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Foreword

Digital technologies have made it increasingly feasible for buyers and sellers to place and receive orders on a global scale. They also enable the instantaneous remote delivery of services directly into businesses and homes, including internationally.

By focusing on these two criteria – *digital ordering* and *digital delivery across borders* – this Handbook offers a conceptual and measurement framework for digital trade that aligns with the broader standards for macroeconomic statistics.

This second edition of the *Handbook on Measuring Digital Trade* is the outcome of a partnership between the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), the United Nations Conference on Trade and Development (UNCTAD) and the World Trade Organization (WTO), resulting in a comprehensive agreed approach. It builds upon the first edition, published in 2019, and has benefitted from substantive inputs by both developed and developing economies.

This edition of the Handbook, while it leaves the fundamental measurement framework unchanged, provides clarifications to the concepts and definitions related to digital trade, and to the guidelines on how to operationalize them. It reflects the advances that statistical compilers have made in the measurement of digital trade. Expanded compilation guidance is included, based on national and international efforts, and covering a variety of relevant survey and non-survey sources. A revised reporting template is also proposed, which offers flexibility to statistical compilers when collating components of digital trade, even when only partial information is available.

This Handbook thereby establishes a valuable shared foundation for understanding and measuring digital trade in a way that is internationally comparable. Furthermore, it provides a crucial resource for an active programme of technical assistance and statistical capacity-building, through which the four co-authoring partner organizations can support statistical compilers as they seek to measure, monitor and respond to the challenges of digital trade.

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Executive summary

Digital technologies are transforming virtually every aspect of the economy, and international trade is no exception. Businesses and households make increasing use of digital ordering. Many services that traditionally required proximity between producers and consumers are now traded at a distance. Online platforms are playing an increasingly important role in matching supply with demand and facilitating economic transactions.

Digitalization is changing how products are purchased and delivered. And yet, it remains largely invisible in traditional macroeconomic statistics, because such statistics focus on what is produced and who produces it. This invisibility ultimately hampers policymaking, and may lead to the misperception that the economy is not being measured accurately.

This Handbook aims to help statistical compilers to address policymakers' needs for better statistical evidence on digital trade. While comprehensive, comparable evidence on digital trade may be most necessary in the area of international trade policy, digital trade also affects, and is affected by, many other policy areas at both the domestic and international levels, including competition, tax policy, development and economic growth.

Defining digital trade

Understanding what "digital trade" refers to, and how it relates to international trade as a whole, is a crucial prerequisite of the statistical framework. Thus, building on previous measurement efforts, the first edition of this Handbook (OECD, WTO and IMF, 2019) combined the two key criteria of digital ordering and digital delivery to formalize for the first time a statistical definition of digital trade: *"digital trade is all international trade that is digitally ordered and/or digitally delivered"*.

This statistical definition reflects the multi dimensional character of digital trade by identifying the nature of the transaction as its defining characteristic. It is the basic building block of a conceptual measurement framework, which is fully consistent with the broader macroeconomic accounts.

Leaving the fundamental measurement framework unchanged, this second edition of the Handbook provides clarifications to the concepts and definitions introduced in the first edition, and to the guidelines on how to operationalize them. It also builds on national experiences and best practices to expand compilation guidance.

Measuring digital trade

Digital trade transactions are a subset of existing trade transactions, as measured in international merchandise trade statistics and in international trade in services statistics.

Any economic actor can engage in digital trade. The accounting principles for recording digital trade follow those defined in the International Merchandise Trade Statistics Concepts and Definitions (UN, 2011), the Manual on Statistics of International Trade in Services (UN et al., 2010), and the Balance of Payments (IMF, 2009).

As the statistical framework set out in this Handbook is designed to align with the broader macroeconomic standards, any updates to those standards (notably, any change in the production boundary) will, by construction, be reflected in the measurement framework, with no impact on the statistical definition of digital trade. The concepts in this Handbook are also in line with the broader guidance on measuring the digital economy established through the framework for digital supply and use tables (OECD, 2023).

Although international trade statistics should, in principle, cover digital trade, digital ordering and delivery exacerbate some of the known measurement challenges involved in recording international transactions. One reason is that digitalization increases the involvement of small firms and households in international trade, and this involvement may not be adequately covered by traditional data sources, often reliant on large firms. The rise in digital ordering has led to an increase in low-value trade in goods, which may elude methods of tracking merchandise trade based on higher value thresholds. The involvement of digital intermediation platforms (DIPs) compounds those difficulties by adding a third actor to certain transactions.

To overcome these challenges, it is necessary to reconsider the existing data sources in terms of their coverage and accuracy, not only to develop digital trade statistics, but also to improve the measurement of international trade in general. The recommendation of this Handbook is, to the extent possible, to build

on and combine existing data sources with a view to producing comprehensive digital trade statistics. Thus, a discussion of the benefits and limitations of each data source is included, and a wealth of case studies and national experiences is presented.

DIGITALLY ORDERED TRADE

In line with the OECD definition of e-commerce (OECD, 2011), digitally ordered trade is defined in this Handbook as *"the international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders"*. Digitally ordered trade is therefore synonymous with international e-commerce, and covers transactions in both goods and services.

Business transactions are a natural starting point when measuring digitally ordered trade, as businesses account for the bulk of e-commerce sales and purchases (UNCTAD, 2023). Information and communications technology (ICT) surveys have long been used to measure e-commerce uptake among businesses (UNCTAD, 2021a). Many economies have built upon these surveys, or have implemented modules in general business surveys, to measure the income that businesses make through e-commerce sales, sometimes also delineating domestic and international e-commerce (UNCTAD, 2023). Some such surveys also measure international e-commerce purchases by businesses. Following successful experiences at national level, this Handbook recommends that business surveys be enhanced to collect information on the monetary value of e-commerce transactions, and to break out digitally ordered trade.

Comprehensive measurement of digitally ordered trade extends beyond transactions involving firms: household and/or travel surveys can also provide a means to measure e-commerce transactions (both sales and purchases) undertaken by individuals.

Besides survey information, other sources, such as administrative data or card payment data, can also be used to measure key components of digitally ordered exports and imports. Of these sources, customs records are particularly relevant. Digitally ordered imports and exports can, in fact, be directly identified as a subset of international merchandise trade statistics if digitally ordered shipments are flagged with specific customs procedure codes. However, an accurate estimation of low-value trade, which is largely driven by digital ordering, is necessary to ensure exhaustive coverage. A variety of sources can be explored to enable this, including administrative data from customs authorities or information from postal and courier agencies.

No single source can offer a holistic measure for digitally ordered exports and imports at the whole economy level. Information from different sources should be integrated to derive digitally ordered trade estimates covering transactions involving all institutional units in the whole economy.

DIGITALLY DELIVERED TRADE

Digitally delivered trade is defined in this Handbook as *"all international trade transactions that are delivered remotely over computer networks"*. This Handbook takes the view that only services can be digitally delivered.

Unlike digital ordering, which is instantaneous, digital delivery can take place over a longer period and can involve a significant degree of inter-personal interaction. Crucial to the definition is that such interaction occurs remotely through computer networks.

The first step in measuring digitally delivered trade is to identify service items that are digitally deliverable – i.e., that can be delivered through computer networks (most often the internet). Where sufficient product detail is available, aggregating these items from existing statistics offers an upper-bound estimate of digitally delivered trade that can be produced without changes to existing data collection mechanisms.

Such estimates of digitally deliverable trade can be refined by exploiting the inherent relationship between the concepts of digital delivery and of cross-border service supply (i.e., Mode 1). For the digitally deliverable services identified, cross-border supply can be considered equivalent to digital delivery. Consequently, shares derived from the measurement of trade in services by mode of supply can provide reasonable estimates for digitally delivered trade.

However, most countries are only just beginning to measure trade in services by modes of supply. In the absence of such data, shares based on expert judgement, such as those in the Eurostat-WTO model (Eurostat, 2021a and WTO, 2023), may be used, provided that that they are regularly assessed to reflect country-specific conditions.

International trade in services (ITS) surveys, which cover businesses, provide the best means for obtaining direct estimates of digitally delivered services trade. By enhancing these surveys with supplemental questions, for example following the model developed by UNCTAD in collaboration with Costa Rica, India, and Thailand (UNCTAD, 2021a), shares of digitally delivered exported and imported services can be measured in a way that is integrated with the sources and methods used to measure overall services trade.

Like for digital ordering, firm-based sources are likely to cover the bulk of digitally delivered trade. Nevertheless, with households increasingly involved in digitally delivered services trade, statistical compilers must investigate further how household surveys and other data sources can be used to improve the coverage of digitally delivered trade estimates. In addition, although the values are often not economically significant, some digitally delivered services may be consumed while abroad (i.e., supplied via Mode 2), and would therefore require different estimation strategies.

Information from various sources should therefore be integrated so that digitally delivered trade estimates representative of the entire economy can be derived.

DIGITAL INTERMEDIATION PLATFORMS (DIPs)

Digital intermediation platforms are defined as *"online interfaces that facilitate, for a fee, the direct interaction between multiple buyers and multiple sellers, without the platform taking economic ownership of the goods or rendering the services that are being sold (intermediated)"*.

Although transactions intermediated by DIPs are, in principle, included in existing trade statistics and are covered by the concepts of digitally ordered and digitally delivered trade, DIPs are separately highlighted in this Handbook because of their significant role in the economy, the policy interest surrounding them, and the specific compilation challenges they pose.

The service provided by DIPs is that of "matching" buyers with sellers, and thus facilitating the exchange of goods or the provision of services. These digital intermediation services, which are, by definition, both digitally ordered and digitally delivered, are defined as *"online intermediation services that facilitate transactions between multiple buyers and multiple sellers in exchange for a fee, without the online intermediation unit taking economic ownership of the goods or rendering the services that are being sold (intermediated)"*.

To record transactions facilitated by DIPs, it is necessary to distinguish the supply of goods or services (i.e., the transaction between the seller and the buyer) from the provision of intermediation services (i.e., the transaction between the DIP and both the seller and the buyer). Regardless of whether a given DIP facilitates transactions in goods or services, the intermediation fees should be recorded under trade-related services in the international accounts.

Several data sources should be explored to compile transactions facilitated by DIPs. The recommendation in this Handbook is to collect information on the exports and imports of intermediation services by businesses via ITS surveys. Surveys of ICT usage in business are instead better placed to collect information on the transacted products (i.e., the goods and services being intermediated). To ensure coverage of the household sector, several types of household surveys should include questions on the value of goods and services purchased via DIPs (notably from well-known DIPs and for tourism-related services), as well as, ideally, on the intermediation fees paid. When a DIP is resident in the compiling economy, surveys can be used to measure both exports of intermediation services and the underlying goods and services transactions.

REPORTING DIGITAL TRADE TRANSACTIONS

This Handbook proposes a reporting template which supports the compilation of the two components of digital trade – digitally ordered trade and digitally delivered trade – as well as the calculation of total digital trade. The template allows the different components to be measured in the way that best suits the compiler, even when only partial information is available.

For a comprehensive measure of total digital trade, it is important to develop data sources that can measure digitally ordered trade, digitally delivered trade and also identify trade that is both digitally delivered and digitally ordered. ICT usage surveys (for both businesses and households) are well placed to measure this overlap. To this end, surveys should collect information on sales and purchases broken down by goods, digitally delivered services, and other services.

Moving forward

This Handbook provides a consistent measurement framework to guide compilers in their efforts to measure digital trade. While further research and empirical testing will be needed to improve and refine the compilation approaches, the fundamental conceptual framework, which is now well established, constitutes the basis for the compilation of internationally comparable statistics on digital trade.

The Handbook also provides the foundation for an active programme of technical assistance and statistical capacity-building, by means of which the four partner organizations – the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), the United Nations Conference on Trade and Development (UNCTAD) and the World Trade Organization (WTO) – can support statistical compilers as they seek to measure, monitor and respond to the challenges of digital trade.

1. Introduction

Why is it important to measure digital trade? This chapter outlines the multifaceted impact of digitalization on international trade and examines which policy areas require consistent, comprehensive and feasible measurement approaches.

1.1 Introduction

Digital technologies are transforming economic and societal processes. Major improvements in internet connectivity have enabled businesses and households to exchange and transfer information with greater variety, in increasing volume and at higher velocity. Computing power and data storage have surged as costs have declined, boosting the development of software tools as well as of advanced technologies and analytical techniques. Consequently, the number of new business models, products and modes of delivery that exploit digital technologies is rapidly increasing.

These developments reflect processes both of digitization and digitalization. Digitization is defined as *"the conversion of analogue data and processes into a machine-readable format"* (OECD, 2019a). Digitization can take many forms, such as the translation of analogue measurements into a digital format, the encoding of business and industrial processes, or the transmission of Voice over Internet Protocol (VoIP) (i.e., the conversion of voice into digital signals for transmission via the internet). Digitalization is a broader concept, understood as the use of digital technologies and data and the interconnections between them, which result in new activities or in changes to existing activities. Collectively, the changes produced by different forms of digitization and digitalization on economic and social activities constitute the *digital transformation*.

Digital technologies have profoundly impacted international trade. On the supply side, firms benefit from the use of digital technologies, as they can boost efficiency and productivity, transform business processes and foster innovation (Nguyen and Paczos, 2020; Gal et al., 2019; Sorbe et al., 2019). At the same time, digitalization has spurred the use of digital technologies on the demand side. In particular, the rise of online retail, wholesale and digital platforms has eased businesses' access to markets, with consumers in turn benefitting from access to a broader selection of products and increased customization (Coreynen, Matthyssens and Van Bockhaven, 2017).

Arguably, the most transformative impact that digitalization has had on trade has been a rapid reduction in the costs of international transactions, which has made it affordable for firms to reach global markets. In much the same way that reductions in transport and coordination costs enabled the fragmentation of production along global value chains, falling costs of sharing information are powering this digital trade revolution. The lower costs of storing and sharing information are reducing some of the traditional constraints associated with engaging in international trade, such as asymmetric information, delays in delivery, or contract enforcement. This is encouraging a greater number of businesses and consumers to connect globally, as well as leading to a faster diffusion of knowledge and ideas across borders.

The rest of the chapter is organized as follows. Section 1.2 shows some indicators providing a view of the impact of digitalization on international trade. Section 1.3 presents the statistical definition of digital trade. Section 1.4 outlines the policy needs that call for better measurement of digital trade. Section 1.5 presents the purpose and the structure of this Handbook. Section 1.6 identifies areas where research is ongoing and may have an impact on the measurement of digital trade and the compilation guidance provided in the Handbook. Finally, Section 1.7 concludes.

1.2 The impact of digitalization on international trade is multifaceted

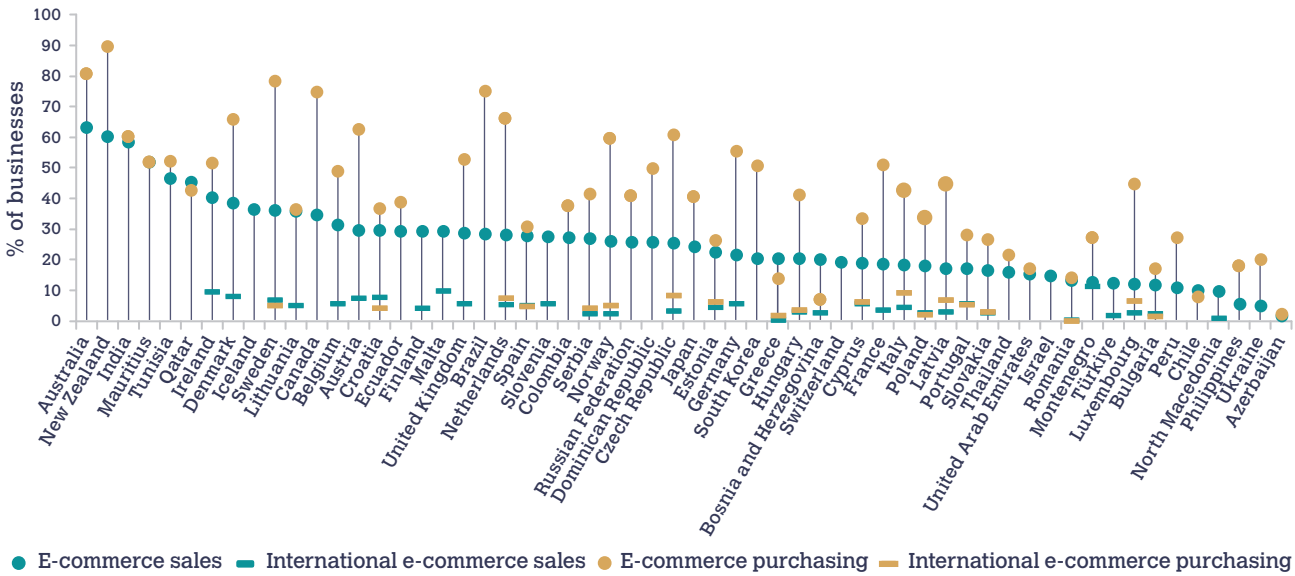
1.2.1 DIGITALIZATION HAS ENABLED THE EMERGENCE OF E-COMMERCE

Thanks to rapid technological advancements, businesses and households can now order goods and services online. The rise of e-commerce, both at domestic and international level, has spurred significant policy interest and motivated several measurement initiatives. Surveys of ICT usage have been used for a number of years as the main instrument to gather information on businesses' participation in e-commerce and to provide insights on e-commerce trends and dynamics (see Figure 1.1). In 2021, the countries reporting the highest share of firms engaged in e-commerce purchasing were New Zealand (89.6 per cent), Australia (80.7 per cent), Sweden (78.4 per cent) and Brazil (75.0 per cent), followed by Canada (74.9 per cent) and the Netherlands (66.1 per cent). The share of firms engaging in e-commerce sales is generally lower, with the most active countries being Australia (63.3 per cent), New Zealand (60.3 per cent) and India (60.2 per cent). Widespread and comparable evidence on the split between domestic and international e-commerce, as well as on the value of e-commerce transactions, is, however, not available.

1.2.2 SERVICES ARE INCREASINGLY TRADED AT A DISTANCE

Many services that traditionally required proximity between producers and consumers can now be traded remotely, allowing firms more opportunities to reach global markets. Falling prices for voice and data communications, along with the computerization of tasks, allow service providers to segment and relocate work to take advantage of large, remote pools of lower-cost labour with the skills needed to deliver high quality services. At the same time, low-value services, such as smartphone applications

Figure 1.1: Businesses make extensive use of e-commerce



Note: The latest available figures are presented for each economy. Sales and purchases figures may refer to different years. International e-commerce sales figures relate to reporting year 2020. International e-commerce purchases relate to reporting year 2017.

Source: Eurostat Digital Economy and Society Statistics Comprehensive Database;[1] OECD ICT Access and Usage by Businesses database;[2] and UNCTAD core indicators on ICT use in business.[3]

or online banking services, are increasingly traded internationally, often via digital platforms (UNCTAD, 2022c).

In 2012, the United States Bureau of Economic Analysis (BEA) made a first attempt to measure trade in "digitally enabled" services, referring to services "for which digital information and communications technologies (ICT) play an important role in facilitating cross-border trade in services". In the study, the BEA stated that "improvements in ICT technologies and reductions in their costs could be expected to contribute to growth in trade in services" (Borga and Koncz-Bruner, 2012).

