the revenue from sales of these digitally delivered services? % or \$
3. What was the breakdown of the revenue from sales of digitally delivered services to customers located in the following geographic areas?
  - a. Own country % or \$
  - b. Other countries % or \$

4. Of the revenue from all sales of digitally delivered services (given in question 2), what was the value of sales where the service was also digitally ordered? % or \$
- 4a. Of the revenue from sales of digitally delivered services to customers abroad (given in question 3a), what was the value of sales where the service was also digitally ordered? % or \$

The above should be supported by explanatory text establishing that “digital means” refers to services delivered through video calls, manually typed emails, voice calls, fax messages or via any other digital communication devices, as well as through cloud networks.

It should be noted that business ICT surveys are often addressed to the business’s IT department. It is therefore recommended to state clearly that the respondent may need to draw on input from colleagues in other relevant departments (e.g., sales/accounting) when responding to questions on digital delivery.

## 4.5 Other sources

As well as the possibility of deriving estimates using the business survey sources already highlighted, various administrative and other sources can provide partial or complementary perspectives on digitally delivered trade. The following sub-sections present examples.

### 4.5.1 COMPILING DIGITALLY DELIVERED TRANSACTIONS USING ITRS DATA

For countries that rely heavily on the International Transaction Reporting System (ITRS)<sup>17</sup> in the collection of their international trade in services statistics, this source can also provide scope to estimate digitally delivered services. This can be especially useful for transactions involving large enterprises that are known to predominantly provide digitally delivered services.

The experience of Brazil (see Box 4.11) shows that this approach is feasible, and that it can provide a mechanism to derive separate estimates of intra-firm digitally delivered trade.

The ITRS can also be a useful source for selecting the largest international traders for each EBOPS item. Based upon this, a direct interaction with (or a small survey of) those enterprises could be used for estimating digitally delivered services. A similar approach can be adopted starting from a business register (or an administrative source) to select the largest enterprises, and then interview these operators.

In some cases, the ITRS may be used to identify payments to and from non-resident DIPs. Care should be taken to ensure that, when the DIP intermediates transactions between buyers and sellers that are both resident in the compiling economy, only the amount

#### Box 4.11: Digitally delivered services in Brazil

The Central Bank of Brazil (Banco Central do Brazil (BCB)) traces international trade in services flows using the ITRS. The Brazilian ITRS was originally conceived within the framework of a foreign capital controls system but as this no longer exists, BCB restructured the system with a focus on supporting (i) the compilation of external sector statistics and (ii) the assessment and supervision of the foreign exchange market. In this regard, the ITRS covers all foreign exchange settlements between resident businesses and non-residents.

The Brazilian ITRS has more than 50 different codes to identify types of services transactions, allowing national compilers to allocate transactions in the balance of payments with a good level of detail. It is possible to determine the industry of the parties involved automatically, particularly that of resident firms, as every transaction is registered (i.e., no threshold is in place) and has a national fiscal registration number identifying the resident party. For the non-resident party, the name is provided.

Regarding digitally delivered trade, BCB contacted several of the largest enterprises operating in Brazil to better understand their business models and decide on an appropriate allocation of the transactions observed in the Brazilian ITRS to digital trade categories.

Virtually all of the foreign multinationals operating in Brazil that deliver services digitally to residents also have international transactions with their foreign parent companies; these international transactions are the focus for measurement of digitally delivered trade. For example, one large multinational enterprise (MNE) has a Brazilian subsidiary that sells online advertising space to customers in Brazil. The subsidiary is physically present in Brazil and employs over 100 staff (software developers and sales assistants). It purchases online advertisement services from its parent company and provides them to local customers in Brazil.

**Source:** Banco Central do Brazil.

## Box 4.12: VAT data in Argentina

Argentina has developed estimates of digitally delivered services by capitalizing on legislation (Law No. 27430/2017, Senado y Cámara de Diputados de la Nación Argentina, 2017) which stipulates that the 21 per cent VAT rate also applies to digital services provided by non-residents to residents. Resident financial intermediaries that act as agents in the collection of this tax are asked to provide information on these transactions.

The fiscal authority data cannot be disaggregated by product detail, so additional information is requested directly from the intermediaries. A detailed concordance between the firms covered and the services they supply was developed by assuming that the non-resident firms export products related to their main activity (based on specific information by the reporting firm, e.g., its name) with allocation to EBOPS 2010 categories as follows:

- Credit rating services and other financial services were assigned to explicitly charged and other financial services (EBOPS 2010 component 7.1).
- Services of messages, calls and video calls provided through internet protocol by companies such as Skype or Viber were assigned to telecommunications services (9.1).
- Computer services (9.2): a) companies that manufacture and distribute antivirus software, such as Symantec or Panda (9.2.1 computer programmes); b) applications that allow the creation and design of webpages, such as WordPress (9.2.2 other computer services); c) companies that offer hosting of webpages (web hosting), servers or domains (e.g., Bluehost), (9.2.2 other computer services); and d) platforms for downloads of videogames or other computer software (such as Sega or PlayStation Network) that are classified with code 9.2.1 computer programmes.
- Information services (9.3.2): a) web hosting services for information, images, video or other content that can be stored (such as Yahoo or Truvalia); and b) subscription services to digitized versions of newspapers/magazines.
- Accounting and related services (e.g., PWC) were assigned to accounting, auditing, bookkeeping, and tax consulting services (10.2.1.2).
- Business and management consulting and public relations services (10.2.1.3): services of companies that provide consulting services through videoconferences or other digitized means (e.g., Neelus).
- Companies such as Instagram, Facebook and Twitter were assigned to advertising services, market research and public opinion surveys (10.2.2), reflecting their core revenue stream.
- Intermediation platforms facilitating connection between buyers and sellers of different business services were imputed to other business services not elsewhere included (10.3.5), (e.g., Habitissimo). Employment services that may be free, but charge premium services (e.g., DGNNet, LinkedIn), were assigned to 10.3.5.1.
- Audio-visual and related services (11.1.1): streaming services, i.e., transmission or digital distribution of multimedia content through the internet (e.g., Spotify and Netflix).
- Remote education services (e.g., OpenEnglish) were assigned to other personal, cultural and recreational services (11.2.2).
- Services associated with sporting and gambling (e.g., Betsson, Bwin) were included in heritage and recreational services (11.2.3).
- Although the main revenue streams are derived via advertising (from data), “free” dating platforms (e.g., Tinder or Badoo), were classified to other personal services (11.2.4).
- For companies offering a range of products (e.g., Google Play), anecdotal evidence was used to provide a split between products, e.g., computer programmes (9.2.1) for downloaded games and audio-visual and related services (11.1.1) for streaming services, etc.

A small number of non-resident firms provide both digital services and goods/non-digital services. As the data are available at the firm level (rather than by product), to avoid imposing VAT on transactions not covered by the new law, the Argentinian fiscal authorities adopted a threshold of US\$ 10 for these firms. Above this, the transactions are assumed not to relate to digitally delivered services products.

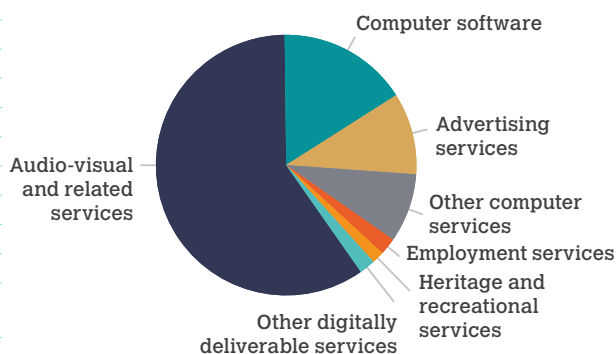
Because of the nature of the digital services provided, and the method of payment (mainly through credit cards), it was assumed that the main resident sector involved was the household sector. Two caveats are needed with this approach in relation to coverage.