In 2013, the Task Group on Measuring Trade in ICT Services and ICT-enabled Services (TGServ), led by the United Nations Conference on Trade and Development (UNCTAD), developed recommendations and indicators on ICT-enabled services trade.[4] In its first report, the Task Force set out definitions for ICT services (defined in OECD (2011)), ICT-enabled services and potentially ICT-enabled services, which this Handbook builds on to define *digitally deliverable services* (UNCTAD, 2015).

Services trade as a whole and trade in digitally deliverable services have increased significantly over the past two decades (Figure 1.2). In 2012, digitally deliverable services represented 48 per cent of global exports of services. This share increased to 52 per cent in 2019 and jumped to 63 per cent in 2021, reflecting the impact of the COVID-19 pandemic on both the composition and the nature of internationally traded services.

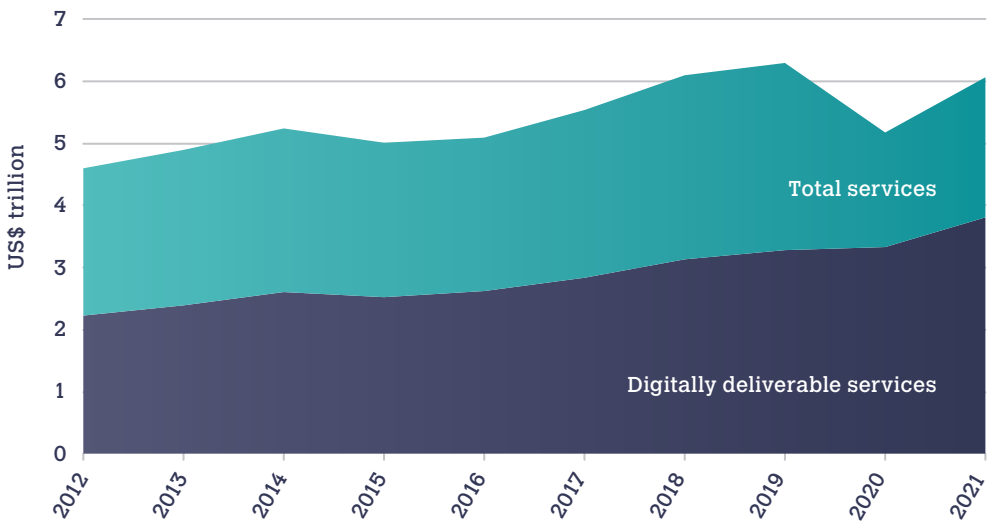
1.2.3 ONLINE PLATFORMS PLAY A TRANSFORMATIVE ROLE IN MANY INDUSTRIES

Online platforms are increasingly important "market makers". They match supply with demand, facilitating and structuring online interactions and transactions (OECD, 2019b). They can develop and exploit large network externalities, with many online platforms offering their services on a global scale. Often considered as "catalysts" of digitalization, online platforms have transformed not only retail and wholesale trade marketplaces, but also industries such as accommodation, transport and food services, as well as many business-to-business (B2B) transactions. Just like digitally deliverable services, sales of goods and services through online platforms surged during the COVID-19 pandemic (Figure 1.3).

1.3 The statistical definition of digital trade

While relevant and informative, the stylized facts presented above only provide a partial view of what is a complex, multidimensional phenomenon. Measures of trade in digitally deliverable services shed some light on which products could be delivered digitally, yet do not fully capture the dimension of how these services were actually delivered. On the other hand, the core indicators on e-commerce target how products are purchased and sold but do not capture the monetary value of these transactions and often do not delineate domestic and international e-commerce (UNCTAD, 2023). Similarly, information on the activity of online

Figure 1.2: Global exports of digitally deliverable services have been growing steadily



Note: Digitally deliverable services are an aggregation of the BPM6/EBOPS 2010 service categories insurance and pension services, financial services, charges for the use of intellectual property n.i.e., telecommunications, computer and information services, other business services, and audiovisual and related services.

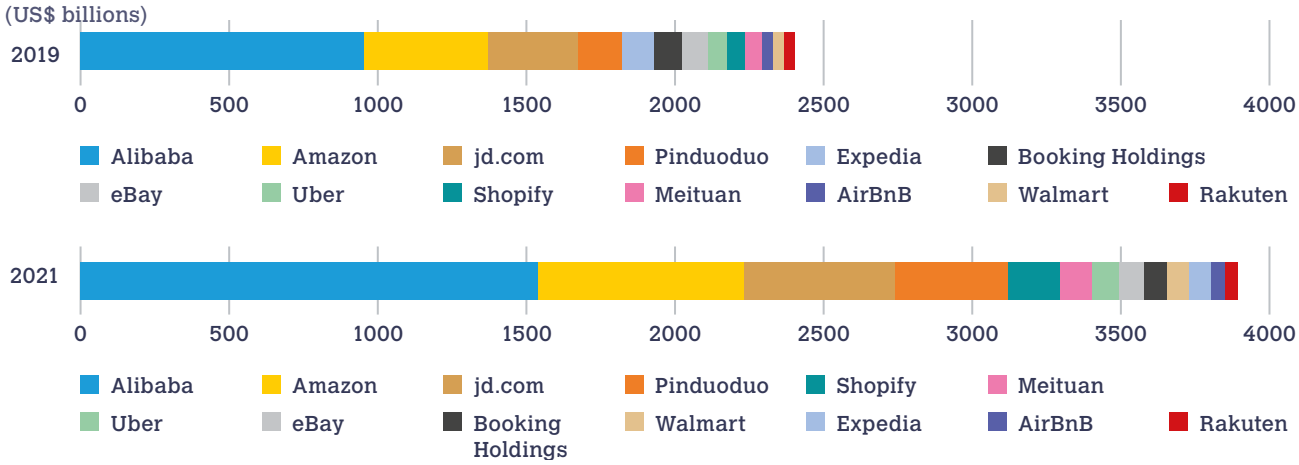
Source: UNCTAD calculations based on WTO and UNCTAD (2022).

platforms is still piecemeal, focused on a specific subset of platforms, and not comparable across countries because of differences in definitions and compilation methods (OECD, 2018a).

Over the last twenty years, a number of initiatives have emerged to measure different aspects of digitalization. The most important measurement initiatives on which this Handbook draws are the OECD and UNCTAD work on defining and measuring e-commerce, UNCTAD's work on ICT-enabled trade, and the OECD's broader efforts on measurement in the context of the Going Digital Project.[5] On the policy front, the WTO Work Programme on Electronic Commerce, established in 1998, defines e-commerce as the "production, distribution, marketing, sale or delivery of goods and services by electronic means" (WTO, 1998a). More recently, the work of López-González and Jouanjean (2017) proposes a framework for digital trade useful for trade policy analysis, by which all digitally enabled transactions are considered to be in scope for digital trade.

Building on all of the above, the first edition of this Handbook (OECD, WTO and IMF, 2019) formalized for the first time a statistical definition of digital trade, combining the two key criteria of digital ordering and digital delivery: *"digital trade is all international trade*

Figure 1.3: Sales through online platforms are booming



Note: The chart covers digital intermediation platforms as defined in this Handbook (e.g., Uber), as well as e-tailers. In some cases, both business models may co-exist on the same platform (e.g., Amazon, Alibaba). The figures reflect the gross value of goods and services sold by/through these companies.

Source: UNCTAD (2022a), based on company reports.

that is digitally ordered and/or digitally delivered". This definition reflects the multi-dimensional character of the phenomenon by identifying the nature of the transaction as the defining characteristic of digital trade and acknowledges the overlap that may exist between digitally ordered and digitally delivered trade.

Digitally ordered trade, defined in this Handbook as *"the international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders"*, echoes the OECD definition of e-commerce (OECD, 2011). Digitally delivered trade, which only covers services, is defined as *"all international trade transactions that are delivered remotely over computer networks"* and builds on the concept of ICT-enabled services transactions developed by TGServ (UNCTAD, 2015). This definition of digitally delivered trade is broader than that in the first version of this Handbook, as it covers any form of digital delivery, not only delivery methods "specifically designed for the purpose of delivering services" (see Chapter 2). The definition thereby becomes more straightforward to interpret and to implement in practice.

The alignment in concepts and terminology with previous initiatives provides clarity for users and ensures that compilers can leverage the measurement instruments already in place to produce estimates of digital trade. Importantly, the two statistical criteria of digital ordering and digital delivery are inherently encompassed by the WTO definition of e-commerce cited above. Figure 1.4 illustrates the relationships between e-commerce, digital trade and their components.

Following extensive consultations with compilers and policymakers,[6] this definition of digital trade is now widely accepted and has proven feasible and practicable for statistical compilers. Several countries have started to implement the concepts and measurement approaches introduced by the previous edition of the Handbook (see, for example, the case studies in Chapter 6). Furthermore, the concepts of digital ordering and digital delivery have been fully integrated into, and are consistent with, the framework of digital supply and use tables (see Annex A and the OECD Handbook on Compiling Digital Supply and Use Tables (OECD, 2023)).

1.4 Measuring digital trade is key for effective policymaking

The goal of this Handbook is to help statistical compilers to address policymakers' demands for better statistical evidence on digital trade.

Starting with its Chinese presidency in 2016, the Group of 20 (G20) has been placing significant emphasis on the measurement of the digital economy and, by extension, the measurement of digital trade. The 2017 G20 Digital Economy Ministerial Declaration, under the German Presidency, called for a review of the statistical frameworks to encompass and separately identify the digital economy (G20 Research Group and University of Toronto, 2017). The measurement dimension has remained high up on the agendas of the more recent G20 presidencies. Through the G20 Trade and Investment Working Group and the Digital Economy Task Force, the G20 has regularly emphasized the importance of measuring digital trade to enable policymakers to harness, regulate and shape digital trade flows.

International trade policy is arguably the policy area in which comprehensive and comparable evidence on digital trade is most crucial to assess existing market access in the context of a rapidly changing business environment, as well as to negotiate new digital economy agreements. However, digital trade affects and is affected at both the domestic and international levels by many other policy areas, including competition and tax policies, as well as development and economic growth. This section gives a brief overview of the policy needs that call for better measurement of digital trade.

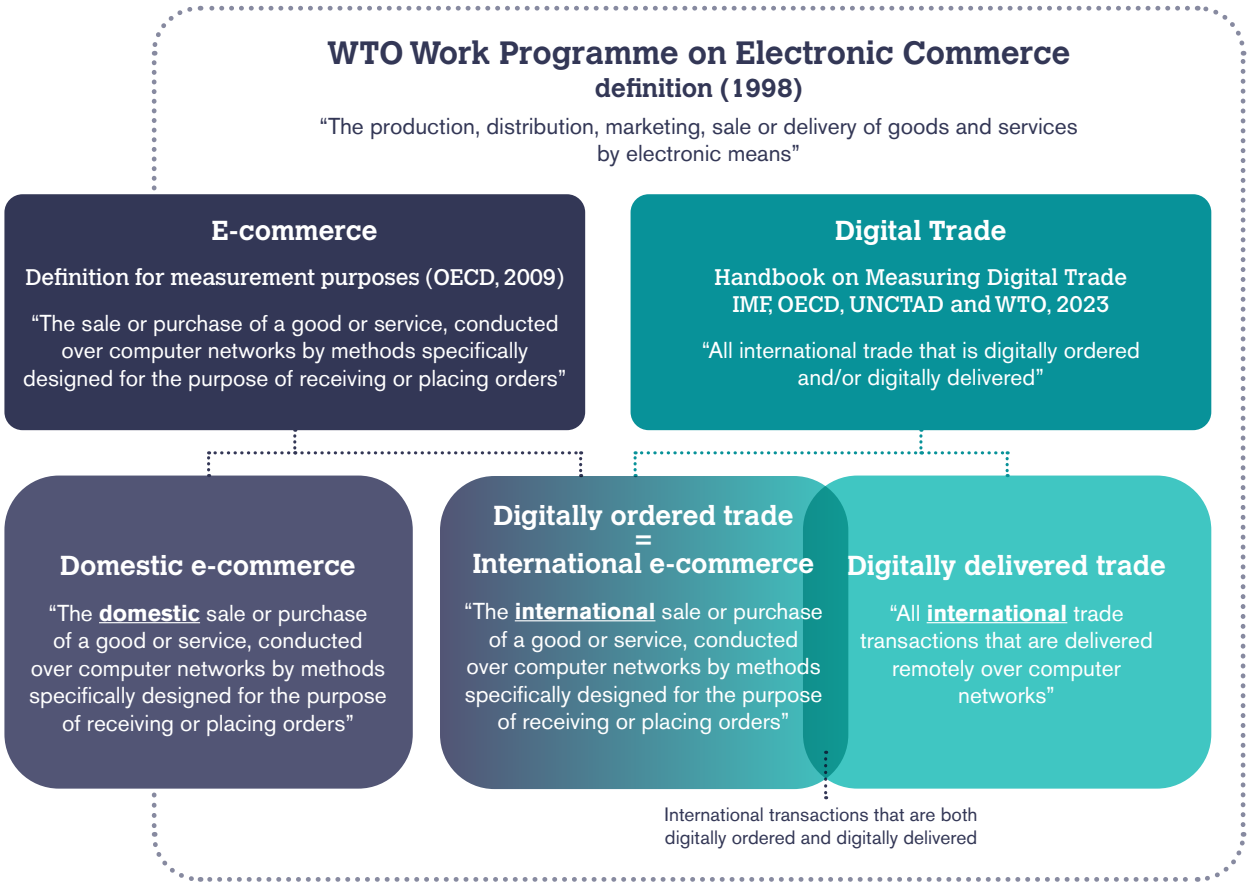
1.4.1 INTERNATIONAL TRADE POLICY

As digital trade continues to grow, so too do discussions on digital trade policies, in the context of the WTO Work Programme on Electronic Commerce, through the WTO Joint Initiative on E-commerce, in regional trade agreements (RTAs), as well as in digital economy agreements (DEAs).[7] However, these discussions are taking place in the context of a relatively thin evidence base, which limits the understanding of the short and long-term benefits, the channels of transmission and the implications of digitalization and related policies. This underscores the importance of this Handbook in providing guidance to better capture the nature and evolution of digital trade and helping to examine its economic, social and environmental impact.

Multilateral agreements under the WTO cover important aspects of digital trade in goods and services. The General Agreement on Trade in Services (GATS), which entered into force in January 1995, remains of primary importance for digital trade. The General Agreement on Tariffs and Trade (GATT), which entered into force in October 1947, and the Trade Facilitation Agreement (TFA), which entered into force in February 2017, have supported digitally enabled trade in goods, while the Information Technology Agreement (ITA), which was concluded in December 1996, has been key in eliminating tariff barriers for certain ICT products.

Despite rapid and far-reaching technological change, the rules and commitments underpinning the digital trade environment at the multilateral level, although

Figure 1.4: Digital trade and e-commerce – fundamental concepts and statistical definitions



Note: The statistical definitions of e-commerce and digital trade are fully compatible with the WTO definition of the Work Programme on Electronic Commerce. In addition to cross-border e-commerce, the WTO Work Programme also covers the domestic e-commerce activities of foreign owned or foreign-controlled service suppliers. The definition of digital trade given in this Handbook is also compatible with the description of e-commerce in IMF (2009) (i.e., *"e-commerce is a method of ordering or delivering products at least partly by electronic means, such as through the internet or other computer mediated networks"*).

Source: IMF, OECD, UNCTAD and WTO.

technology-neutral, have remained unchanged. Multilateral discussions on digital trade began in 1998 with the launch of the WTO Work Programme on Electronic Commerce (WTO, 1998a). In the same year, WTO members agreed on a moratorium on customs duties on electronic transmissions, which states that "members will continue their current practice of not imposing customs duties on electronic transmission". The moratorium has been regularly extended (most recently at the 12th Ministerial Conference in June 2022).[8]

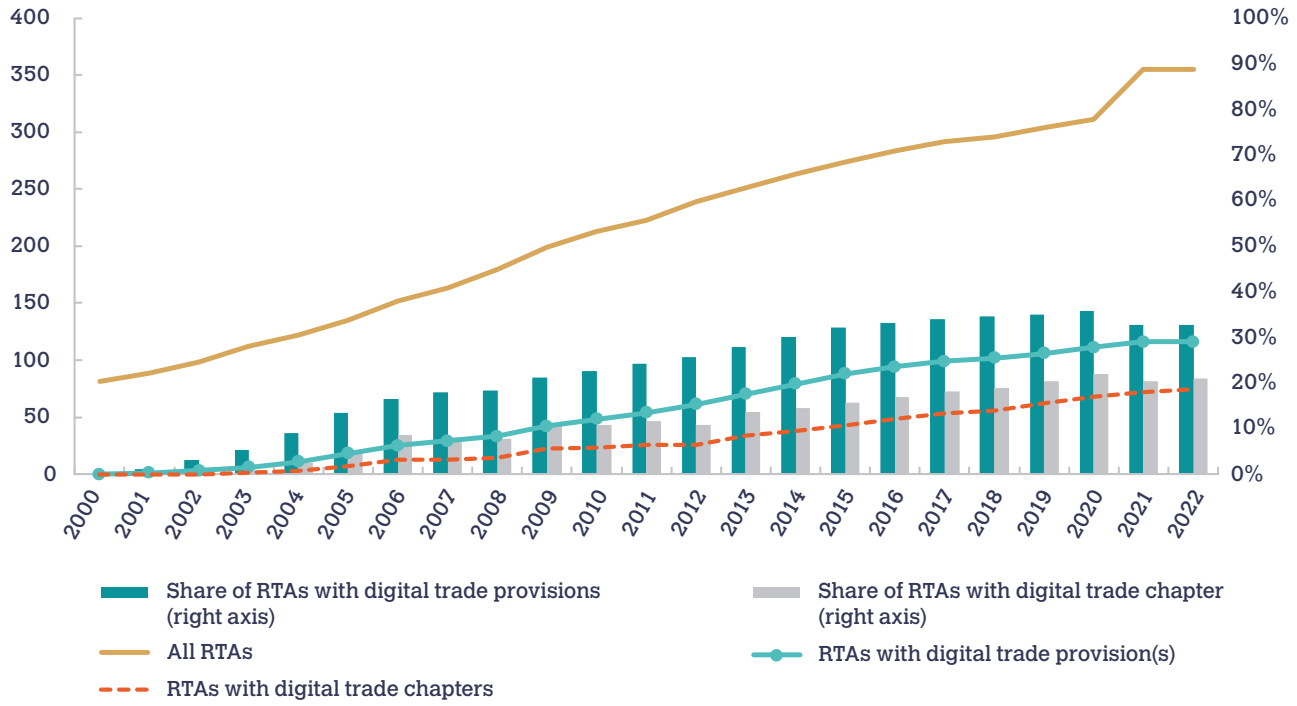
In January 2019, a group of WTO members confirmed their intention to commence negotiations on trade related aspects of e-commerce (WTO, 2019). As of July 2023, 89 members were participating in the Joint Initiative on Electronic Commerce and addressing a range of issues, including the development of disciplines on e-signatures and e-payments, as well as information flows, privacy, consumer protection and cybersecurity.[9]

Prior to the Joint Initiative on Electronic Commerce, the governance of issues related to digital trade was largely negotiated in the context of bilateral and regional trade agreements. In 2022, there were 116 such agreements with digital trade provisions, representing 33 per cent of all agreements notified to WTO (Figure 1.5). These cover a range of crosscutting issues, from digital trade facilitation to privacy and data protection, consumer protection, source code, customs duties on electronic transmissions, and cybersecurity.

In parallel, countries have also started negotiating broader "digital economy agreements". These include, among others, the Digital Economy Partnership Agreement (DEPA) between Chile, New Zealand and Singapore, and the DEA between Australia and Singapore.[10] These agreements incorporate many of the issues discussed in existing trade agreements, such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), but extend discussions to cover further areas, such as artificial intelligence (AI).

Despite progress in discussing digital trade-related provisions internationally, evidence from the OECD Digital Services Trade Restrictiveness Index (DSTRI)

Figure 1.5: A growing number of RTAs have digital trade provisions



Note: The vertical axis shows the number of RTAs (left axis) and the share of RTAs with provisions or a chapter on digital trade (right axis). The analysis only considers agreements currently in force. "RTAs with digital trade provisions" refers to there being at least one e-commerce/digital trade provision, whether in a separate chapter of the trade agreement or not (e.g., intellectual property provisions which might be important for the digital economy but are not in an individual e-commerce chapter). RTAs are identified using the WTO RTA database (https://rtais.wto.org/). Digital provisions sourced from the Trade Agreements Provisions on Electronic-commerce and Data (TAPED) database (https://www.unilu.ch/en/faculties/faculty-of-law/professorships/managing-director-internationalisation/research/taped/).

Source: López González, Sorescu and Kaynak (2023).

suggests that domestic regulation affecting digital trade has become increasingly tight. Measures concerning infrastructure and connectivity, which include restrictions on cross-border data flows and data localization requirements, account for the bulk of the increase in the index (see Figure 1.6).

Quantifying digital trade flows in an accurate and comparable way would not only provide long-awaited information to support trade policy discussions, but also provide a basis to analyse and understand the digital trade implications of national regulatory changes, whether through the removal of restrictive measures or the introduction of new ones, and to establish good regulatory practices.

1.4.2 TRADE IN LOW-VALUE GOODS AND *DE MINIMIS* THRESHOLDS

The digitization of information can be a powerful instrument to facilitate trade, as easier data exchange paves the way for faster customs clearance procedures and improved risk management. For example, the World Customs Organization's (WCO) "Framework of Standards on cross-border e-commerce" prescribes the establishment of a legal and regulatory framework for advance electronic data exchange among the parties involved in an e-commerce supply chain, and requires customs administrations and other relevant government agencies to enhance facilitation and control measures (WCO, 2022).

The WCO also promotes the enhanced exchange of information and inter-agency cooperation on cross border flows of low-value packages. As a result of the emergence of online platforms, more low-value goods are crossing international borders than ever before, and while this has given rise to new opportunities, not least for individuals and micro, small and medium-sized enterprises (MSMEs), to directly engage in trade, it is also raising new challenges for both measurement and policy (López González and Sorescu, 2021).

Measurement challenges can arise as a result of *de minimis* thresholds, as these can render goods exempt from customs duties and/or taxes, as well as entitle them to expedited procedures with fewer documentation requirements. Despite recommendations to estimate low-value trade in merchandise trade statistics (UN, 2011), the value of goods falling below *de minimis* thresholds is often not recorded. By providing guidance on improving official measures of digitally ordered goods (see Chapter 3), including to better capture low-value trade, this Handbook helps to build the evidence base that will enable a better understanding of the challenges and opportunities raised by small-value goods trade.

1.4.3 COMPETITION POLICY

Online platforms have the potential to affect competition and the structure of markets across various industries. They can generate consumer benefits in many markets, including lower prices, greater accessibility and more variety.

At the same time, their business models can cause questions to be raised about how existing regulatory frameworks need to be adapted to digitalization (G7 Germany, 2022). For instance, the size and reach of certain large digital firms across multiple markets has highlighted the risks of anti-competitive conduct, durable market power (and thus less market dynamism and innovation), systemic risks and rent-seeking (for example, through lobbying) (UNCTAD, 2019).

Therefore, it is important to identify these actors in the digital trade framework separately and to develop relevant statistics that can better assess the role of these intermediaries in international trade.

1.4.4 TAXATION POLICY

Digitalization has provided greater scope for firms to export products to markets without having a physical presence in those markets. This is at odds with the allocation of taxing rights based on physical presence. In addition, digitalization exacerbates already existing challenges concerning profit-shifting, as multinational enterprises (MNEs) can more easily relocate highly valuable intangible assets to low-tax jurisdictions to reduce their tax burdens. This is the case for intellectual property assets, but it is equally true with respect to a whole range of other knowledge-based assets, notably marketing assets.

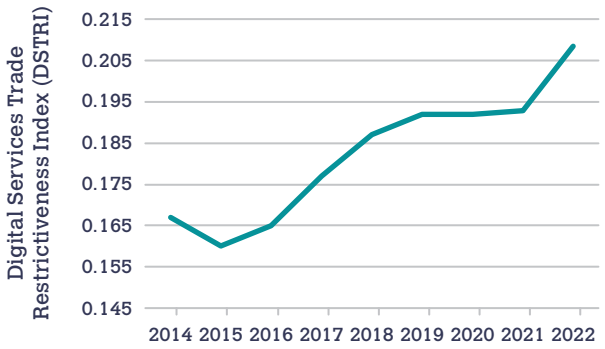
The ability to quantify such digitally delivered flows will help to inform the debate on international taxation, and will potentially administer the two-pillar solution put forward by the OECD/G20 Base Erosion and Profit Shifting (BEPS) framework (OECD and G20, 2021). Under this agreement, Pillar One involves reallocating taxing rights among economies with respect to the share of profits of the world's largest and most profitable MNEs. Pillar One also involves reallocating some taxing rights over MNEs from their home economies to the markets in which they have business activities and earn profits, regardless of whether those MNEs have a physical presence there. Pillar Two involves ensuring that all MNE groups with an annual turnover of more than EUR 750 million will be subject to a minimum effective tax rate of 15 per cent.

Besides corporate taxation, rapid digitalization has also created considerable challenges for indirect taxation frameworks globally, such as for the imposition and collection of value-added tax (VAT) on online sales of services, and physical goods in international trade. For most countries, VAT is the single largest source of indirect tax revenues, and in several developing economies, VAT is the single largest source of all tax revenues (OECD, 2022). The purpose of VAT is to generate government revenue through a broad based tax on final consumption, and it follows that its imposition in international transactions accords the right to tax international supplies to the jurisdiction in which consumption takes place.

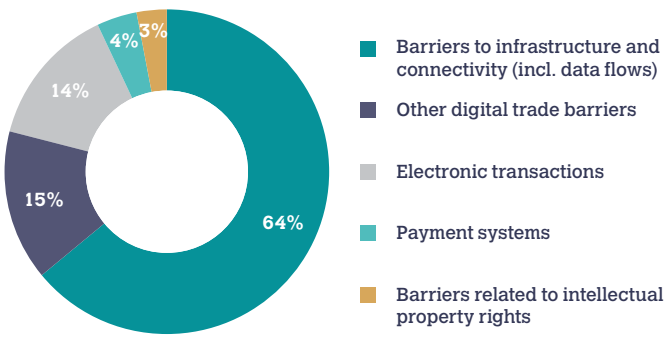
Accurate measurement of digital trade will help governments adapt their taxation frameworks to new business models. At the same time, VAT information itself can be a useful source with which to measure certain elements of digitally ordered trade and digitally delivered trade (see Chapters 3 and 4).

Figure 1.6: Digital trade barriers are intensifying and are concentrated in infrastructure and connectivity issues

A. Evolution of DSTRI over time (2014-22)



B. Share of measures across categories (2022)



Note: Panel A shows the simple average DSTRI for the 74 economies currently covered. The DSTRI ranges between zero and one, one being the most restrictive.

Source: OECD (2022).

1.4.5 ECONOMIC GROWTH AND DEVELOPMENT

Although it is widely accepted that digital trade provides significant new opportunities, there is also a sense that many developing economies are lagging behind in terms of the infrastructure, skills and regulatory environment needed to take advantage of these opportunities (UNCTAD, 2022d). Market openness is a necessary element to enable benefits from digital trade, but it is not sufficient. Comprehensive policy action is needed across skills, trade, competition, taxation, innovation and connectivity policies, if we are to avoid a growing digital divide.

At the 12th WTO Ministerial Conference, WTO members agreed to reinvigorate work under the Work Programme on Electronic Commerce, particularly in line with its development dimension.[11] WTO members have also agreed that digital connectivity will be one of the three priority areas in the WTO Aid for Trade work programme for 2023-24.[12] Development cooperation activities should contribute to bridging gaps in digital connectivity and information technology (IT) to support an enabling environment for business and trade facilitation in developing countries and least-developed countries (LDCs).

A challenge here is to ensure that developing economies are also not left behind in their ability to produce evidence for policymaking. This Handbook showcases various developing economy experiences of producing insights on digital trade (see Chapter 6).

1.5 Purpose and structure of the Handbook

The objective of this Handbook is to provide compilers with a statistical definition of digital trade, a conceptual measurement framework and practical compilation guidance on how to make digital trade transactions more visible in existing statistics on international merchandise and services trade.

Building and expanding on its first edition (OECD, WTO and IMF, 2019), this second edition of the Handbook provides several conceptual clarifications, while keeping the definition and the measurement framework broadly unchanged. It builds on extensive consultations with a wide range of national statistical compilers, international organizations and other key stakeholders in the domain of trade statistics and policy analysis. The work presented in this Handbook is at the frontier of statistical measurement and contributes to developing the domain of digital trade statistics by:

- Providing a statistical definition of digital trade and its components;
- Establishing a conceptual framework on how to measure digital trade;
- Proposing a reporting template to record digital trade transactions;
- Providing specific compilation guidance;
- Sharing best practices and case studies.

The Handbook is structured as follows:

Chapter 2 introduces the conceptual framework and reporting template for digital trade.

Chapters 3, 4 and 5 provide compilation guidance on the components of digital trade identified in the conceptual framework: Chapter 3 focuses on the measurement of digitally ordered trade, Chapter 4 presents the measurement of digitally delivered trade, and Chapter 5 addresses the specific challenges related to the recording of transactions enabled by digital intermediation platforms.

Finally, Chapter 6 presents detailed case studies contributed by China, Jamaica, Spain and Türkiye.

The chapters build on existing compilation practices and have greatly benefitted from inputs received from national compilers. Nevertheless, as the domain is still evolving, and compilation practices are not yet well established, the authors of the Handbook recognise that coordinated international effort is still required to address the remaining practical and conceptual challenges.

1.6 Areas of ongoing work

To the extent possible, this Handbook attempts to cover all of the digitalization issues which are of relevance for trade statistics. Nevertheless, it also recognises that in some areas, measurement efforts are still in their infancy, and therefore further conceptual research, as well as empirical testing, will be needed to improve and refine the guidance provided in this Handbook.

For example, more research is needed concerning the coverage of orders via online chat functions, the addition of new services to the list of digitally delivered services as technology advances, and the provision of additional services – such as warehouse services – by digital intermediation platforms.

There are also topics in which conceptual research was ongoing at the time of writing of this Handbook, and therefore these topics have not yet been covered by the conceptual framework. In addition, for certain topics, important compilation challenges persist. Many of these issues are currently being investigated in the context of the update of the UN System of the National Accounts (SNA)[13] to SNA 2025, and of the IMF Balance of Payments Manual (BPM) to BPM7.

1.6.1 DIGITALIZATION, INVESTMENT AND INTELLECTUAL PROPERTY

Digitalization exacerbates some of the best-known challenges to measuring international trade. For example, intellectual property products can easily be "moved" across international borders, often within the same MNE, and in this case, attributing economic ownership of those intellectual property products, and thus determining the type and direction of the related transactions, is no trivial task (IMF, 2008).

Digitalization has also further blurred the lines between cross-border services transactions (as covered in the balance of payments) and services sales/output through the establishment of foreign affiliates. In the case of digital intermediation platforms and other platforms providing access to intellectual property product content, such as streaming platforms, the lines can become even less clear.

While these issues do not undermine the conceptual measurement framework presented in this Handbook, the complexity of the related transactions calls for the development of further guidance on feasible and comparable compilation approaches based upon country experiences.

1.6.2 CROSS-BORDER DATA FLOWS

Trade and production can be heavily dependent on data and information, which are increasingly being exchanged across borders. Cross-border data flows create new trading opportunities, but also amplify concerns related to privacy protection, digital security, national security, regulatory reach, competition and industrial policy. In order to shape adequate policies around cross-border data flows, it is crucial to develop better measurement of the volume of international data flows and better assessments of the conditions under which data cross borders effectively.

Some international data flows are a direct manifestation of digital trade, arising in the process of an order being placed, or of a service being delivered, through computer networks. The economic value associated with these data flows is accounted for by recording the value of the transaction they facilitate in digital trade. Where data assets (e.g., databases) are traded internationally as products, these transactions are also accounted for in digital trade. At the same time, not all cross-border data flows arise from or are related to trade transactions (UNCTAD, 2021b).

While digitally delivered trade already captures part of the data components of transactions, measuring and recording the value of assets based on the data underlying goods and services transactions is being discussed in the context of the update of the macroeconomic statistical frameworks. Understanding the full implications will require further research and experimentation.

1.6.3 CLOUD COMPUTING

Cloud computing services, defined as *"computing, data storage, software, and related IT services accessed remotely over a network, supplied on demand and with measured resource usage that allows charging on a pay-per-use basis",* are increasingly used to replace ownership of on-premises IT equipment. The main suppliers of cloud computing services are MNEs with operations spanning many countries and a potentially global customer base. Although paid international transactions in cloud computing should be recorded as trade in services, determining where the service originated and where it was consumed is a challenging task in practice, even if both the countries making and receiving the payment are known.

Moreover, and related to the point above on cross-border data flows, cloud computing often relies on international data transfers between related parties, which take place without a corresponding monetary transaction (IMF, 2022).

1.6.4 NON-LIABILITY CRYPTO ASSETS

Crypto assets are defined as *"digital representations of value that rely on cryptography and decentralized peer-to-peer architecture based on distributed ledger technology (DLT), which enables two parties to directly transact with each other without the need for a trusted intermediary".* Non-liability crypto assets are those assets designed to act as a general medium of exchange without a corresponding liability, such as Bitcoin and Ether. Within the context of the updates of the BPM6 and SNA 2008, an agreement has been reached in March 2023 to treat non-liability crypto assets as non-produced non-financial assets, and therefore excluding them from the scope of digital trade.[14]

A further agreement was made that the recommendation could be revisited if there are significant market, regulatory and/or accounting changes, either before or after the release of the manuals in 2025. Bearing in mind also that the measurement framework proposed in this Handbook is in general consistent with BPM6, no crypto asset is currently considered in scope for measuring digital trade.

1.6.5 COMPLEMENTARY GUIDANCE ON MEASURING THE VALUE OF E-COMMERCE

Digitally ordered trade constitutes a subset of total e-commerce, i.e., where the seller and buyer are in different economic territories. At its meeting in November 2022, the UNCTAD Working Group on Measuring E-commerce and the Digital Economy established a task team to discuss relevant international measurement practices in detail and to work toward developing guidelines to support and encourage countries in measuring the value of e-commerce.

Given the relationship between e-commerce and digitally ordered trade, this effort will support the operationalization and adoption of the compilation guidance set out in Chapter 3 of this Handbook on using surveys to measure digitally ordered trade.

1.7 Putting the Handbook into practice

This Handbook provides a common basis from which statistical compilers can work to produce measures of digital trade. Nevertheless, countries may face various challenges in putting the Handbook into practice, from applying the core concepts to the specific national context and to the available data sources, to compiling and disseminating the resulting statistics.

This Handbook establishes a foundation for an active programme of regional and bilateral technical assistance, capacity-building and workshops, by means of which the four co-authoring partner organizations, the IMF, OECD, UNCTAD and WTO, can support countries in measuring digital trade. This programme of activities can take place within existing activities conducted by the four agencies or through the development of specific programmes on digital trade measurement.

Endnotes

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

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

3 https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=81140&IF_Language=eng.

4 Members of the Task Group included UNCTAD, the United Nations Statistics Division (UNSD), the Organisation for Economic Co-operation and Development (OECD), the World Trade Organization (WTO), the International Telecommunication Union (ITU), the Economic and Social Commission for Western Asia (UNESCWA) and the World Bank.

5 See https://www.oecd.org/digital/going-digital-project/.

6 The OECD Working Party on International Trade in Goods and Services Statistics (WPTGS) widely discussed and endorsed this Handbook in their 2020, 2021 and 2022 annual meetings. This Handbook has also been extensively discussed at the UNCTAD Working Group on Measuring E-commerce and the Digital Economy.

7 Important progress has also been achieved through the recently agreed G7 Trade Ministers' Digital Trade Principles (https://www.gov.uk/government/news/g7-trade-ministers-digital-trade-principles), which cover open digital markets, data free flow with trust, safeguards for workers, consumers and businesses, digital trading systems, and fair and inclusive global governance.

8 The original moratorium decision refers to WTO (1998b), while the latest extension is contained in WT/L/1143 and WT/MIN(22)/32 (https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN22/32.pdf&Open=True).

9 The original Joint Statement on Electronic Commerce from 2017 is accessible here: https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN17/60.pdf. In January 2019, participants confirmed their intention to commence negotiations on e-commerce (https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/L/1056.pdf&Open=True). In a statement dated 20 January 2023, the co-chairs of the discussions (Australia, Japan and Singapore) noted progress on ten articles – "paperless trading, electronic contracts, electronic authentication and electronic signatures, unsolicited commercial electronic messages, online consumer protection, open government data, open internet access, transparency, cybersecurity, and electronic transactions frameworks". (https://www.wto.org/english/news_e/news23_e/igo_20jan23_e.pdf).

10 In addition to the recent DEA between the United Kingdom and Singapore (December 2021), Canada has expressed interest in joining the DEPA, China officially filed an application to join (November 2021), and an agreement has been reached for the Republic of Korea to begin negotiations to join formally. Moreover, in December 2021 Singapore and the Republic of Korea concluded discussion on their Digital Partnership Agreement Korea Singapore Digital Partnership Agreement (KSDPA), which entered into force on 14 January 2023.

11 See https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN22/32.pdf&Open=True.

12 See https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/COMTD/AFTW95.pdf&Open=True.

13 See https://unstats.un.org/unsd/nationalaccount/sna.asp.

14 Fungible crypto assets with corresponding liability, such as stable coins with a claim on the issuer, are considered as financial assets and are also not in scope for international trade.

2. The conceptual framework for measuring digital trade

Drawing on prior measurement initiatives and focusing on policy needs, this chapter defines digital trade as *"all international trade that is digitally ordered and/or digitally delivered"*. It sets out a conceptual framework that identifies digital trade transactions within the existing measurement frameworks for international trade, specifying *how* digital trade transactions are defined, *what* types of products are included and *who* are the actors involved in digital trade.

From the conceptual framework, the chapter develops a reporting template, setting out the key components of digital trade that are required to inform policy discussions.

2.1 Measuring digital trade: the statistical framework

Digitalization affects international trade on many levels, by transforming the way in which goods and services are traded and by creating entirely new, internationally traded digital products. Just as importantly, digitalization also has a significant transformative impact on many existing industries: by "shrinking the space" between consumers and producers, and among producers, it provides previously unimaginable access to new markets, particularly for micro, small and medium-sized enterprises (MSMEs).