The first relates to intermediation services for platforms intermediating goods that cannot be estimated with this method but, whose commission, in theory, is captured in goods statistics (valued at Cost, Insurance and Freight (C.I.F)).

The second concerns the use of the US\$ 10 threshold for firms providing both digital services and goods/non-digital services, although anecdotal evidence suggests that this is not currently a significant problem.

**TABLE 4.5: IMPORTS OF DIGITALLY DELIVERED SERVICES PAID BY HOUSEHOLDS IN THE THIRD QUARTER OF 2022**

EBOPS 2010 Component	Amount US\$
Audio-visual and related services (11.1.1)	123,865,939
Computer software (9.2.1)	33,660,666
Advertising services (10.2.2)	21,090,180
Other computer services (9.2.2)	17,836,474
Employment services (10.3.3.1)	4,341,608
Heritage and recreational services (11.2.3)	3,169,463
Telecommunication services (9.1)	979,120
Education services (11.2.2)	946,995
Other business services n.i.e. (10.3.5)	839,533
Other personal services (11.2.4)	726,280
Business and management consulting (10.2.1.3)	305,883
Financial services (7.1)	161,627
Information services (9.3.2)	118,069
Accounting services (10.2.1.2)	4,288
<b>TOTAL</b>	<b>208,046,125</b>



Source: Argentina National Institute of Statistics and Censuses (INDEC).

relating to intermediation services provided by the DIP (and not the value of the services being intermediated) should be recorded in digitally delivered trade. For more on recording transactions involving DIPs, see Chapter 5.

#### 4.5.2 COMPILING DIGITALLY DELIVERED TRANSACTIONS USING TAX ADMINISTRATION DATA

##### VAT DATA

Some countries have introduced measures to collect value-added tax (VAT) on services digitally delivered into their country by foreign actors. When coupled with simplifying assumptions, most notably about the products being sold by each firm, this can provide a source of data on digitally delivered trade. Box 4.12 and section 4.2.2(ii) provide examples.

##### VAT DATA – THE EUROPEAN UNION ONE STOP SHOP (OSS)

Compilers of statistics in the European Union have been able to make progress on cross-border, business-to-consumer (B2C) services transactions from data collected by the tax authorities under the VAT Mini One Stop Shop (MOSS) scheme. The services covered under MOSS are digitally delivered. They include website hosting, supply of software, access to databases, downloading apps or music, online gaming and distance teaching.

Under this scheme companies, including companies not resident in the European Union, that supply certain cross-border services to individuals and other entities

not liable for the payment of VAT in the European Union may file VAT returns in a single member state.<sup>18</sup> The VAT is collected by the tax authorities in that member state and redistributed to other member states on a quarterly basis.

The tax authorities in each member state receives, from the counterpart countries, the name of the company, its VAT number, the country of registration, whether the company is an EU resident, and the value of the sales made during the reporting period. These data, if made available to national statistics offices or other compilers of official statistics, can be used to estimate spending by the household sector on cross-border digital services.

The MOSS is a rich data source. It captures many of the smaller transactions by households. However, some challenges remain. Companies are not obliged to use the MOSS scheme. Bigger suppliers of services may choose to file their VAT returns through other means. The data may also contain cross border payments by other non-taxable entities such as government or education service providers, so care is needed to avoid double counting. There may be other challenges such as timing and country detail. All these challenges can be better understood with access to the granular company-level data.

The new OSS (One Stop Shop) scheme, in place since 2021, is an extension to the MOSS scheme and covers B2C cross-border transactions including “distance” sales of goods (broadly corresponding to digital ordering)<sup>19</sup> as well as electronic services. Some early experiences with VAT OSS in the European Union shows that attention and further analytic effort may be needed with the new information. Goods need to be separated from services, and compilers should ensure there are no overlaps with data collected from

### Box 4.13: The use of VAT Mini One Stop Shop (MOSS) data in Denmark

In Denmark, the supply of digital services provided directly to private consumers has increased greatly in recent years. Before MOSS data became available, Statistics Denmark estimated these services using a variety of sources, for five different categories, including streaming, apps, gambling, games and other services (Burman & Sølvsten Khalili, 2018).