Quantifying the overall impact of digitalization on international trade is, however, beyond the scope of this Handbook. The objective of this chapter, and indeed of this Handbook, is to establish a common understanding of (i) what "digital trade" refers to, and (ii) how it relates to international trade as a whole.

One of the key concerns driving the demand for better evidence on digital trade has been the perception that large parts of the economy, and, by extension, of international trade, are not being recorded because of digitalization (Ahmad and Schreyer, 2016; Corrado et al., 2021). Even if it is generally accepted that the current statistical frameworks are still well suited for measuring international trade,[1] the fact that digital trade is not visible within existing statistics hinders the ability to assess the impact of trade policy and may lead to the misperception that digitalization in trade is not measured accurately.

The statistical definition of digital trade is based on the nature of the transaction, rather than on the characteristics of the product that is traded or on the characteristics of the actors involved in the transaction. This Handbook defines digital trade as:

"All international trade that is digitally ordered and/or digitally delivered."

This definition is at the core of the conceptual framework for measuring digital trade, presented in Figure 2.1. It implies that digital trade transactions should be compiled as a subset of existing trade transactions, i.e., (i) international merchandise trade statistics on a cross-border basis, as defined in the International Merchandise Trade Statistics: Concepts and Definitions (IMTS) 2010 (United Nations, 2011) and (ii) international trade in services statistics (transactions between residents and non-residents, as defined in the Balance of Payments and International Investment Position Manual, Sixth Edition (BPM6) (IMF, 2009) and in the Manual on Statistics of International Trade in Services (MSITS) 2010 (UN et al., 2010)).[2] As such, and notwithstanding the impact that digitalization may have on commercial presence, foreign affiliates statistics do not directly fall in the scope for the measurement of digital trade.[3]

As depicted in the upper part of Figure 2.1, the conceptual framework for digital trade includes transactions that are, in principle, covered by the conventional measures of international trade in goods and services and fall within the UN System of National Accounts (SNA) 2008 (UN, 2008a) production boundary. Consequently, monetary transactions for data products (e.g., purchase of datasets), when they take the form of transactions in services,[4] also fall within the scope of digital trade. In addition, monetary transactions supported by data flows will of course be included in digital trade when these trade transactions are digitally ordered and/or digitally delivered.

The framework also acknowledges the existence of, and growing interest in, non-monetary digital flows, as depicted in the lower section of Figure 2.1. Examples of these are data flows to search engines and social networks, which do not entail a direct monetary transaction but do support them (for instance, services paid for by advertisers). Nevertheless, these non-monetary digital flows are outside of the production boundary of the SNA 2008 (UN, 2008a), and they are therefore measured neither in national accounts nor in international goods and services trade statistics.

The nature of the transaction – digitally ordered and/or digitally delivered – is the overarching defining characteristic of digital trade, i.e., it is how the transaction is conducted that sets out the scope of digital trade. However, the conceptual framework outlined in this Handbook also includes two other dimensions crucial for trade policy purposes: the product dimension (*what is traded*) and the actors engaged in digital trade (*who is trading*).

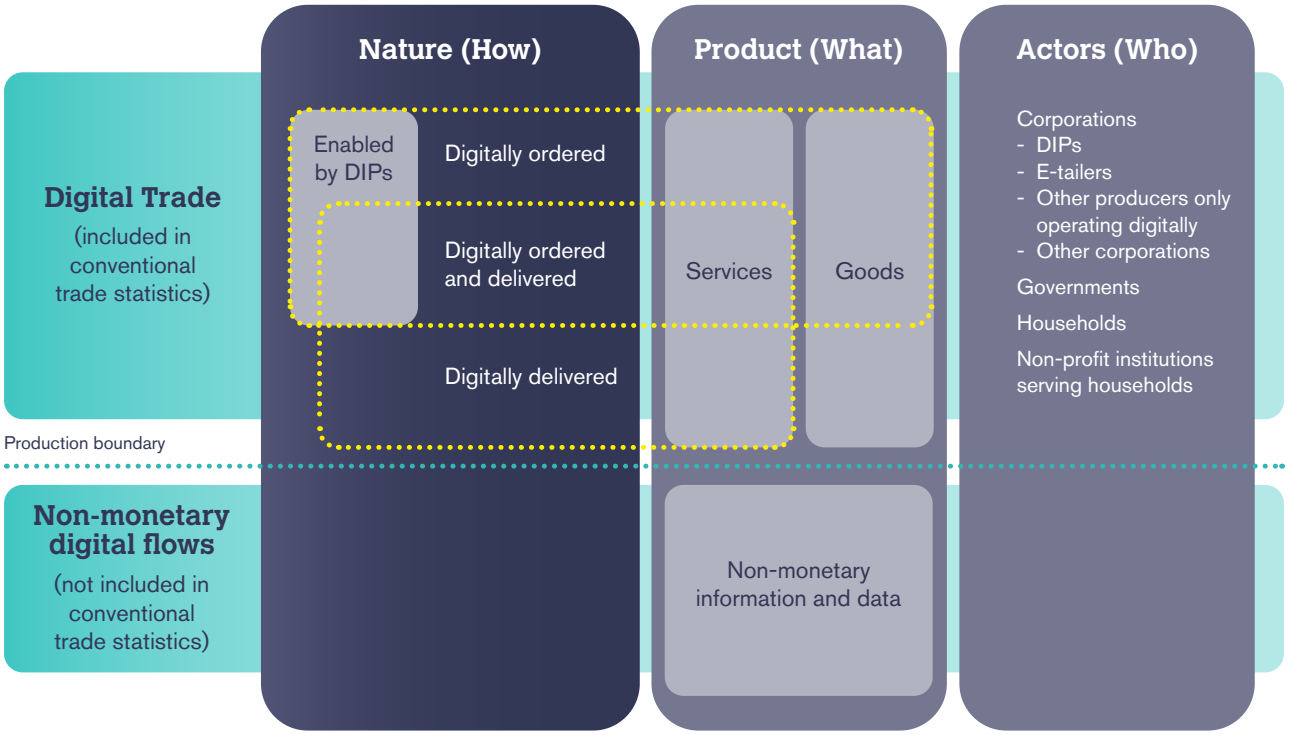
The rest of this chapter is organized as follows. Sections 2.2, 2.3 and 2.4 describe the three dimensions, outlined in Figure 2.1, of nature, product and actors in more detail; Section 2.5 clarifies the role of non monetary digital flows; Section 2.6 defines how digital trade fits in the existing accounting frameworks of BPM6 (IMF, 2009), SNA 2008 (UN, 2008a), IMTS 2010 (UN, 2011) and MSITS 2010 (UN et al., 2010); Section 2.7 presents the recommended reporting template for digital trade transactions; and Section 2.8 provides users with a preview, based on information available at the time of writing, of how digitalization will be accounted for in the upcoming update to the international statistical standards (SNA 2025 and BPM7).

2.2 The nature of the transaction (How)

2.2.1 DIGITALLY ORDERED TRANSACTIONS

The first criterion to identify digital trade is transactions that are *"digitally ordered"*. Significant efforts have led to an internationally agreed definition for the measurement of e-commerce (OECD, 2011). This Handbook builds

Figure 2.1: The conceptual framework for digital trade



Note: This conceptual framework is in line with that presented in the OECD Handbook on Compiling Digital Supply and Use Tables (OECD, 2023). Digital transactions undertaken by Actors can include transactions that are both digitally ordered and/or digitally delivered (Nature), and can encompass both goods and services (Product).

Source: IMF, OECD, UNCTAD and WTO, adapted from OECD, WTO, IMF (2019).

on those efforts by aligning with the OECD definition of e-commerce to define digitally ordered trade as

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

Digitally ordered trade, as defined here, is therefore equivalent to international e-commerce and as such it is a subset of total e-commerce (see also Figure 1.4 in Chapter 1). If a transaction is deemed to be digitally ordered, the total value of the transaction should be included in the measure of digital trade, irrespective of whether the traded product has digital characteristics or not and irrespective of whether the product was delivered digitally or physically. Box 2.1 provides further details on the "computer networks" enabling the relevant transactions.

To assist in the consistent interpretation of this definition, the following supporting clarifications are provided to help identify digitally ordered transactions in international trade:[5]

1. For digitally ordered transactions, the payment and ultimate delivery of the goods or services do not have to also be conducted online;
2. Digitally ordered transactions can involve participants from all institutional sectors (shown in the "Actors" column of Figure 2.1);
3. Digitally ordered transactions cover orders made over the web,[6] extranet or via electronic data interchange (EDI, see Box 2.1);
4. Digitally ordered trade includes purchases of applications (apps) and in-app online purchases;
5. Digitally ordered trade includes transactions via online bidding platforms;
6. Orders made by phone, fax or manually typed email are excluded from digitally ordered trade;
7. Offline transactions formalized using digital signatures are excluded from digitally ordered trade;
8. Each trade transaction should be treated separately. When a transaction is established via offline ordering processes, but subsequent transactions (or follow up orders) are made via digital ordering systems, the follow-up orders should be considered as e-commerce; and
9. Trade transactions do not necessarily coincide with contracts. For a contract spanning several statistical periods and potentially involving multiple transactions, each transaction should be classified as digitally ordered or not digitally ordered, reflecting the mode(s) of ordering initiated in the current period.

Some areas of ambiguity remain and are subject to further research. For example, the OECD guidance on e-commerce does not specify whether purchases of goods or services via online chat functions (such as WeChat or WhatsApp) should be considered digitally ordered. On the one hand, the chat functions (and

the applications that enable them) are typically not specifically designed for placing orders (as per the e-commerce definition), and receive manually composed messages similar to emails, which are excluded from digitally ordered trade. On the other hand, rapid technological change has meant that orders, even when manually typed, can now be handled automatically (e.g., if workflows are automatized using artificial intelligence (AI)). In this case, arguably, the related transactions could be classified as digitally ordered trade.

2.2.2 DIGITALLY DELIVERED TRANSACTIONS

The second criterion to identify digital trade is transactions which are *"digitally delivered"* and only covers services. The concept of digitally delivered trade builds on the work of the UNCTAD-led Task Group on Measuring Trade in ICT Services and ICT-enabled Services (in collaboration with International Telecommunication Union (ITU), OECD, the Economic and Social Commission for Western Asia (UNESCWA), the United Nations Statistics Division (UNSD), the World Bank and the WTO (UNCTAD, 2015)).

In this Handbook, digitally delivered trade is defined as

"All international trade transactions that are delivered remotely over computer networks."

It should be noted that this definition is broader than that provided in the previous version of this Handbook,[7] which closely mirrored digitally ordered trade by only covering delivery methods "specifically designed" for the purpose of delivering services.

The simplification of the definition avoids complex interpretation issues around what "specifically designed" refers to, especially when a single service contract (transaction) can be rendered by multiple different means over its duration (e.g., a combination of emails, video calls and automatic file transfers).

Equally important, the revised definition better aligns with the pre-existing concepts of ICT-enabled services and of cross-border supply of services (or Mode 1, see MSITS 2010 (UN et al., 2010) and Box 2.2).

In other words, since the definition of digitally delivered trade refers to any international transaction in which the service is delivered remotely over computer (i.e., ICT) networks, the concept of digital delivery is de facto equivalent to that of "ICT-enabled services", defined as "services products delivered remotely over ICT networks", in UNCTAD (2015). Furthermore, the concept of digitally delivered trade, which, by definition, only covers services, is, in practice, equivalent to the concept of service supply via Mode 1, i.e., services that are digitally delivered are most likely supplied via Mode 1.

Box 2.1: A note on computer networks and EDI

A key element of the definitions of both digitally ordered trade and digitally delivered trade is the role of "computer networks". This term is adopted from the OECD definition of e-commerce (OECD, 2011). That definition does not provide a specific definition for "computer networks". However, it makes clear that:

1. "The internet is a worldwide public computer network".
2. "Other computer networks include internal networks (e.g., a LAN), proprietary external networks which are not IP-based (for instance, the networks set up for early versions of EDI), and automated telephone systems".

Electronic data interchange (EDI) is the computer-to-computer transmission of business data – such as shipping orders, purchase orders, invoices and requests for quotations – in an electronic format using agreed standards. The messages are composed and processed without human intervention, which increases the speed of order processing and reduces errors. EDI is used in a wide variety of industries, including food, retail, logistics and manufacturing, to manage international supply chains efficiently (e.g., just-in-time inventory management).

Practically, and in particular considering the digitalization of voice transmission – including the prevalent use of Voice Over Internet Protocol (VoIP) for telecommunications – computer networks are equivalent to the concept of "ICT networks" defined by UNCTAD as "voice or data networks, including the internet" (UNCTAD, 2015).

The role of computer networks in connecting buyers and sellers/service suppliers is the key factor of relevance to identifying digital trade. The precise devices used to access those networks, and the precise features of the network (e.g., if it is a "mobile network" or "cloud network") do not affect this. For example, use of the internet is equivalent to use of a computer network regardless of whether the internet is accessed via a computer, mobile phone, tablet or other device, and of whether the connection is made wirelessly or through a wired connection.

Source: IMF, OECD, UNCTAD and WTO.

Box 2.2: The GATS Modes of Supply

The WTO's General Agreement on Trade in Services (GATS) distinguishes four modes of supplying services internationally (GATS Article I:2 "Scope and Definition"). The GATS modes of supply are defined based on the location of the supplier and the consumer when a service is supplied, taking into account their nationality or origin (see MSITS 2010 (UN et al., 2010), paragraph 2.25). The four modes are:

Mode 1: Cross-border supply – takes place when a service is supplied "from the territory of one [WTO] Member into the territory of any other Member".

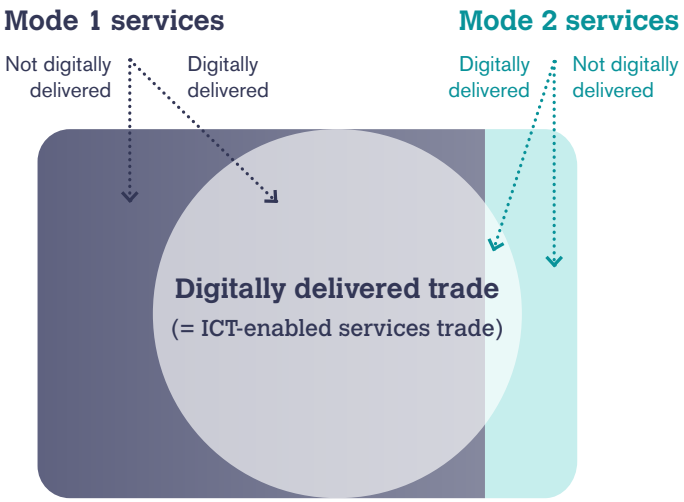
Mode 2: Consumption abroad – takes place when the service is supplied "in the territory of one Member to the service consumer of any other Member".

Mode 3: Commercial presence – takes place through supply of a service "by a service supplier of one Member, through commercial presence in the territory of any other Member".

Mode 4: Presence of natural persons – takes place when a service is supplied "by a service supplier of one Member, through [temporary] presence of natural persons in the territory of any other Member".

Source: WTO.

Figure 2.2: Digitally delivered trade and related statistical concepts



Source: IMF, OECD, UNCTAD and WTO.

It is worth noting, however, that some services are deemed to be supplied via Mode 1 but are not digitally deliverable (namely most transport services and postal delivery). As transport is easily identifiable, remaining Mode 1 estimates can be considered digitally delivered trade, as postal delivery is unlikely to make a material difference.

It is also important to point out that some services can be digitally delivered and consumed abroad (i.e., via Mode 2 – see Box 2.2); their value, however, just like services delivered by post, can be considered negligible.

Finally, a service supplied via presence of natural persons (Mode 4) cannot be digitally delivered, since Mode 4 implies physical presence.

Figure 2.2 provides further clarity on the relationship between digitally delivered trade, ICT-enabled trade and modes of supply.

To assist in the consistent interpretation of the definition, the following supporting clarifications are provided to identify digitally delivered transactions in international trade:

1. Only services can be digitally delivered;
2. Digitally delivered transactions can involve participants from all institutional sectors;
3. For digitally delivered transactions, the payment for and ordering of the services do not have to be conducted online;
4. Services delivered by phone, fax, video call or email are included in digitally delivered trade;

5. Digitally delivered trade includes services provided through apps;
6. Each trade transaction should be treated separately. When a trade transaction is delivered via offline processes, but subsequent follow-up transactions are delivered digitally, the follow-up transactions should be considered as digitally delivered; and
7. A trade transaction can be delivered via multiple (digital and non-digital) modes.

It should be noted that transactions in products such as most insurance services (notably, the core service of risk management) and financial services (such as liquidity provision and transformation, underwriting, safekeeping, record-keeping and payment services) are assumed to be in scope for digitally delivered trade. This reflects the enabling role that computer networks play in the international supply of these services, even though the underlying service being provided is not determined by its ability to be digitally delivered (see Chapter 4).

2.2.3 TRANSACTIONS ENABLED BY DIGITAL INTERMEDIATION PLATFORMS (DIPs)

Online platforms play an increasingly important role in the digital economy. They facilitate economic transactions (e.g. trade in goods and services), or non-economic interactions (e.g., social media and discussion sites). In 2019, the OECD, after extensive consultations, set out a broad definition of online platforms as "a digital service that facilitates interactions between two or more distinct but interdependent sets of users (whether firms or individuals) who interact through the service via the internet" (OECD, 2019a).

A particularly crucial subset of online platforms are DIPs, sometimes referred to as "online marketplaces". These platforms facilitate transactions in goods and services and charge a fee for facilitating the transaction. The World Customs Organization, in WCO (2022), and the OECD Centre for Tax Policy and Administration (OECD 2018b; 2019c) identified the key defining features of DIPs:

1. There are multiple buyers and multiple sellers that interact through the platform; and
2. The platform itself does not own the goods, nor does it render the services that are being intermediated.

Based on these criteria, digital intermediation platforms[8] are defined in this Handbook as

"Online interfaces that facilitate, for a fee, the direct interaction between multiple buyers and multiple sellers, without the platform taking economic ownership of the goods or rendering the services that are being sold (intermediated)."

The assumption in this Handbook is that all transactions undertaken via a DIP are digitally ordered. Often the products advertised can only be paid for electronically (although it should be noted that means of payment do not matter when considering whether the transaction is digitally ordered or delivered).

It follows from the definition that services offered by platforms that intermediate electronic content without first taking economic ownership of the intellectual property products they distribute (such as app stores) are included in this category. A DIP is deemed to not take economic ownership if the licence-holder of the intellectual property does not charge the online platform for distributing the digital content until after the consumer has paid to use the content.

Although all digitally intermediated trade transactions are included in digitally ordered trade (and where relevant also in digitally delivered trade), they are separately highlighted in the framework for three reasons:

1. A specific interest in the economic role of DIPs – including their role in trade – and in particular, their potentially transformative impact on the economy;
2. The possibility that a targeted focus on DIPs, including through dedicated survey vehicles, may deliver (partial) results on both digitally ordered and digitally delivered trade; and
3. The specific conceptual and statistical challenges that transactions through DIPs present, especially when the DIP is not resident in the economy where the intermediation services are consumed (see Chapter 5).

When identifying international transactions undertaken via DIPs, it is not only necessary to record the value of the transaction between the buyer and seller as digitally ordered trade and, where appropriate, as digitally delivered trade, but also the fee. DIPs exist to intermediate transactions between multiple buyers and sellers. The service they provide – typically, the only service – is that of "matching" buyers with sellers and facilitating ordering, payment, communication, etc. between them. These services provided by DIPs are termed *digital intermediation services*[9] and are defined in this Handbook as

"Online intermediation services that facilitate transactions between multiple buyers and multiple sellers in exchange for a fee, without the online intermediation unit taking economic ownership of the goods or rendering the services that are being sold (intermediated)."