The introduction and use of MOSS data have resulted in not-insignificant revisions to earlier estimates (except for betting services, which are not covered in MOSS). For example, in 2015, imports of computer services were revised upwards to DKK 2.9 billion from DKK 0.4 billion, while imports of audio-visual services by private individuals have been revised downwards (likely reflecting the fact that consumers typically pay for these services through subscriptions with local intermediaries).

In total, MOSS data showed that imports by private individuals accounted for 6 per cent of all imported computer services and almost 30 per cent of audio-visual services.

While Statistics Denmark is yet to assess the impact of the move from MOSS to OSS/IOSS, the expectation is that any change will be small.

**Source:** Statistics Denmark.

### Box 4.14: The use of “One Stop Shop” (OSS) data in Hungary

#### Exports

The first step in assessing the potential and the scope of OSS data included a comparison of export data (in the service categories covered by OSS) for 14 enterprises that were identified in both OSS and the International Trade in Services Survey (ITSS). These 14 enterprises accounted only for 14 per cent of the total exports included in OSS. ITSS figures were, in general, higher than those from OSS, as the scope of services assessed by the ITSS survey is wider.

More than 62 per cent of OSS exports are represented by 12 enterprises, of which only two are included in the ITSS data collection. Consequently, OSS data can contribute to refining the scope of ITSS data in order to better monitor digital trade. OSS data accounted for 0.5 per cent of total Hungarian EU services exports in 2021, so this part of the ITSS data is certainly related to digital trade.

#### Imports

OSS dataset can be used to estimate digitally delivered services by households, which are not covered by ITSS sources. The value of OSS imports for 2021 was higher than the value of the import grossing-up in ITSS data on the relevant EBOPS 2010 codes. This implies that the value of digital services used by households may be underestimated in the ITSS data (but billing differences may also account for the discrepancy). Therefore, a cross-check with OSS data will be useful at the revision for 2021. As a share of the total EU services imports, OSS data amounted to 3.6 per cent.

#### Future plans

Given the small overlap between the respondents of ITSS and OSS in exports, OSS can be useful in the selection of data providers dealing with digital trade and to refine the grossing-up method in exports.

It is planned to link non-resident enterprises with the relevant EBOPS 2010 codes and thus use the OSS imports to refine grossing-up in ITSS by estimating digital services used by households.

**Source:** Hungarian Central Statistical Office (HSCO).

other sources, such as the VAT Information Exchange System (VIES) dataset, survey data or counterpart export data.

Boxes 4.13, 4.14 and 4.15 describe the use of (M)OSS data to derive estimates of digitally delivered trade in Denmark, Hungary and Ireland.

## 4.5.3 COMPILING DIGITALLY DELIVERED TRANSACTIONS WITH HOUSEHOLD SURVEYS

Households are very active as consumers of digitally delivered services including streaming music and video and online gaming services, among others, as well as of the telecommunications services that enable digital delivery. Additionally, households may act as producers

### Box 4.15: Estimating household expenditures on digital services in Ireland

In 2022 the Central Statistics Office (CSO) of Ireland combined administrative sources with publicly available data to compile estimates of the expenditure on digital services by households. In particular, using articles, studies and reports from private companies and researchers, the CSO researched the provision of online services by firms that are not already in the VAT OSS dataset for inclusion in the estimation.

**TABLE 4.6: EXPENDITURE ON DIGITAL SERVICES BY HOUSEHOLDS IN IRELAND**

By product and region/country of the seller, 2020, millions of euros

Region/Country	Music and video streaming	Online gaming	Online gambling	Publishing/well-being/social media	Other digital services
Ireland	25		2		111
Europe (excluding Ireland)	263	118	128	42	60
North America	11	3			44
Rest of the world	0	0			6
Not allocated	25	16			41

Source: Ireland Central Statistics Office (2022).

of digitally delivered services – for example by selling video or audio content online.

Households' consumption (imports) and sales (exports) of digitally delivered services are unlikely to be well captured in trade statistics, which traditionally rely on enterprise surveys or ITRS. As noted in Chapter 3, household surveys can offer a vehicle for gathering information on households spending and earnings online – including those related to digitally deliverable products. However, and also as noted in Chapter 3, households can face challenges calculating their expenditures on relevant products and especially with identifying transactions as international (as opposed to domestic transactions).

Nevertheless, it may be possible to build on experiences of using household surveys to measure online spending by products, and online earnings (e.g., the example of Canada, see Box 4.16) to carve out the international dimension.

## 4.6 Recommendations

This chapter has looked at both survey and non-survey sources for measuring digitally delivered trade. There is no single approach which offers easy and complete measurement of all dimensions of digitally delivered exports and imports. Nevertheless, there are many

relevant examples available, based on which the following recommendations can be identified:

- 1 Defining digitally delivered services:** For a service to be digitally delivered, it is a prerequisite that it is digitally deliverable. Efforts to measure digitally delivered trade should therefore target the digitally deliverable services identified in Table 4.1 and detailed further in Annex C.
- 2 Using expert judgement:** In the absence of appropriate data sources (e.g., survey questions), estimates of digitally delivered services can be derived by applying expert judgement shares of the portion of each service product delivered by cross-border (Mode 1) supply. These shares can be based on various sources, including observations from countries with similar characteristics (notably, with a similar level of digitalization), but they must be applied at a sufficiently detailed degree of product disaggregation.
- 3 Compiling digitally delivered services based on ITS surveys:** The collection of data on digitally delivered trade through ITS surveys is recommended as a priority. ITS surveys should collect sufficient product detail (and sub-product detail as necessary) to allow digitally deliverable services to be distinguished from other services as a basis for statistical compilation. In addition, there are synergies to be found with the collection of information on Mode 1 supply of services (among other modes of supply to trade services), which an

increasing number of countries are implementing in their ITS surveys.

- Those digitally deliverable service products that are readily available should be aggregated to give a measure of “digitally deliverable services trade”. An addendum item is included in the reporting template for this statistic (see Chapter 2, Box 2.2), which can be regarded as a *useful upper-bound estimate of digitally delivered trade*.
- For digitally deliverable services products (other than those likely to be 100 per cent digitally delivered), questions on digital/remote delivery should be added to ITS surveys. The UNCTAD model questionnaire (UNCTAD, 2021a) provides a useful starting point in designing questions to measure digitally delivered exports. Questionnaires can target digital delivery and Mode 1 delivery at the same time, since

cross-border (mode 1) supply can be regarded as giving a *reasonable estimate for the bulk of digitally delivered trade*.

- 4 **Using ICT surveys as complementary source:** ICT surveys can give a measure of digitally delivered trade and indicate the degree of overlap between digitally delivered and ordered services, respectively. This can be achieved by including additional questions asking for the percentage of exports of services that were digitally delivered as well as the share of digitally ordered products. Ultimately, the data obtained from the ICT survey requires a combination with international trade in services statistics to derive product and geography breakdowns.
- 5 **Using the International Transaction Reporting System (ITRS) as complementary source:** ITRS can be a useful source to identify digitally deliverable services at the total economy level, but efforts should be made (by investigating individual

### Box 4.16: Household surveys on the consumption of digitally delivered services – Canada

Several iterations of the Canadian Internet Use Survey (CIUS), a household survey of ICT use and e-commerce, collected information on individuals' expenditure on various digital services.<sup>20</sup> Although the survey has not attempted to delineate purchases from suppliers abroad, in cases where the services concerned are mainly provided by suppliers outside Canada, the results can be regarded as measuring imports of digitally delivered services.