DIPs are remunerated for providing digital intermediation services through fees received from the buyer, the seller, or both. Fees can take various forms. For example, an amount for the platform's service may be separately itemized and charged, or the fee could be implied by a difference between the amount the buyer pays the platform, and that paid by the platform to the seller. Also, the fees may be

Box 2.3: OECD Informal Advisory Group on Measuring GDP in a Digitalised Economy

The OECD Informal Advisory Group on Measuring GDP in a Digitalised Economy (the Advisory Group) was created in 2017 by the OECD Committee on Statistics and Statistical Policy (CSSP). CSSP established this group to respond to questions being raised regarding the suitability and appropriateness of the SNA production boundary to cope with the evolving digital transformation underway within the economy.

The advisory group, which reports to the OECD Working Party on National Accounts (WPNA), was formed with the overall purpose of advancing the digitalization measurement agenda and to "serve as a forum and focal point to share ideas and experiences; and to develop best practice". Within the SNA, the digitalization measurement agenda includes improving (or making more visible) the measurement of such items as data, AI, DIPs and free digital services.

More specifically, the Advisory Group was requested to:

- Clarify the statistical concepts in conjunction with the digital economy;
- Quantify potential mismeasurement issues;
- Quantify the value of "free" goods and services, including free digital services financed by revenue from advertising or revenue streams generated by data;
- Quantify cross-border digital-economy-related trade (e-commerce, digital services and intellectual property products).

Since 2017, the main focus of the Advisory Group, which includes members from both OECD and non-OECD countries, has been on how to improve the visibility of digitalization within the national accounts. To do this, the group developed the Digital Supply and Use Tables (Digital SUTs) framework (Mitchell, 2021), which is now beginning to be implemented in several countries.[10] The Advisory Group is currently overseeing the creation of a handbook on compiling Digital SUTs, a companion to this Handbook.

Source: OECD.

collected at the same time as, or separately from, the main transaction undertaken through the DIP (e.g., in the case of a monthly subscription for the platform's services, the payment would be separate). The important point is that these amounts accrue to the DIP rather than to the other parties in the transaction (i.e., not to the seller).

Due to their unique nature, and to facilitate understanding of the role of DIPs in digital trade, fees for digital intermediation services should be separately measured or estimated (see Chapter 5).

2.3 The product (What)

The conceptual framework splits products into the two conventional categories of goods and services, as shown in Figure 2.1.

2.3.1 GOODS

This Handbook adopts the convention that goods cannot be delivered digitally.[11] Therefore, goods trade relevant for measures of digital trade comprises only those goods that have been digitally ordered. Any good can be digitally ordered.

2.3.2 SERVICES

Digital trade in services can be broken down into two distinct but overlapping components in the framework: *digitally ordered services* and *digitally delivered services*. The overlap reflects digitally ordered services that are also digitally delivered and includes digital intermediation services.

Digitally ordered services

Transactions in services that are digitally ordered, following the definition described, should be included as digitally ordered services. This includes digitally ordered services not digitally delivered and services that are both digitally ordered and delivered.

Digitally delivered services

As described above in the nature of transaction, digitally delivered trade builds on the definition of ICT-enabled services developed by the UNCTAD-led Task Group on Measuring Trade in ICT Services and ICT-enabled Services (TGServ). In the operationalization of that definition, the Task Force identified those Central Product Classification (CPC Version 2.1) products which can *potentially* be ICT-enabled (see Chapter 4 and UNCTAD, 2015). This forms the basis for the list of services considered in this Handbook as *"digitally deliverable"* (see Chapter 4).

Digital intermediation services
Digital intermediation services, which are provided by DIPs to the buyers and sellers whose transactions the DIP intermediates, are recorded in digitally ordered and digitally delivered services trade when the DIP is resident in a different economy to the buyer/seller (including if the buyer and seller are resident in the same economy as one another). This Handbook recommends that these services be recorded in the Extended Balance of Payments Services Classification 2010 (EBOPS 2010) under *trade-related services* (SJ34), a subcomponent of *other business services* (SJ).[12]

2.4 Actors (Who)

Any economic actor can engage in digital trade. In particular, the possibility to buy and sell online, and for many services to be delivered online, has lowered, and has the potential to lower further, barriers to exports and imports. These developments impact different groups of actors in varied ways, and the separate identification of the different actors involved in digital trade can provide important policy-relevant insights. While the proposed reporting template does not incorporate a breakdown according to the actors involved (see Section 2.7), compilers are encouraged to explore the breakdowns that are most relevant for their statistical users.

2.4.1 CORPORATIONS

Corporations exist to produce and sell products. Digital ordering and delivery offer efficient ways to reach customers as well as to purchase productive inputs. In particular, this has made it easier for smaller firms to market their products abroad, while also facilitating access to productivity-enhancing digital inputs that can increase their competitiveness. Businesses undertake the majority of international trade and, in general, can be expected to account for the bulk of digital export and import flows.

Besides DIPs, a number of other online operators play an important role in digital trade:[13]

1. **E-tailers:** Electronic retailers or "e-tailers" are defined as *"retail and wholesale businesses engaged in purchasing and reselling goods,*[14] *which receive a majority of their orders digitally"* (OECD, 2023). E-tailers own the products being sold, and so provide margin based distribution services, as opposed to digital intermediation services, as defined above.

   It should be noted that DIP and e-tailing business models may co-exist within the same enterprise. For example, Amazon Marketplace, a digital intermediation platform, is part of the same firm, and largely indistinguishable from, Amazon's online retail activities, as they both operate through the same online interface (Amazon.com). Notwithstanding the possible compilation challenges arising from this, in the context of digital trade measurement, efforts should focus on the nature of individual transactions facilitated by such hybrid online platforms.

   Online transactions undertaken via e-tailers are digitally ordered but do not entail the provision of digital intermediation services.

2. **Other producers only operating digitally:** Another category comprises businesses that produce their own services for sale but operate exclusively digitally. This covers, for instance, priced digital media providers and providers of any subscription-based digitally delivered services.

   Streaming platforms, cable television and radio subscription services are included in this category, as they are deemed to assume economic ownership of the intellectual property products they distribute before the content is streamed.

   Transactions undertaken via other producers only operating digitally are digitally ordered and digitally delivered, but do not involve the provision of digital intermediation services. In some cases, the distinction between DIPs and these producers can be challenging, particularly because the same firm may provide electronic content through both business models.

3. **Data- and advertising-driven digital platforms:** This category covers businesses that operate exclusively online, facilitate non-monetary interactions, and provide services without charging fees to end-users. They predominately generate revenue by selling data or advertising space. Examples are free social media platforms, dating apps, search engines, knowledge-sharing platforms and phone applications that generate revenues in this way and therefore provide services to end-users free of charge.[15]

   Also included in this category are websites and platforms that receive revenue for directing visitors to third-party websites. In this latter case, although the platform receives a fee from the website being advertised, the process itself does not explicitly facilitate a transaction between two independent sets of users, simply making such a transaction more likely. As with other categories listed above, different business models may co-exist within the same enterprise; for instance, Facebook Marketplace increasingly facilitates B2C transactions for which it charges "selling fees" like a typical DIP.

Interactions between suppliers and end-users facilitated by these platforms are, in general, not in scope for measures of digital trade. However,

compilers should be aware of the blurred lines between the different business models outlined above and consider, to the extent possible, the nature of the individual transactions being conducted through all types of online operators.

Finally, some digital platforms may facilitate, for a fee, the direct interaction between multiple persons for purposes other than buying and selling goods and services. This category includes fee-based digital platforms such as those facilitating peer-to-peer lending, equity-based crowdfunding, and philanthropic crowdfunding; fee-based platforms facilitating individuals with similar interests to get together; and fee-based dating apps. The services provided by these platforms are generally digitally ordered and digitally delivered.

2.4.2 HOUSEHOLDS

Technological change has provided individual consumers (households) with increased possibilities to purchase goods and services from foreign suppliers, while also increasing their interaction as "producers" supplying services (for example, accommodation services) via DIPs. These aspects of the digital transformation complicate the way trade is measured in practice. For example, business surveys do not capture transactions between domestic households via foreign DIPs, and measuring this via household surveys may prove challenging (see also Chapters 3 and 5 on this topic).

2.4.3 GOVERNMENTS AND NON-PROFIT INSTITUTIONS SERVING HOUSEHOLDS (NPISHs)

Although their economic purposes and motives are somewhat different from corporations and households, governments and NPISHs make use of digital ordering and digital delivery both as buyers and sellers and should be covered in exhaustive measures of digital trade.

2.5 Non-monetary digital flows

The bottom part of Figure 2.1 acknowledges the increasing importance of non-monetary digital flows alongside monetary transactions (upper part of the figure).

Non-monetary digital flows refer to data and information flows that are exchanged without a monetary transaction. For instance, social networking sites or search engines offer services to users in exchange for data – often personal data – from their users that can then, in turn, be used by these firms to generate revenues from targeted advertising (Nakamura, Samuels and Soloveichik, 2016). Also, international banking is today made possible through the cross-border flow of data to support the services that are being provided. While international transactions relating to advertising or banking services can be captured in trade statistics, the data flows upon which they depend are not.

At the time of writing, investigations are ongoing to better understand and quantify these flows, given their importance in supporting economic transactions. Research carried out in the context of the revision of the SNA, for instance, concluded that services provided free of charge to end-users are already implicitly included in the value of goods and services in the current SNA production boundary.[16] Other work streams are investigating the role of data in the national accounts as well as other issues related to the impact of digitalization on economic statistics.[17]

For the time being, however, non-monetary digital flows are not in scope for digital trade. Nevertheless, paid transactions for data (e.g., sales of data sets), and indeed all trade transactions facilitated by data flows, are included in measures of international trade, and so, where appropriate, these transactions should also be included in the relevant component of digital trade.

2.6 Accounting principles

The accounting principles for recording digital trade (including in particular valuation and time of recording) generally follow those of BPM6 (IMF, 2009), IMTS 2010 (UN, 2011) and MSITS 2010 (UN et al, 2010).

Transactions that pass through DIPs, however, require some clarifications, especially those that facilitate transactions in services. Intermediation services other than financial intermediation, travel or transport are not explicitly defined and addressed in BPM6 (IMF, 2009). In paragraph 10.160, BPM6 covers subcontracting (also referred to as outsourcing), an arrangement where services such as transport, construction, computer services or other types of business services are subcontracted to a different service provider. In these cases, BPM6 recommends that "the value of services exported and imported in the economy of the service arranger is recorded on a gross basis" (BPM6, para 10.160). This approach implies that the "arranger" of the subcontracted service consumes that service and then supplies it to the customer.

Intermediation services provided by DIPs are fundamentally different from subcontracting. Subcontracted services involve a higher degree of engagement on the part of the arranger than digital intermediation platforms, which are often completely automated. DIPs, in fact, are deemed never to take ownership of the goods nor render the services that

they intermediate. Thus, this Handbook recommends recording only the intermediation fees, not the full value of the products being intermediated, in the accounts of DIPs. This view, which better reflects the economic substance of these types of transactions, is consistent with more recent research conducted in the context of the BPM6 (IMF, 2009) and SNA update processes.[18]

2.7 Recommended reporting template

As a result of the multi-dimensional nature of digital trade, guidance is needed on how to aggregate various statistics within a standardized reporting mechanism that could form the basis for digital trade accounts. Table 2.1 provides the template recommended by this Handbook to compile and present digital trade transactions.

The template includes the two main components of digital trade, namely digitally ordered trade (item 2) and digitally delivered trade (item 3). It allows both of these components to be measured in the way that best suits the compiler. For example, it is possible to use ICT/e-commerce surveys for digitally ordered trade and services trade sources for digitally delivered trade. The template also includes an item for digitally ordered services trade (item 2.2), which would be readily available from ICT/e-commerce surveys taking the common approach of collecting a monetary value for e-commerce and then using additional questions for breakdowns (e.g., domestic sales and sales abroad; between sales of goods, digitally delivered services, and other services – see Chapter 3).

The template also allows for cases where compilers might only have access to information *either* on total digitally ordered trade *or* on total digitally delivered trade, and might collect information on the overlap through the sources used for either one of these. As long as an estimate of the double-counting (item 4) is available from either side, it can be subtracted when aggregating digitally ordered trade and digitally delivered trade to get total overall digital trade.

The template is meant to provide a feasible approach to making digital trade more visible in existing international trade statistics, while preserving comparability across countries. However, based on the resources available to compilers and on specific policy needs, the template can be expanded to include additional dimensions. For instance, a link between this template and the (Services) Trade by Enterprise Characteristics (TEC/STEC) framework could provide valuable insights on the role of MSMEs or foreign controlled enterprises in digital trade. Additional breakdowns by type of exporter/importer (by institutional sector) could also prove particularly relevant. In any case, it is important to provide metadata on the institutional sectors, industries, sizes of firms, etc. covered by digital trade estimates to facilitate user understanding and allow international comparisons.

Two addendum items, *digital trade in services* and *digitally deliverable services*, are proposed in the template. Digital trade in services provides a total for digitally ordered and/or digitally delivered services. The category of digitally deliverable services is included in recognition of the fact that, in most cases, compilers should be able to produce estimates for this addendum item without modifications to existing sources, i.e., by identifying within existing trade statistics the service categories that are digitally deliverable (see Chapter 4).

2.8 Work on updating national accounts and balance of payments standards

The conceptual framework presented in this Handbook is designed to align with the broader macroeconomic standards, namely the SNA 2008 (UN, 2008a), BPM6 (IMF, 2009), IMTS 2010 (UN, 2011) and MSITS 2010 (UN et al., 2010). Any updates to those (notably, any change in the production boundary) will, by construction, be reflected in the measurement framework with no impact on the statistical definition of digital trade.

At the time of preparing this Handbook, work on updating the national accounts and the balance of payments standards, led by the UN Advisory Expert Group on National Accounts (AEG) and the IMF Committee on Balance of Payments Statistics (BOPCOM), respectively, was still ongoing. Digitalization featured prominently in the research agenda of both workstreams, and the updated System of National Accounts (SNA) and Balance of Payments and International Investment Position Manual (BPM) are to include common chapters addressing the impact of digitalization on macroeconomic statistics.

The update process towards SNA 2025 and BPM7 provides a number of clarifications which are likely to be useful to compilers even before the new macroeconomic standards are in place. This section provides a brief overview of some of the main research issues related to digitalization that impact international trade. Those issues are addressed in the guidance notes (GNs) listed below.[19]

- **Digital intermediation services (GN C.4)**
  This guidance note clarifies the difference between services subcontracting and transactions in which an intermediary arranges (or intermediates) the supply of a service without rendering the service itself. The latter category, which can be extended to cover intermediation of goods, includes DIPs. The guidance note assimilates these "intermediation services" with services provided by agents; it

TABLE 2.1: REPORTING TEMPLATE FOR DIGITAL TRADE

Item			Total exports	Total imports
1	**Total digital trade**	2+3 minus 4		
2	**Digitally ordered trade**	2.1+2.2		
2.1	Goods			
2.1.a	*of which: via DIPs*			
2.2	Services			
2.2.a	*of which: via DIPs*			
3	**Digitally delivered trade**			
3.a	*of which: via DIPs*			
4	**Digitally ordered *and* digitally delivered trade**			
4.a	*of which: digital intermediation services*			
	Addendum items			
A.1	Digital trade in services	2.2+3 minus 4		
A.2	Digitally deliverable services	>3		

Note: Transactions should be broken down by relevant product groupings (EBOPS 2010 for services and, for example, the Harmonized Commodity Description and Coding System (HS) or the Central Product Classification (CPC) for goods). Annex B provides a number of examples to guide compilers in using the reporting template to record digital trade transactions.
Source: IMF, OECD, UNCTAD and WTO.

recommends recording the fees of DIPs separately from the main transaction, under *trade-related services*. The present Handbook also recommends recording DIP fees in the same manner (see Section 2.3 and Chapter 5).

- **Cloud computing (GN DZ.8)**
  With the aim of making cloud computing more visible in the macroeconomic accounts, this guidance note defines cloud computing services as *"computing, data storage, software, and related IT services accessed remotely over a network, supplied on demand and with measured resource usage that allows charging on a pay-per-use basis"*. The note recommends treating payments for software subscriptions as purchases of services, while long-term licences for software should be considered fixed assets regardless of whether the software is hosted in the cloud. International transactions in cloud computing should be recorded under computer services, as digitally ordered and digitally delivered trade as appropriate.

- **Non-fungible tokens (NFTs) (GN DZ.10)**
  This guidance note defines NFTs as digital records hosted on a blockchain that are associated with a digital or physical asset, and which may serve a functional purpose. NFTs record the rights assigned to their owner and are distinct from the associated asset or product.

  The guidance note recommends recording NFTs based on the rights conferred upon the owner:

  (a) NFTs that confer personal use and display rights to the associated digital or physical asset should generally be recorded as consumption, although some such NFTs may gain the features of valuables.

  (b) NFTs that confer some commercial rights, or other rights beyond personal use, without ownership of the associated asset (e.g., right to print t-shirts with the image) should be seen as contracts, licenses or leases.

  (c) NFTs that confer full ownership of an associated digital or physical asset should not be recorded as assets (this presumes that the asset itself is already recorded).

  International transactions in NFTs for personal use, as per point (a), are generally to be recorded in services, as digitally ordered and digitally delivered trade as appropriate.

- **Fintech (GN F.7)**
  This guidance note discusses the implications of the new financial products, services, technologies and access modes introduced by fintech (i.e., financial technology). Fintech activity and transactions are to be allocated within the existing institutional sector, activity and product breakdowns and separately identified (with "of which" categories) where relevant. This also applies to international trade in services.

- **Crypto assets (GN F.18/GN DZ.2)**
  In 2023, BOPCOM and the AEG agreed on the treatment of non-liability crypto assets as non-produced non-financial assets and therefore excluding them from the scope of digital trade.

- **Recording of data (GN DZ.6)**
  Data that are produced and used in production for more than one year meets the SNA characteristics of an asset and, as such, should be capitalized in national accounts. Data can be sold in a market transaction and international transactions in data are to be recorded in services, digitally ordered and digitally delivered as appropriate.

Endnotes

1 Ahmad and Schreyer (2016) show that there is no systematic under- or overestimation of international trade because of digitalization.

2 For the purpose of this publication, the terms "goods" and "merchandise" are used interchangeably to describe goods "which add to or subtract from the stock of material resources of a country by entering (imports) or leaving (exports) its economic territory" (UN, 2011).

3 While foreign affiliates statistics (FATS) are not directly part of the digital trade framework, adding the digitally ordered/digitally delivered dimensions to FATS could enhance the understanding of affiliate activities in digital trade, including for digital intermediation platforms (DIPs).

4 For instance, database services are currently recorded as trade in services (in BPM6 (IMF, 2009) under the category "Telecommunication, computer and information services"). However, many other services transactions can include a data component.

5 Clarifications 1, 3 and 6 directly proceed from the OECD definition of e-commerce (OECD, 2011).

6 The language reflects the exact supporting text quoted in the OECD definition. For the purposes of this Handbook, references to the "web" should be interpreted as the "internet", including access to the internet via mobile devices.

7 i.e., "International transactions that are delivered remotely in an electronic format, using computer networks specifically designed for the purpose" (OECD, WTO and IMF, 2019).

8 DIPs in this Handbook exclude financial intermediation.

9 Digital intermediation services exclude financial intermediation.

10 The framework for digital SUTs has been endorsed by the UN Advisory Expert Group on National Accounts (AEG), which oversees the overall 2008 SNA update programme. See https://unstats.un.org/unsd/nationalaccount/RAdocs/ENDORSED_DZ5_Digital_SUTs.pdf.

11 Notwithstanding the ongoing discussions concerning the classification of transactions related to 3D printing, the scope of goods and services in this Handbook reflects that of SNA 2008 (UN, 2008a), BPM6 (IMF, 2009), IMTS 2010 (UN, 2011) and MSITS 2010 (UN et al., 2010).

12 This approach is in line with the proposed classification of services transactions in the Balance of Payments and International Investment Position Manual (BPM7), which is currently in preparation; see https://www.imf.org/-/media/Files/Data/Statistics/BPM6/CATT/c6-trade-in-services-classifications.ashx.

13 The OECD Handbook on Compiling Digital Supply and Use Tables (OECD, 2023) identifies seven digital industries which cluster institutional units based on the way they leverage digitalization rather than based on the conventional activity breakdown. This section lists, among them, the three categories that are most relevant for digital trade.

14 The definition of e-tailers is based on the International Standard Industrial Classification of All Economic Activities (ISIC) definition of retailers, which precludes services.

15 It is important to stress that, while the non-monetary transactions related to these online platforms are outside of the scope of the current measurement framework, the revenues, value-added, employment, etc. of these entities (generated or sustained through sales of advertising and data services) will be recorded in the economic accounts.

16 See https://unstats.un.org/unsd/nationalaccount/RAdocs/DZ3_GN_Free_Digital_Products_Core.pdf.

17 See https://unstats.un.org/unsd/nationalaccount/snaupdate/dztt.asp.

18 See https://www.imf.org/-/media/Files/Data/Statistics/BPM6/CATT/c4-merchanting-and-factoryless-producers-clarifying-negative-exports-in-merchanting-and-merchanting.ashx.

19 These guidance notes are available via the https://unstats.un.org/unsd/nationalaccount/SNAUpdate/GuidanceNotes.asp and https://www.imf.org/en/Data/Statistics/BPM webpages.

3. Digitally ordered trade

This Handbook defines digitally ordered trade as the *"international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders"*. This chapter describes how existing enterprise and household surveys targeting e-commerce provide a basis for measuring digitally ordered trade. It highlights the significant challenges that survey respondents, in particular households, can face when identifying and reporting international transactions, especially when these pass through digital intermediation platforms.

This chapter provides concrete country examples, as well as recommendations, in the context of the use of surveys and additional data sources by compilers to estimate the components of digitally ordered trade.

3.1 Identifying digitally ordered transactions

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

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

This is aligned with the 2009 OECD definition of e-commerce (OECD, 2011), but focuses only on international transactions.

The payment and ultimate delivery of the goods or services do not also have to be conducted online. Digitally ordered trade transactions can involve participants from all institutional sectors, and can cover orders made over the internet, via an extranet[1] or via electronic data interchange (EDI) messages[2]; and orders made by phone, fax or manually typed email are excluded (see Box 3.1).

A trade transaction is "digitally ordered" when the order is placed and received *both*:

1. "over computer networks", and
2. "by methods specifically designed for the purpose of receiving or placing orders".

In most cases, the internet will be the "computer network" facilitating digitally ordered trade. Nevertheless, digital orders may also take place through private networks, such as direct network connections between (usually large) companies and their business customers. See Box 2.1 in Chapter 2 for further clarifications on computer networks.

Digital ordering covers orders placed through websites or apps via an "online shopping cart" or order form. This is the case whether the website or app concerned belongs to the seller or is that of a third party, such as an online marketplace or auction site. Digital orders can also be placed through extranet ordering systems and via EDI-type (i.e., machine-to-machine) messages.

Some "chat bots" or "virtual agents" also have features allowing digital orders to be placed. These are "a computer generated, animated, artificial intelligence virtual character that serves as an online customer service representative" (Eurostat, 2021b). Customers place orders through an automated "structured conversation", during which the customer is prompted to provide the information needed to fill in an order form. Orders placed through voice commands issued to virtual assistants (such as those embedded in mobile phones and smart speakers) also meet the criteria outlined above and international transactions should be included in digitally ordered trade.

In most cases, it is straightforward to apply the concept of digital ordering to an international transaction and to identify what transaction value should be included in digital trade. Examples of various digitally ordered transactions are given in Annex B, along with guidance for their entry into the reporting template for digital trade set out in Chapter 2.

However, digital ordering is also a feature in certain more complex transactions. Some digital orders give rise to an ongoing provision of services with accompanying payments (recurring transactions). Examples include subscriptions to streaming media, online software and gaming services, subscriptions for online platform delivery services, and clothing rental subscriptions, among many others.

Although the order is placed only once, the service continues over subsequent periods as long as it is not cancelled and the subscription fee is paid. All transactions associated with international digital orders placed in the current statistical reporting period should be included in digitally ordered trade. In principle, the subsequent transactions can be regarded as digitally ordered (i.e., as an extension of the original digital order) and can also be recorded as digitally ordered trade. However, in practice it is likely that firms will not have the information needed to identify the original ordering method associated with recurring payments – especially for subscriptions which began years or even decades in the past. It may therefore be necessary to estimate the share of total subscription income in the current period arising from digital orders. One possibility is to do so based on the share of digital ordering among subscriptions initiated in the current period. This can be conceived as reflecting the share of digital ordering which would arise if customers had to place a new order each time instead of the service automatically renewing.

In some cases, two parties in different countries may agree an over-arching "framework contract" for the provision of goods or services from one to the other. An example would be an agreement under which a company in Country A becomes the exclusive supplier of certain products to a business in Country B. The framework contract may be negotiated and agreed in person and set parameters such as unit prices, minimum purchase volumes and the duration of the agreement. Online orders ensuing under the agreement should be included in digitally ordered trade.

Box 3.2 looks at how digital ordering is identified and applied in further specific cases.

Having set out the defining features that identify digitally ordered trade transactions, Section 3.2 examines sources and methods for measuring digitally ordered trade. Section 3.3 looks at measuring the overlap between digitally ordered trade and digitally delivered trade. Finally, Section 3.4 identifies key recommendations and presents a summary table offering an overview of the strengths and limitations of the sources available.

Box 3.1: UNCTAD guidance related to the definition of e-commerce

The OECD definition of e-commerce excludes orders placed by phone, fax and manually typed emails. The reason is that these ordering methods were not "specifically designed for the purpose of receiving or placing orders".

Nevertheless, emails and other forms of manually typed messages, such as those sent via messaging apps or social networks, can be used to place and receive orders online. This is particularly the case in some developing countries, where such messaging provides businesses, and especially small businesses, with a low-cost, easily accessible way to take orders via the internet, even when access to digital equipment, infrastructure and skills is limited.

For example, the sharp increase observed in the number of businesses in Brazil selling online during the COVID-19 pandemic (from 56 per cent of all businesses in 2019 to 74 per cent in 2021) was mainly driven by orders placed via messaging apps (from 42 per cent of businesses selling online to 78 per cent), email (39 per cent to 62 per cent) and social networks (20 per cent to 39 per cent). Furthermore, such orders were especially important for firms that sell online through only one channel (UNCTAD, 2023).

In operationalizing the OECD definition of e-commerce, the UNCTAD Manual for the Production of Statistics on the Digital Economy 2020 (UNCTAD, 2021a), states that *"to take into account the different levels of technological development in countries, the Partnership [on measuring ICT for development] recommends collecting data on orders received or placed over the internet, including by email"*. Accordingly, countries may vary in their inclusion or exclusion in e-commerce statistics of orders made by means of manually typed emails. Indeed, several OECD members include orders via email in their published business e-commerce sales figures (UNCTAD, 2023).

This highlights how important it is that all aspects of survey coverage are clearly recorded and communicated to users, in order to allow proper interpretation and comparison of the resulting statistics. In cases where manually typed messages are included within the scope of e-commerce, the value of these transactions should ideally be measured separately from those occurring through other e-commerce channels. If that is not possible (e.g., due to respondent burden), it is recommended to ask respondents if the amounts reported include orders (or purchases) placed via messages, as this gives an indication of the prevalence of this ordering channel and the potential scale of transactions involved. An example of this is available in the UNCTAD model questionnaire for business surveys on the use of ICT (see UNCTAD (2021a), Annex 2).

Source: UNCTAD.

3.2 Measuring digitally ordered trade

As noted in Section 3.1 (and illustrated in Figure 1.4 in Chapter 1), digitally ordered trade consists of international e-commerce transactions. Any e-commerce transaction involves two main parties – a buyer and a seller. These roles may be filled by any combination of businesses, households, government bodies, or non-profit institutions serving households (NPISHs). The most common and widely analysed e-commerce flows are business-to-business (B2B) and business-to-consumer (B2C) transactions.

One implication of this is that measures of businesses' e-commerce revenues and households' e-commerce expenditures in a given economy will partially overlap because of businesses selling to consumers in the same economy. In the international trade context, however, either the buyer or the seller is always outside the compiling economy. Sources measuring digitally ordered sales to, and purchases from, parties abroad by businesses and households in the compiling economy will therefore yield results that are mutually exclusive and additive.

Many e-commerce transactions also involve a third party – a digital intermediation platform (DIP), which acts as an intermediary. This can introduce several complicating factors.

First, the involvement of a third party in the transaction can make it harder to assess whether the buyer and seller are resident in the same country – especially for survey respondents, who may believe they are purchasing from the DIP itself and/or might not know whether the DIP is resident in their country or not. This can lead to cases where a transaction between domestic parties is reported as international e-commerce because the DIP is a foreign resident; or where a cross-border e-commerce purchase is not reported as trade because the DIP is resident in the same country as the buyer.

Second, in facilitating the transaction, the DIP itself provides digital intermediation services to both the seller and buyer, which should be recorded as digitally ordered and digitally delivered trade in cases where the

Box 3.2: Digital ordering in specific cases

Financial, insurance and pension services

As noted in Chapter 2, financial, insurance and pension services are considered to be within scope for digital trade. This is in recognition of the very significant impact that digitalization has had on how these products are subscribed to and supplied, including across borders, even though many of the core services (such as liquidity provision and risk management) do not directly rely on their ability to be digitalized.

Financial, insurance and pension services are considered to be digitally ordered when the customer (whether an individual or organization) applied online for the service – e.g., opening a bank or trading account, taking out a loan, or subscribing to an insurance or pension contract.

Some financial, insurance and pension services may have features of both digital and non-digital ordering. For example, a customer may subscribe online to a share dealing service, paying a monthly fee which would be recorded in digitally ordered trade. Under the contract, the customer might give instructions for the purchase or divestment of shares and as a result have to pay a specific "action fee". The instruction and associated action fee should be regarded as a separate order/transaction and assessed according to whether or not the order was placed digitally.

In some cases, when a customer requests an evolution of a contract, it is necessary to consider this as giving rise to a separate transaction. For example, a business might take out an employee travel insurance policy from a provider located abroad. As the order was placed online, this transaction and ensuing subscription payments are included in digitally ordered trade. Several months later, the company contacts the insurer *by phone* to extend the policy to cover loss or damage to specialized equipment during business travel, increasing the total insurance premium to be paid. This can be regarded as establishing a new contract/transaction, and the ensuing premium payments would be excluded from digitally ordered trade, as the order was placed by phone.

The complexity of financial insurance and pension services may make the above distinctions difficult for some providers of these services to operationalize and report upon. It is recommended that specific guidelines should be developed to help such enterprises in responding to surveys, and that these guidelines should be shared internationally so that other compilers may learn from them.

Mobile roaming services

An individual using their home country SIM card to connect to and receive service from a cell network in a country they are visiting purchases this service from their home country telecommunications provider. The trade transaction is therefore between the host and home country telecommunications providers and should reflect the amount charged by the former to the latter for the roaming service. This amount should be included in digitally ordered trade.

Transactions between affiliated enterprises

A high proportion of imports and exports of goods and services are between affiliated enterprises. Affiliated enterprises can use private networks or proprietary computer systems for the purpose of receiving and placing orders between members of the group. The same principles apply as for trade between unaffiliated enterprises, and orders via such systems would constitute digitally ordered trade.

Source: IMF, OECD, UNCTAD and WTO.

DIP is resident in a different economy from the buyer/seller (even when the buyer and seller are resident in the same country). See Chapter 5 for more on measuring and recording transactions involving DIPs.

No single source can offer a holistic measure for digitally ordered exports and imports at the whole economy level. Figure 3.1 maps potential sources of data on digitally ordered trade according to coverage of digitally ordered export and import trade flows involving different institutional sectors. It also maps the sources' ability to collect data on the digitally ordered trade items in the reporting template for digital trade set out in Chapter 2. The extent of alignment with the digital ordering concept itself is also considered.

As few countries are likely to have all these potential data sources in place, a key purpose of Figure 3.1 is to support compilers in identifying potential sources and considering the coverage they can offer individually and collectively. The section references given in Figure 3.1 indicate where further details on each source can be found in this chapter, while Table 3.2 gives a complementary overview of the strengths and limitations of these data sources in terms of measuring digitally ordered trade.

A key benefit of survey sources is that they can be designed to cover the relevant institutional units, trade flows and reporting items, while also ensuring alignment with the relevant concepts. In contrast,

alternative data sources can offer the potential to avoid the cost and burden associated with surveys, but they often necessitate compromises on the coverage of institutional units or trade flows, the availability of reporting items, or on alignment with the digital ordering concept.

Business transactions are a natural starting point when measuring digitally ordered trade. E-commerce enables businesses to make sales, including across borders. Box 3.3 provides evidence that it is reasonable to assert that businesses account for a significant majority of e-commerce sales by value and that they are therefore also likely to comprise a majority of digitally ordered exports.

Figure 3.1: Institutional sector and conceptual coverage of digitally ordered trade sources

	Businesses								Households				Government/ Non-profit institutions serving households (NPISH)		All institutional sectors			
Source	Information and communications technology (ICT) surveys		Core business surveys		Multinational enterprise (MNE) surveys[1]		Value added tax (VAT) returns[2]		ICT surveys		Card payments[3]		ICT surveys		Customs declarations[4]		Low-value trade estimates[5]	
Section reference	3.2.1						3.2.2		3.2.1		3.2.2		3.2.1		3.2.2			
Exports (X) / Imports (M)	X	M	X	M	X	M	X	M	X	M	X	M	X	M	X	M	X	M
Digitally ordered trade																		
Goods																		
of which: via DIPs																		
Services																		
of which: via DIPs																		
Digitally ordered and digitally delivered trade																		
Legend:	Partial coverage / conceptual alignment (see notes)																	
	Full coverage / conceptual alignment (depending on survey design)																	

Notes:

1 Partial coverage – MNEs only; conceptual misalignment – may include sales through local subsidiaries/affiliates outside the compiling country. MNE surveys tend to focus on sales (exports) and not to cover businesses' purchases (imports).

2 Partial coverage – only VAT registered businesses; may exclude businesses which sell online through channels other than their own website/webshop (e.g., via online marketplaces or EDI); possible over-coverage – may include offline sales by businesses selling online.

3 Partial coverage – only payments made by card; possible over-coverage – may include payments made on corporate/business cards or payments made on personal cards for business purposes. Breakdown into goods, services, digitally delivered services may be possible based on merchant category codes.

4 Partial coverage – only goods above relevant customs/statistical thresholds.

5 Partial coverage – only goods below relevant customs/statistical thresholds.

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

Source: IMF, OECD, UNCTAD and WTO.

Furthermore, according to UNCTAD estimates, around 80 per cent of businesses' e-commerce sales (by value) are made to buyers that are also businesses (UNCTAD, 2021c). Thus, sources that capture the purchases businesses make via e-commerce would, by extension, be expected to cover a significant portion of digitally ordered imports.

Businesses are also central actors and stakeholders in all the various policy areas related to digital trade set out in Chapter 1, including international trade and customs policy, competition policy, taxation policy, and economic growth and development. Measures of the value created and captured by businesses through digitally ordered trade are a key area of user need.

Digitally ordered trade involving businesses as both sellers (exports) and buyers (imports) should therefore generally be the highest measurement priority. Nevertheless, situations will vary across countries, and compilers of digital trade statistics should assess the prevalence and importance of cross-border e-commerce transactions involving government units, NPISHs, and, especially, households to establish priorities and ensure that the statistics produced are sufficiently exhaustive and representative.

As goods account for over three quarters of global trade (WTO, 2022), and the limited evidence available suggests that around two-thirds of e-commerce sales relate to goods (see Section 3.3), digitally ordered trade in goods can be another key potential starting point for measurement. The main source for merchandise trade statistics is data gathered through customs declarations. When complemented by low value trade estimates, these provide a holistic measure of all exports of goods from, and imports of goods to, the compiling economy. Implementing the identification of digitally ordered shipments in customs systems offers the possibility of measuring a large component of digitally ordered trade in a way that cuts across institutional sectors and is directly integrated with international merchandise trade statistics (see Section 3.2.2).

A key implication of Figure 3.1 is that it will be necessary to combine data sources to gain statistics representing the whole economy. The subsections following hereafter examine these various data sources in more detail. For example, in certain situations (see Section 3.2.2), card payments data might offer a robust measure for household expenditure on digitally ordered imports that is complementary to measures of business imports derived from surveys (Section 3.2.1). Customs-based measures of digitally ordered trade in goods (Section 3.2.2) would need to be complemented with figures on digitally ordered services imports derived from other sources.

Related to this is microdata linking. For example, by integrating goods and services trade data with responses from business ICT surveys, it would be possible to identify both exporting businesses which make at least some sales via e-commerce and importing businesses which use e-commerce to purchase at least some of their inputs (or to estimate the propensity that a trading business with given characteristics does either of these). With the total imports and exports of these businesses known from goods and 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 ordered.

3.2.1 SURVEY SOURCES

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

Up until now, most efforts to measure the value of e-commerce have focused on businesses and households. Surveys can ask businesses about their sales revenues from e-commerce transactions and about their expenditures on purchases (e.g., of material inputs, services, etc.) via e-commerce. Meanwhile, given the primary role of households as consumers, household surveys have focused more on measuring their e-commerce spending. Nevertheless, there are examples of measuring households' online income from selling items (such as crafts or second-hand items) and/or services (e.g., accommodation, transport, delivery services, etc.).

The following sub-sections examine the use of business surveys, household surveys, and surveys of government units or NPISHs to gather information relevant to measuring/estimating digitally ordered trade.

BUSINESS SURVEYS

ICT surveys

The most widely adopted vehicle for measuring business e-commerce is surveys of ICT usage in business. Including similar but more specific "business e-commerce surveys", it is estimated that nearly 80 countries worldwide have undertaken such collections (UNCTAD, 2023). Annual business ICT surveys are legally mandated for EU member states and also take place in other countries participating in the European Statistical System (i.e., Bosnia and Herzegovina, Iceland, Montenegro, North Macedonia, Norway, Serbia, Türkiye).[5] Annual or biennial surveys are also carried out in most other OECD countries and in Brazil, which also submits statistics to the OECD database on ICT access and usage by businesses.[6]

Box 3.3: Evidence on businesses and households in e-commerce

On average across OECD countries, nearly 30 per cent of businesses received orders over computer networks in 2022.[3] In the same year, around 20 per cent of individuals sold goods or services online.[4] In Canada, 12 per cent of persons aged 15 years or older reported earning money online in 2020. The average earning from online activities was CAD 2,700 (around US$ 2,000). By comparison, in the following year the average e-commerce sales value was CAD 3.7 million across all businesses and over CAD 500,000 for small enterprises (Statistics Canada, 2022a).