The 2022 survey contained a re-designed module with the following questions related to digitally delivered services:

*The following questions are about your online orders of digital 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.*

*How much did you spend on the following digital services during the past 12 months?*

- |   |          |
|---|----------|
| • Music or video downloads or streaming subscriptions                     | _____ \$ |
| • E-books, audio books or podcast books                                   | _____ \$ |
| • Online newspapers or magazines  | _____ \$ |
| • Online gambling   | _____ \$ |
| • Online gaming, gaming applications, game downloads or in-game purchases | _____ \$ |
| • Any additional digital services ordered over the internet               | _____ \$ |
| <b>Total</b>  | _____ \$ |

A similar module in the 2018 and 2020 editions of the survey, which included specific items for “Digital gift cards purchased online for online redemption”, “Online data-storage services”, “Online courses or learning”, and “Other applications, software or online subscriptions”, found that average expenditure per individual on digital services was CA\$ 568 in 2020, an increase of almost 40 per cent compared to 2018. In 2020, spending on digital services comprised around 17 per cent of average total online expenditure on all goods and services.<sup>21</sup>

The CIUS has also been used to collect information on the different ways respondents earned money online, including by selling services online. Respondents were asked to provide a best estimate of the amount they earned through methods that included “selling services via online bulletin boards” and providing “platform-based peer-to-peer services”. The categories offered to respondents do not expressly provide for a distinction between earnings from services provided in-person and those from services that were digitally delivered, although such a differentiation may be adopted in a future edition of the survey.

**Source:** Statistics Canada.

companies) to derive product breakdowns from other sources, as this information is rarely available in ITRS.

- 6 Using administrative data (such as VAT records):** Some countries have implemented regimes to collect VAT from non-resident digital services providers. The administrative data associated with this can be a very useful source of information on household imports of digitally delivered services, an area where the coverage of other sources may be weak (even if total estimates of household consumption may be robust).
- 7 Using household surveys:** Many of the sources identified in this chapter mainly target firms. At the same time, households are increasingly buying and consuming digitally delivered services, which are often supplied by non-resident entities. Compilers should further investigate how household surveys can be used to collect information on digital trade transactions involving households. While not strictly a “household survey”, compilers should look to add questions on digitally delivered products to travel/border surveys (relating to Mode 2 transactions), as these target natural persons (i.e., travellers/tourists) and are normally conducted in the compilation of travel statistics in the balance of payments.

- 8** Some items within the scope of digital trade may require additional sources and effort to measure, namely **digital intermediation services provided by DIPs** (to be recorded within trade-related services) and **digitally delivered services consumed abroad** (i.e., supplied via Mode 2). The lack of availability of estimates for items should not preclude the aggregation of digitally deliverable services trade based on available data or the estimation digitally delivered Mode 1 trade.
- 9 Information from different sources may be integrated to derive digitally delivered trade estimates representative of all institutional units in the whole economy.** In all cases, it is crucial to record and communicate the sources used and 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.

To support users in considering different sources for measuring digitally ordered trade, Table 4.7 provides a brief overview of the strengths and limitations of the sources set out in this chapter.