In Japan in 2021, it is estimated that business-to-business (B2B) e-commerce transactions amounted to over YEN 370 trillion, business-to-consumer (B2C) e-commerce to almost YEN 21 trillion, and consumer-to-consumer (C2C) e-commerce to just YEN 2.2 trillion (METI, 2022). In 2013, C2C e-commerce accounted for only 1 per cent of the total value of e-commerce sales in the Republic of Korea (Statistics Korea, 2014).

Taken together, this evidence strongly indicates that businesses are the main actors in e-commerce and therefore, by extension, in digitally ordered trade.

Source: IMF, OECD, UNCTAD and WTO.

The frequency of business ICT surveys in other economies is more variable, but there are many examples of recurring collections, especially in Asia, including in China, Indonesia, Malaysia, the Philippines, Singapore and Thailand. Statistics from these countries can be found in the UNCTAD database of core indicators on ICT usage in business.[7]

Alongside monitoring a wide range of ICT uses, these surveys have long been used to ask businesses whether they have adopted e-commerce (UNCTAD, 2021a). Both the share of businesses making e-commerce sales and the share purchasing inputs through e-commerce are among the Core ICT indicators[8] established by the Partnership on Measuring ICT for Development in which the OECD and UNCTAD are active partners, along with various other regional and international organizations.[9] The core indicators have been officially adopted by countries through endorsement at the UN Statistical Commission. Even so, and although information on the *uptake* of e-commerce among businesses is useful for analytical and policymaking purposes, measuring the *monetary value* of e-commerce transactions, including those taking place across borders, is a crucial next step, which will allow e-commerce to be integrated into frameworks for economic statistics, including trade statistics.

To investigate the *value* of business e-commerce, a logical enhancement to business surveys is to ask each business that engages in e-commerce about its income resulting from e-commerce sales and its expenditure on e-commerce purchases. These can either be requested directly as monetary values, or as a percentage of the business' total sales income/expenditure.

A majority of the countries that conduct business ICT surveys have collected at least some value information. For example, EU member states have collected data on the value of turnover from e-commerce orders since 2012. However, as of 2023 only a relatively small number have published monetary figures on the value of e-commerce sales (UNCTAD, 2023).

In many cases, business ICT surveys supplement questions about whether the respondent engages in e-commerce sales with additional requests – most commonly about the customers to whom the responding business sells (businesses, government, consumers), and the sales channels used (own websites/apps, third-party websites/apps/marketplaces, EDI messages). Another common follow-on question asks whether the business has made e-commerce sales to customers abroad. A further extension implemented in a limited number of countries asks for a breakdown of the total value of e-commerce sales, as percentage shares or monetary amounts, for each of the domestic and international components (UNCTAD, 2023). From this information, the business' digitally ordered exports can be derived.

Box 3.4 presents an example of this approach from the Department of Statistics Malaysia, illustrating how the total value of e-commerce sales can either be collected directly as a monetary value or as a percentage of businesses' total sales revenue. It also shows how respondents are requested to provide the breakdown into e-commerce sales to customers domestically and abroad in the form of shares adding up to 100 per cent. The results published in Figure 3.2 show the total value of business e-commerce sales increasing rapidly over time, while the share of sales going to customers abroad also increased.

Also notable in this example is the guidance given to responding enterprises – such as digital intermediation platforms (DIPs) – which receive internet orders on behalf of other entities. In these cases, the DIP is instructed to enter only the fees

earned on the transaction. This mitigates the risk of double counting where the sale of accommodation services, for example, is reported both by the seller (e.g., a hotel) and within the value of transactions reported by the DIP (e.g., a hotel-booking platform). The inclusion in questionnaires of specific guidance such as this to help respondents in lines of business where the digital ordering concept may not be straightforward to interpret and apply, is recommended. As well as DIPs, businesses providing financial, insurance and pension services, and affiliated enterprises might especially benefit from specific guidance (see Box 3.3). For more information on the measurement and recording of transactions involving DIPs, see Chapter 5.

Many countries request more geographical detail on e-commerce sales abroad. For example, in EU surveys, responding businesses have been asked to delineate e-commerce sales to customers in the respondent's own country, in other EU member states and in the rest of the world (see Box 3.5). This was included as a mandatory breakdown for the first time in 2021, having been optional in 2019 and 2017. Importantly, though, the EU surveys do not collect a total value for e-commerce sales, but separate (sub)totals for "web sales" (sales through web sites and apps, including DIPs) and "EDI-type sales".[10] The cross-border breakdown was only specified for web sales, which in 2020 comprised 7 per cent of the turnover generated by businesses with 10 or more persons employed across all EU member states. By comparison, EDI-type sales accounted for almost double this share – 13 per cent of turnover on average. Results from this breakdown of web sales turnover were not released as part of the 2021 Eurostat value of e-commerce sales database.[11]

Several countries have moved toward a model of measuring bilateral digitally ordered trade flows. Box 3.6 presents an example from Canada's Survey of Digital Technology and Internet Use, which collects information on the shares of e-commerce sales revenue coming from different geographic regions and, in some cases, specific countries. The published results for 2021 show that 20 per cent of e-commerce sales by businesses in Canada were to customers abroad, with over three-quarters of these orders (by value) going to customers located in the United States (see Figure 3.3).

The United Kingdom Office for National Statistics (ONS) 2021 Digital Economy Survey took a somewhat similar approach, asking respondents to break down e-commerce turnover by geographic regions (Box 3.7). However, this and other details are nested within an over-arching question on businesses' turnover from sales to customers outside the United Kingdom. This top-down approach has two potential benefits. Firstly, respondents can break down their e-commerce turnover into that coming from abroad versus from domestic customers, even if they are unable to provide further details. Secondly, it allows the turnover from e-commerce sales to customers abroad to be broken down in various additional ways.

Of particular relevance to measuring digital trade is a breakdown into sales of goods, non-digitally delivered services and digitally delivered services, which can yield an estimate for the overlap between digitally ordered trade and digitally delivered trade (i.e., of digitally delivered services ordered via e-commerce). Shown as item 4 in the reporting template for digital trade (see Table 2.1 in Chapter 2), this is crucial to avoid double counting when compiling a measure of total digital trade. Section 3.6 looks at estimation of the overlap in more detail.

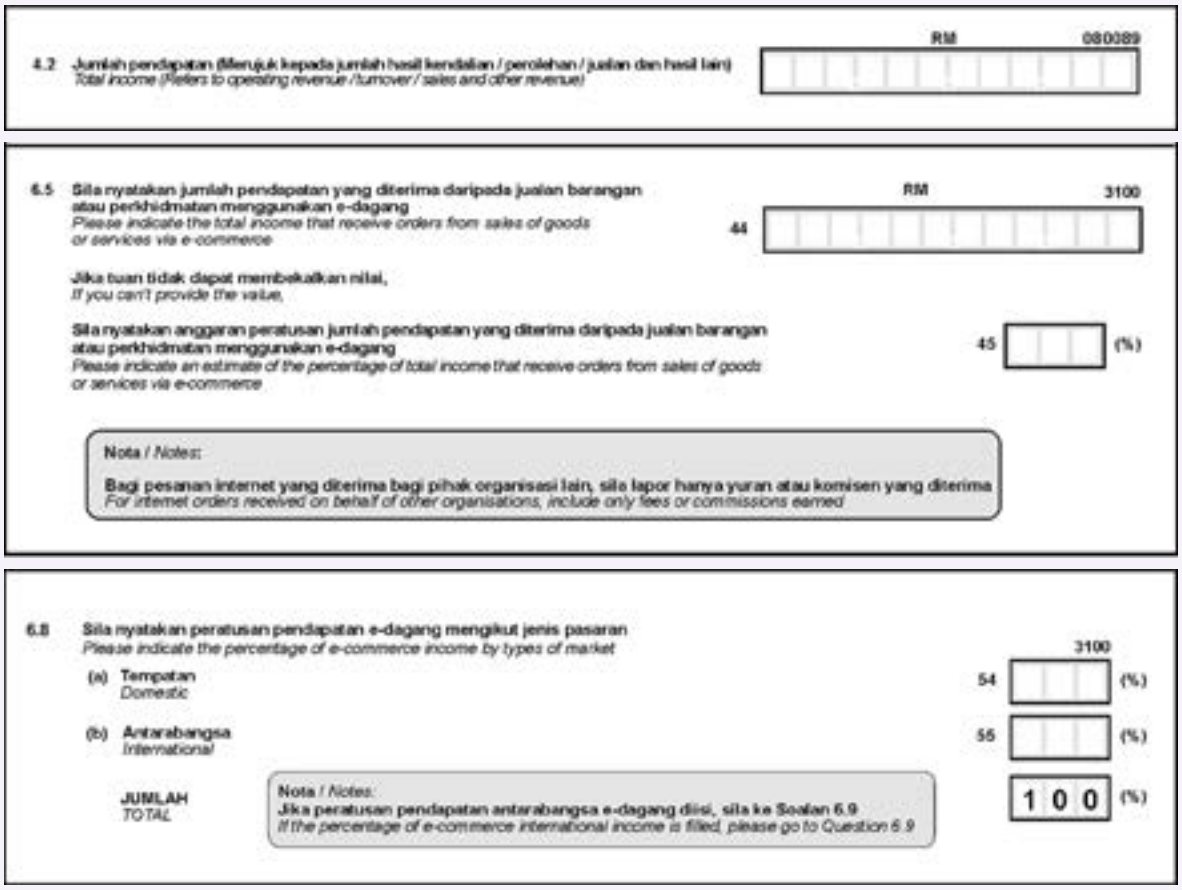
The ONS survey also collected a separate breakdown isolating the turnover via "online marketplaces" (i.e., DIPs) relevant to measuring items 2.1.a (digitally ordered trade in goods via DIPs) and 2.2.a (digitally ordered trade in services via DIPs) of the reporting template (see Table 2.1 in Chapter 2). The ONS example also illustrates how business ICT surveys can be used to gather information on a key component of *digitally ordered imports* – namely the value of goods and services ordered, via e-commerce, by domestic businesses from suppliers abroad.

Spain's Instituto Nacional de Estadística (INE) provides a further example of this (see Box 3.8). Published results show that, in total, business e-commerce purchases in Spain amounted to EUR 222 billion in 2020 (for comparison, total business e-commerce sales in Spain were EUR 275 billion in the same year). Spending via e-commerce amounted to 23 per cent of purchases across all businesses, and 45 per cent of purchases by businesses which used e-commerce to buy goods and services. Almost a quarter of these e-commerce purchases by businesses in Spain, EUR 53 billion in 2020, were from sellers/suppliers abroad, the majority of which were in other EU member states (see Figure 3.4).

The examples presented above demonstrate that business ICT surveys can be used to gather extensive detail on digitally ordered exports and imports by businesses – providing a basis for completing many elements of the reporting template for digital trade. Nevertheless, each additional question increases the burden on respondents and may potentially contribute to lower overall response rates. As is always the case, statistical compilers will need to balance the competing need for detailed information with the need to manage respondent burden and response rates. In this regard, it is important to note that the reporting template (see Table 2.1 in Chapter 2) offers flexibility, allowing countries to report key items, such as total digitally ordered trade and the sub-component relating to digitally delivered services, without imposing the need to collect all breakdown items.

Box 3.4: Measuring international e-commerce sales in Malaysia

The following questions on e-commerce sales income, including an apportionment into domestic and international e-commerce sales, were included in the 2020 Malaysia Survey on Usage of ICT and E-commerce by Establishment.



4.2 Jumlah pendapatan (Merujuk kepada jumlah hasil kendalian / perolehan / jualan dan hasil lain)
Total income (Refers to operating revenue / turnover / sales and other revenue)
RM 080089

6.5 Sila nyatakan jumlah pendapatan yang diterima daripada jualan barangan atau perkhidmatan menggunakan e-dagang
Please indicate the total income that receive orders from sales of goods or services via e-commerce
44 RM 3100

Jika tuan tidak dapat membekalkan nilai,
If you can't provide the value,

Sila nyatakan anggaran peratusan jumlah pendapatan yang diterima daripada jualan barangan atau perkhidmatan menggunakan e-dagang
Please indicate an estimate of the percentage of total income that receive orders from sales of goods or services via e-commerce
45 (%)

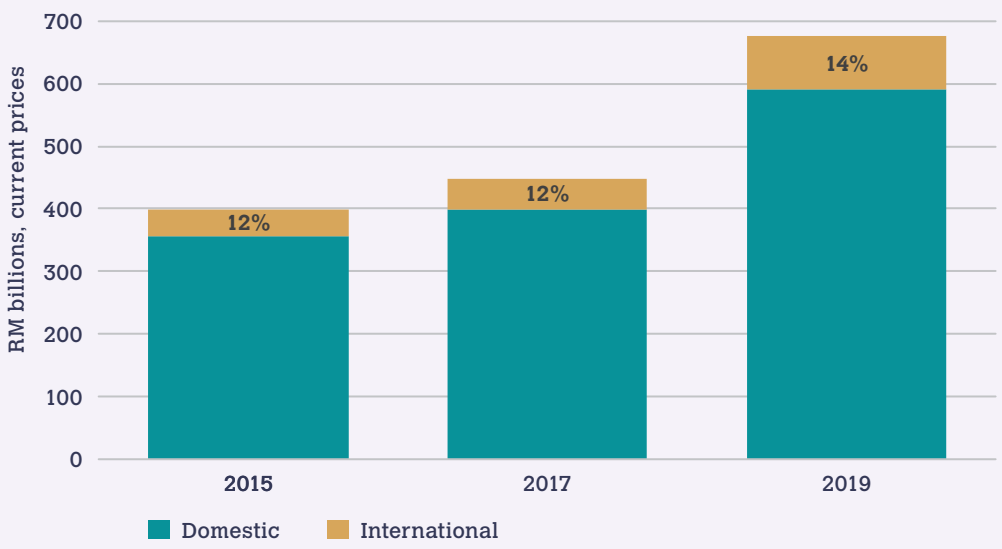
Nota / *Notes:*
Bagi pesanan internet yang diterima bagi pihak organisasi lain, sila lapor hanya yuran atau komisen yang diterima
For internet orders received on behalf of other organisations, include only fees or commissions earned

6.8 Sila nyatakan peratusan pendapatan e-dagang mengikut jenis pasaran
Please indicate the percentage of e-commerce income by types of market
3100
(a) Tempatan *Domestic* 54 (%)
(b) Antarabangsa *International* 55 (%)
JUMLAH *TOTAL* 100 (%)

Nota / *Notes:*
Jika peratusan pendapatan antarabangsa e-dagang diisi, sila ke Soalan 6.9
If the percentage of e-commerce international income is filled, please go to Question 6.9

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

Figure 3.2: Business e-commerce sales by customer location, Malaysia



Source: IMF, OECD, UNCTAD and WTO based on Department of Statistics Malaysia (2019; 2021).

Box 3.5: Measuring international e-commerce in businesses in the European Union

The following questions were included in the 2021 European Community Survey on ICT Usage and E-commerce in Enterprises (Eurostat, 2021b). This harmonized survey is implemented by EU member states and partner countries. The same questions were included as optional variables on the 2022 survey.

The harmonized survey only includes a breakdown of *sales via a website or apps* ("web sales") into domestic and international sales; as a result, this breakdown is not widely available for "*EDI-type sales*". This is important because around 65 per cent of e-commerce turnover earned by businesses in the EU27 countries comes from EDI-type sales.[12] Nevertheless, it should be noted that participating countries are free to collect additional details beyond those prescribed in the harmonized survey. For example, Spain has successfully collected and published this breakdown of EDI-type sales since 2015.

Question B2. What was the value of your web sales?
(WEB sales: the customer places the order on a website or through an app)

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

OR

b) What percentage of total turnover was generated by web sales of goods or services, in 2020? _____ %

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

Question B8. What was the percentage breakdown of the value of web sales in 2020 to customers located in the following geographic areas?
(Please refer to value of web sales you reported in B2)
If you cannot provide the exact percentages an approximation will suffice.

a)	Own country	___ %
b)	Other EU countries	___ %
c)	Rest of the world	___ %
	Total	100 %

Source: Eurostat (2021b).

It is important to note that business ICT surveys can vary significantly in their coverage of industries and small firms. In EU member states it is usual for surveys to exclude firms that employ fewer than 10 persons, while surveys in many other countries include such microenterprises. In addition, it is common to omit "Agriculture, Forestry, and Fishing" (ISIC Rev.4 section A), "Mining and Quarrying" (B), and "Public Administration and Defence" (O) from business ICT surveys. Under the EU model, "Finance and Insurance" (K); "Education" (P); "Human Health and Social Work" (Q); "Arts, Entertainment, and Recreation (R)"; and most of "Other service activities" (S) are also beyond scope.

This affects the exhaustiveness, and thus the comparability, of business e-commerce and digitally ordered trade figures across economies (UNCTAD, 2023). For this reason, statistical compilers are recommended to ensure that the coverage of business ICT surveys, and the methods and estimations applied to the responses gathered, are sufficient to derive digitally ordered trade estimates that are representative of all businesses. In any case, it is crucial that any exclusions and limitations in terms of representativeness are communicated to users and documented in metadata.

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

Box 3.6: Measuring international e-commerce sales by trading partner in Canada

The following questions measuring international e-commerce sales by trading partner were included by Statistics Canada in the 2021 Survey of Digital Technology and Internet Use.[13]

Question 21. What was this business's total gross sales conducted over the internet in 2021?
(If precise figures are not available or the year is not yet complete, please provide your best estimate in Canadian dollars)

_____ Rounded to the nearest CAN$

OR

Don't know

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

_____ %

OR

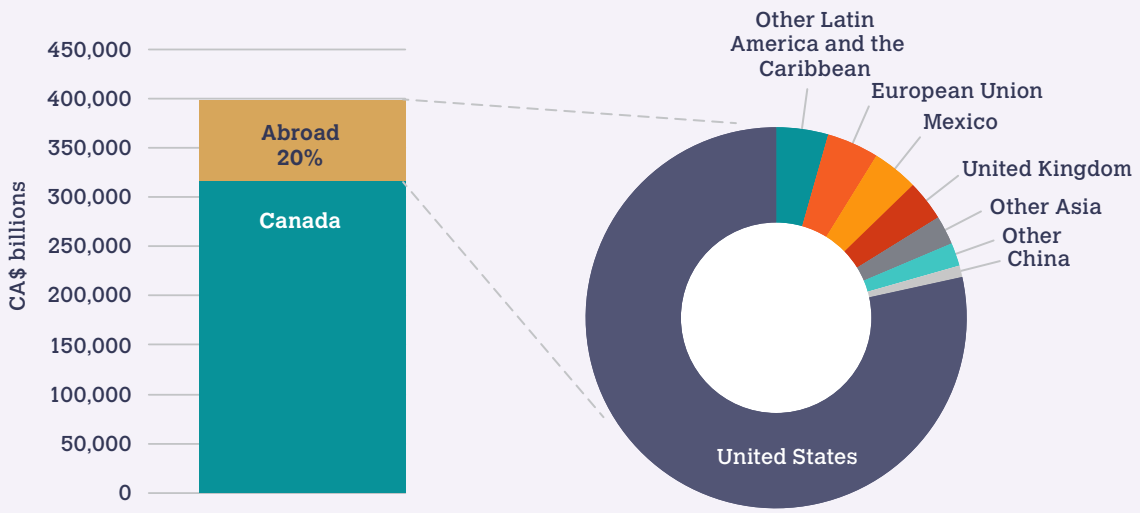
Don't know

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

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

Source: Statistics Canada (2021).