**TABLE 4.7: STRENGTHS AND LIMITATIONS OF SOURCES FOR MEASURING DIGITALLY DELIVERED TRADE**

Source	Strengths	Limitations
Digitally deliverable services (compiled from ITS survey data)	Can be compiled using product detail commonly available in existing services trade statistics.	Digitally deliverable ≠ digital delivery. Does not cover digitally delivered services consumed while travelling (Mode 2).
Digitally delivered services (Mode 1) – estimated by expert judgement shares	Leverages the existing modes of supply framework to measure digitally delivered services trade.	Does not cover digitally delivered services consumed while travelling (Mode 2). Mode 1 includes services delivered by post (though often negligible for products that are digitally deliverable). Standard shares used across countries will not reflect the specific situation in individual countries.
Digitally delivered services (Mode 1) – measured through ITS survey questions	Measures the role of digitally delivered trade. No need for separate questions to measure digitally delivered and Mode 1 trade.	Implementing questions on remote delivery on ITS surveys requires resources and adds to respondent burden.
Business ICT surveys	Can offer more flexibility to add new questions than ITS surveys. Can be used to measure the conceptual overlap between <i>digitally ordered</i> and <i>digitally delivered trade</i> .	No real-world examples of business ICT surveys including modules on digital delivery. Combining results with figures from ITS sources may be challenging without a central business register.
International Transaction Reporting System (ITRS)	Can provide a ready-made source of data on digitally delivered trade. In addition, supplemental information may be included with a low burden on respondents.	Most suited to identifying transactions involving large companies known to produce digitally delivered services. When banks report transactions on behalf of the transactors, there may be higher potential for misclassifications. Transactions are recorded when payments are made and not necessarily at the time of output and consumption. The counterpart country responsible for the payment may not correspond to the partner country from or to which the service is delivered. Mitigating these issues requires resources for stringent quality checks, ensuring that the reporters in financial institutions are well trained, etc.
VAT data	Can provide a ready-made source of data on digitally delivered trade.	Only available when VAT is collected from non resident digital services providers. Only covers businesses subject to and registered to pay VAT. The information collected for VAT purposes may not be well-suited to measuring digitally delivered trade, for example if digitally and physically delivered services are not reported separately.
Household surveys	Imports and exports of digitally delivered services by households not covered by ITS surveys / ITRS. Household surveys can offer a vehicle for collecting this information.	Households can have great difficulty in correctly distinguishing international transactions from domestic.

**Source:** IMF, OECD, UNCTAD and WTO.

# Endnotes

- 1 An extranet is a closed network that uses internet protocols to securely share a business' information with suppliers, vendors, customers or other business partners. It can take the form of a secure extension of an Intranet that allows external users to access some parts of the business' intranet. It can also be a private part of the business' website, which business partners can access after being authenticated via a login page (UNCTAD, 2021a).
- 2 With regard to phone and fax, it should be noted that the networks these rely on have become largely digitalized, including through the adoption of Voice over Internet Protocol (VoIP), and so "voice networks" are no longer distinct from the "computer networks" underlying digitally delivered trade.
- 3 See UNCTAD (2015). This work was also presented to the UN Statistical Commission in the reports of the TGServ, E/CN.3/2016/13, <http://unstats.un.org/unsd/statcom/47th-session/documents/2016-13-Partnership-on-measuring-ICT-for-development-E.pdf> and the Task Force on International Trade Statistics (TFITS) (E/CN.3/2016/24, <http://unstats.un.org/unsd/statcom/47th-session/documents/2016-24-Interagency-TF-on-international-trade-statistics-E.pdf>).
- 4 Statistical Data and Metadata eXchange Balance of Payments Data Structure Definition. See [https://sdmx.org/?page\\_id=1747](https://sdmx.org/?page_id=1747).
- 5 A digital twin is a virtual model designed to accurately reflect a physical object. The object being studied—for example, a commercial building—is outfitted with various sensors related to vital areas of functionality. These sensors produce data about different aspects of the physical object's performance, such as energy output, temperature, weather conditions and more. This data is then relayed to a processing system and applied to the digital copy. Once informed with such data, the virtual model can be used to run simulations, study performance issues and generate possible improvements, all with the goal of generating valuable insights—which can then be applied back to the original physical object. (Source: <https://www.ibm.com/topics/what-is-a-digital-twin>).
- 6 Being a transactor-based item in the balance of payments, construction may include services provided via digital delivery by suppliers of the country where the project is taking place (for instance, architectural design services or engineering). However, unbundling the different elements is particularly challenging in practice, and since construction, at its core, is an inherently physical activity, this item is not covered in the list of items being digitally deliverable.
- 7 See Guidance Note F.18: Recording of Fungible Crypto Assets in Macroeconomic Statistics. See <https://www.imf.org/en/Data/Statistics/BPM/approved-guidance-notes>.
- 8 This will be expanded in the revised Balance of Payments and International Investment Position Manual (BPM7) to include personal, cultural and recreational services. See <https://www.imf.org/-/media/Files/Data/Statistics/BPM6/approved-guidance-notes/c1-recording-of-transactor-based-components-of-services.ashx>.
- 9 <https://stats.wto.org/> and <https://unctadstat.unctad.org/wds/TableView/tableView.aspx?ReportId=158358>.
- 10 [https://stats.oecd.org/Index.aspx?DataSetCode=TISP\\_EBOPS2010](https://stats.oecd.org/Index.aspx?DataSetCode=TISP_EBOPS2010).
- 11 WTO Trade in Services by Mode of Supply (TiSMoS) is an experimental dataset produced by the WTO and funded by the European Commission's Directorate-General for Trade.
- 12 TiSMoS is an experimental dataset produced by the WTO and funded by the Directorate-General for Trade of the European Commission. Given the unavailability of such information in official trade statistics, the objective of TiSMoS is to provide for the first time an overall picture of international trade in services according to the four modes of supply as defined in the GATS. This is done on the basis of the recommendations of the MSITS 2010 (UN et al., 2010). In the absence of national estimates, a simplified approach is taken to the breakdown of transactions into modes of supply. This approach is applied to allocate balance of payments data to modes of supply, mostly modes 1, 2 and 4 (see Chapter 2, Box 2.2 for definitions of the four modes). Each type of service is allocated to one dominant mode or, where there is no single dominant mode, allocation shares are applied. Individual experiences are incorporated for the economies that have conducted specific surveys or studies. In those cases, the default allocation is replaced by information provided at the national level (enhanced simplified approach). Mode 3 is mostly estimated using foreign affiliates statistics.
- 13 Retail and distribution services are not included in these estimates, as, in the balance of payments their value is covered indistinguishably with the value of goods traded. The value of distribution services provided on a commission basis are covered as trade-related services, which are included under other business services.
- 14 Postal delivery may remain relevant in some cases such as developing countries with lower levels of digitalization; this should be considered when designing data collections.
- 15 "Manufacturing services"; "maintenance and repair"; "transportation"; "construction"; and "government goods and services n.i.e" are not covered in Annex D, as in general they are not considered to be digitally deliverable in this Handbook.
- 16 <https://ec.europa.eu/eurostat/web/experimental-statistics/stec>.
- 17 The ITRS is a system of collecting data of individual international settlements and/or transactions as reported by banks (on behalf of the transactors, enterprises and households), or by the transactors themselves (normally enterprises). It is important to flag that ITRS does have drawbacks for measuring international trade in services, as described in MSITS 2010 (UN et al., 2010a) and in the MSITS Compiler's Guide (UN et al., 2010b). These include: a higher potential for misclassifications, as banks classify transactions on behalf of the reporters; transactions that are recorded when payments are made and not necessarily at the time of output and consumption; and that the counterpart country responsible for the payment may not correspond to the partner country from or to which the service is delivered. However, these drawbacks can at least partially be mitigated, as described in the example by Brazil (Box 4.11), e.g., via stringent quality checks, and by ensuring that the reporters in financial institutions are well trained. Supplemental information may be included without increasing the burden on respondents. When reporting thresholds are absent or low as is often the case, data coverage may be higher in the ITRS than in ITSS.
- 18 [https://europa.eu/youreurope/business/taxation/vat/vat-digital-services-moss-scheme/index\\_en.htm](https://europa.eu/youreurope/business/taxation/vat/vat-digital-services-moss-scheme/index_en.htm).
- 19 Council Implementing Regulation (EU) 2019/2026 as regards supplies of goods or services facilitated by electronic interfaces and the special schemes for taxable persons supplying services to non-taxable persons, making distance sales of goods and certain domestic supplies of goods.
- 20 <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4432>.
- 21 <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2210013901>.