Figure 3.3: Business e-commerce sales by customer location, Canada, 2021



Source: Statistics Canada

Box 3.7: Measuring international e-commerce sales and purchases in the United Kingdom

The following extract from the UK Office for National Statistics 2021 Digital Economy Survey demonstrates the collection of a considerable range of details for both international e-commerce sales (exports) and purchases (imports) by businesses. These include the trading partners involved, the sales channels used – including online marketplaces (DIPs), and the types of products sold and purchased.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Source: United Kingdom Office for National Statistics.

Box 3.8: Measuring business e-commerce purchases from abroad in Spain

The following questions from the Instituto Nacional de Estadística Survey on the use of Information and Communication Technologies and Electronic Commerce in companies 2020 illustrate how ICT surveys can be used to measure the money businesses spend on purchases made via e-commerce, and to delineate domestic purchases from international purchases (digitally ordered imports).

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

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

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

Purchases by Electronic Commerce in 2020

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

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

Orders by messages or emails written manually are excluded.

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

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

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

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

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

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

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

Source: Instituto Nacional de Estadística (2020).

Figure 3.4: Business e-commerce purchases from abroad, Spain, 2016-20

Source: IMF, OECD, UNCTAD and WTO based on Instituto Nacional de Estadística (2022c).

Core business surveys

As an alternative to ICT surveys, some countries measure the total value of e-commerce sales through questions included on "core" macroeconomic business surveys. For example, the Annual Survey of Philippine Business and Industry was used to measure "sales from e-commerce transactions", broken down by ISIC Rev.4 industry sections (Philippine Statistics Authority, 2020). In Singapore, the Annual Services Industry Survey has been used to measure the "e-commerce revenue of the services sector", with a breakdown by industry and customer type (business or consumer) (Statistics Singapore (SingStat), 2021). In the United States, the Census Bureau measures e-commerce sales through the separate annual surveys of manufacturing, services, retail and wholesale businesses. Together, these offer a fairly comprehensive overall value for business e-commerce sales (United States Census Bureau, 2021).

Although none of these surveys measure international e-commerce transactions, information on the total value of e-commerce may be combined with information collected on imports and exports by these businesses to derive first estimates of digitally ordered trade. Such collections could, in principle, be built upon in a similar top-down approach to that outlined for business ICT surveys above. In so doing, routine business activity surveys could become a vehicle for measuring digitally ordered trade. This approach could offer some benefits compared to ICT surveys, including wider coverage of industries and firm sizes and closer integration of the resulting measures with major economic aggregates such as gross value added of the business sector and GDP.

Mainstream enterprise surveys that gather headline information on digitally ordered sales and purchases can also be used alongside more detailed ICT surveys (if appropriate assumptions are made and care is taken). This approach would combine the benefits of population coverage of the mainstream surveys with the more detailed breakdowns that can be collected in the ICT survey.

Another possibility could be to add questions on digital ordering to international trade in services surveys. While these surveys do not cover digitally ordered goods, this could be a useful approach for collecting further information on digital ordering directly integrated into the key sources for data on services trade transactions, and could potentially provide insights on the overlap between digital ordering and digital delivery. Furthermore, in countries where the collection of economic data is fragmented across multiple sector specific questionnaires, and potentially across multiple statistical agencies, it may be easier for compilers of international trade statistics to add questions to the appropriate trade survey(s).

Given the emphasis on developing a better understanding of the digital economy more generally, and of digital trade in particular, statistical compilers should explore whether additional relevant questions could be mainstreamed in core business surveys used to derive structural business statistics and/or in international trade in services surveys. The sample survey questions and experiences presented for business ICT surveys could serve as a starting point for developing questions for use in other business surveys.

Multinational enterprise surveys

Surveys of multinational enterprises (MNEs) offer yet another possibility for collecting data concerning digital ordering as well as digital delivery (see Chapter 4) and digital intermediation platforms (see Chapter 5).

While MNEs comprise a subset of businesses, and such surveys will not, therefore, cover all digital trade transactions, they can account for a large share of goods and services trade. For example, in the United States, over 90 per cent of services trade and a majority of goods trade was driven by MNEs (Bruner and Grimm, 2019). Questions on surveys of MNEs therefore have the potential to measure a considerable portion of digital trade.

MNEs can be included in general balance-of-payments surveys (e.g., international trade in services surveys), or they can be surveyed separately for the required official international accounts statistics. Units in national statistics offices or central banks responsible for dealing with MNEs, known as large case units (LCUs), are common; their goal is to ensure that MNEs are well understood by statistical compilers and correctly represented in economic statistics. The LCU may collect additional information on MNEs, such as balance sheets or income statements and sales (to both domestic and foreign customers), that can contribute toward measures of digital trade.

MNEs are also often surveyed on topics of special interest, such as the digital economy. They may be asked if they engage in online sales and asked to report on the share of their sales revenues arising from digital sales, as well as the share of their sales that are digitally delivered (see Box 3.9). The resulting data can be used alone to give partial measures of digital trade or can be combined with trade data at an aggregate or microdata level to produce more exhaustive digital trade statistics. An additional benefit of collecting information on digital trade data via MNE surveys is that information can be collected for trade in goods and in services in the same survey.

HOUSEHOLD SURVEYS

E-commerce has made it much easier for households to find and buy products from abroad, as well as providing opportunities for them to sell goods and services online. Surveys of ICT access and usage in households and by individuals have been used to measure the proportions of individuals purchasing and selling goods and services online at the whole economy level (ITU, 2020).[14] As for business surveys, it is less common that information on the value (as opposed to the incidence of) of e-commerce transactions by individuals, and furthermore of cross-border transactions, has been collected.

Box 3.9: Measuring digitally ordered trade by multinational enterprises in the United States

The United States Bureau of Economic Analysis (BEA) has collected shares of sales that are digitally ordered or digitally delivered using its surveys of the activities of multinational enterprises.

Questions were first introduced in the BEA 2019 Benchmark Survey of US Direct Investment Abroad for both US parent companies and their foreign affiliates. The questions collected the shares of:

1) services sales that are digitally delivered;
2) services sales that are digitally ordered; and
3) goods sales that are digitally ordered.

Similar digital economy questions have been included in the 2022 BEA Benchmark Survey of Foreign Direct Investment in the United States.

As is typical of special topic questions, they were only included on the version of the form filed by the largest reporters. Respondents were asked to report the shares using checkboxes that indicated percentage ranges, and to provide reasonable estimates based on informed judgement, sampling techniques or prorations (i.e., proportional calculations) based on related data if direct measures were not available and indicating the basis for their responses. As many survey respondents are not familiar with the concepts of digital ordering and digital delivery, it was necessary to include simple definitions, prepare supplementary guidance and follow up directly with many respondents to ensure accurate responses.

TABLE 3.1: BEA MULTINATIONAL ENTERPRISE QUESTIONS ON DIGITAL ORDERING AND DELIVERY, 2019

Digitally ordered pertains to the sale of a good or service conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders, negotiating terms of sales or price. This covers orders placed over an electronic data interchange, the internet, mobile devices, or any other online system.

Digitally delivered services are those that are delivered remotely over information and communications technology networks — i.e., over voice or data networks, including the internet, or in an electronically downloadable format.

	Check the appropriate percentage range (check one)							**The information provided is based on (check one)**	
	0%	1- 24%	25-49%	50-74%	75-89%	90-99%	100%	Accounting records	Recall/general knowledge of operations
Percentage of sales of services reported that were **digitally ordered**	…	…	…	…	…	…	…	…	…
Percentage of sales of goods reported that were **digitally ordered**	…	…	…	…	…	…	…	…	…
Percentage of sales of services reported that were **digitally delivered**	…	…	…	…	…	…	…	…	…

Source: U.S. Bureau of Economic Analysis benchmark survey of U.S. direct investment abroad 2019 (https://www.bea.gov/be-10-benchmark-survey-us-direct-investment-abroad).

Among responding US parent companies, the overall share of services that were digitally ordered was 25 per cent (estimated by multiplying the midpoint of the percentage range by the reported sales for each respondent, then adding up all respondents), while the share of goods that were digitally ordered was 19 per cent. These shares were higher for foreign affiliates – between 30 and 35 per cent. Responses varied considerably across industries, with digital ordering being most prevalent for services in the Information Services and Professional, Scientific, and Technical Services industries, and for goods in the Manufacturing and Retail Trade industries.

Three in four US parent companies and two in three affiliates reported responding based on recall or general knowledge of operations rather than accounting. Furthermore, just over half of US parents did not respond to these questions. The BEA follows up directly with many respondents to ensure accurate responses and is exploring ways to account for non-responses and for MNEs which were not asked the digital economy questions.

Source: United States Bureau of Economic Analysis.

In principle, the information needed from households is equivalent to that needed from businesses, though as households are primarily consumers rather than producers, efforts have tended to focus more on measuring households' e-commerce expenditure. Within that expenditure, any transactions where the seller is resident in a different economic territory would amount to *digitally ordered imports*.

Several different forms of survey questions have been used to measure individuals' or households' spending online.

In the 2021 European Community Survey on the Use of ICT in Households and by Individuals (Eurostat, 2021c) respondents are asked to provide their estimated total purchases made via websites or apps [15] over the three months prior to being surveyed, or to indicate it in the form of spending bands (see Box 3.10). Countries may vary in their implementation of this question by offering either or both of these response options.

The resulting dataset, compiled and published by Eurostat, shows that it was most common for respondents to have spent between EUR 100 and 299 via websites and apps over the three months prior to being surveyed – although this varies from one country to another. In addition, 21 per cent of individuals (aged 16-74) had made online purchases from sellers outside their country of residence (Figure 3.5). However, because the questions on seller location and the value of online spending are separate from one another, the survey does not provide a measure of the share of online spending attributable to purchases from abroad.

The 2020 Canadian Internet Use Survey adopted a different approach, asking respondents for the specific amounts they spent on various online purchases of goods and services (Box 3.11). This has the benefit of allowing e-commerce transactions to be categorized into those relating to goods, digitally delivered services, and other services (Figure 3.6), and so double counting of transactions that are both digitally ordered *and* digitally delivered can be avoided when total digital imports are calculated. However, the 2020 survey did not distinguish between domestic and international e-commerce.

In contrast, the 2018 edition of the Canadian Internet Use Survey asked several questions with an international dimension. Respondents were asked if their online orders of physical goods were "delivered from" merchants in Canada, in the United States, from other countries, or from "merchants of unknown country of origin", although, as in the European survey, this breakdown was not applied to the amount spent on goods. In testing questions that link the domestic/international and monetary dimensions, it was found that respondents had difficulty identifying cross-border transactions. For example, an order placed on Amazon.ca might be reported by some respondents as an order from a local business ("Amazon Canada"), especially when the product concerned is shipped from a warehouse in Canada. But others would report it as an international transaction due to the fact that Amazon is an "American company", or due to an awareness that the products bought originate from other parts of the world. Nevertheless, such efforts provide valuable experience, and a basis on which to develop and test additional options to capture the value of digitally ordered imports by households.

In some cases, household surveys have also been used to measure the money made online by individuals. Within those earnings, any transactions with a buyer resident in a different economic territory would amount to *digitally ordered exports*. For example, the 2020 Canadian Internet Use Survey (Statistics Canada, 2020) included this among questions on "online work" (see Box 3.12). Again, the international dimension was not collected, and so these results cannot be used directly to measure digitally ordered exports by households.

The evidence suggests that household surveys can yield meaningful results on the share of digital ordering in overall household expenditure and on the income that households earn by making sales online. Comparing those shares to total business e-commerce sales and purchases would provide some insight into the potential economic significance of digitally ordered imports and exports involving households.

Ideally, household surveys should also collect information on whether the product purchased or sold is a good, a digitally delivered service, or a service delivered via another channel. Further breaking down household e-commerce spending according to the products purchased could yield useful insights relevant to measuring digital trade. If there are no major domestic suppliers of a particular product, such as music streaming services, online gaming, or online storage, for example, then spending on such products implies imports of digitally ordered and digitally delivered services. Indeed, such details are one area where household surveys can also prove useful for measuring expenditures on digitally delivered products (see Chapter 4).

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

Other household surveys could in principle be expanded to collect information on the value of international digitally ordered transactions in a similar way to business surveys. However, some prior efforts suggest that respondents struggle to delineate domestic and international transactions accurately and consistently. Survey questions and methods in this area are still at an early stage of development and further design, testing, and experimentation is needed to identify the best ways to gain meaningful results.

Box 3.10: Measuring e-commerce spending by individuals in the European Union

The following questions from the 2021 European Community Survey on the use of Information and Communication Technologies in Households and by Individuals (Eurostat, 2021c) gathered information on the amount individuals spent online and the location of the sellers they bought from. These questions were also included in the 2020 survey.

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

_____ national currency

Or (tick one)

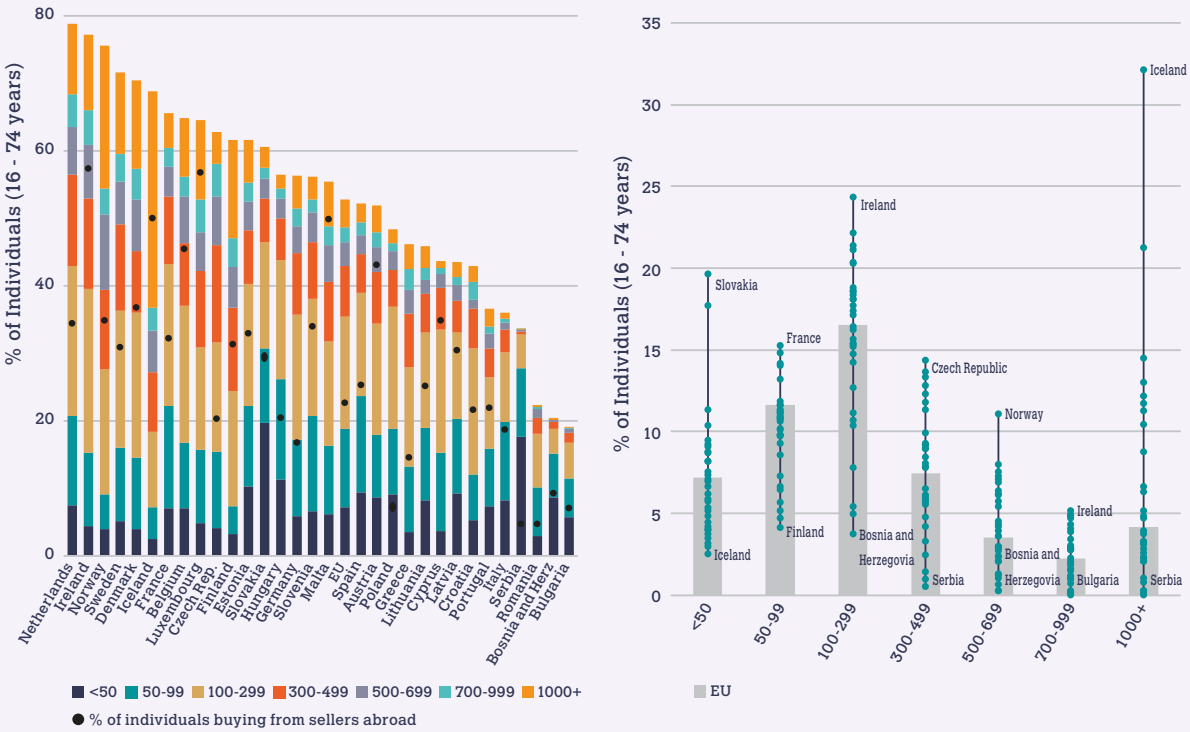
- ☐ Less than 50 euro
- ☐ 50 to less than 100 euro
- ☐ 100 to less than 300 euro
- ☐ 300 to less than 500 euro
- ☐ 500 to less than 700 euro
- ☐ 700 to less than 1000 euro
- ☐ 1000 euro and more
- ☐ Don't know

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

1. a) National sellers
2. b) Sellers from other EU countries
3. c) Sellers from the rest of the world
4. d) Country of origin of sellers is not known

Figure 3.5: Individuals' e-commerce spending, EU and partner countries, 2021

E-commerce spending in the 3 months prior to survey, euros:



Source: IMF, OECD, UNCTAD and WTO based on Eurostat digital economy and society database.[16]

Box 3.11: Measuring e-commerce spending by individuals in Canada

The Canadian Internet Use Survey 2020 (Statistics Canada, 2020a) included questions collecting detailed information on online spending by individuals across goods, digital services, and other services. However, the survey did not attempt to distinguish domestic and international purchases.

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

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

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

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

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

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

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

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

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

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

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

Figure 3.6: Average online shopping expenditure by product type, Canada, 2020

Note: Peer-to-peer accommodation are services that connect travellers and hosts through a mobile application or website that acts as an intermediary and processes the payment from the traveller to the host. Examples of peer-to-peer accommodation intermediaries are Airbnb and Flipkey.

Source: Statistics Canada (2022b).

Box 3.12: Measuring online earnings by individuals in Canada

The question below, which measures earnings by individuals from online activities including e-commerce sales, was included on the Canadian Internet Use Survey 2020 (Statistics Canada, 2020a):

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

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

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

In 2022 (Statistics Canada, 2022c), the survey included instead a question collecting an overall amount of online earnings from these activities:

> *The next question relates to income earned over the internet from self-employment contract arranged through online platforms, such as on-demand jobs in the "gig economy" or the sale of services or goods that you created. Remember that your answers will be kept strictly confidential.*
>
> *Workers in the gig economy are usually not employed on a long-term basis by a single firm; instead, they enter into various contracts with firms or individuals (task requesters) to complete a specific task or to work for a specific period of time, either in person or digitally, for which they are paid a negotiated sum. Examples include Uber, Lyft, TaskRabbit, Upwork, Guru, Fiverr, Freelancer, or incomes earned through online advertisements and sponsored content.*

During the past 12 months, what is your best estimate of the income you earn from contracts arranged over the internet related to the gig economy or the sale of services or goods that you created? _____$

The results from 2020 found average earnings from online activities of CAD 2,700 (around USD 2,000). By quite some margin, the most common ways of earning money online were "selling physical goods online that you built or created" (7 per cent of those aged 15 or over in Canada, with average earnings of almost CAD 1,700) and "selling services via online bulletin boards [such as eBay or Kijiji]" (4 per cent, CAD 1,500), while the highest earnings were generated through "online freelancing" (0.7 per cent, around CAD 10,000 on average) and "other activities" (2.3 per cent and around CAD 19,000 on average).

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

Source: Statistics Canada.

One potential area where household surveys could be directly linked to digital trade concerns expenditures abroad and tourist expenditures in the compiling economy. Specific questions could be added either to conventional household expenditure surveys or to international travel surveys to identify the share of expenditures on accommodation and (separately) travel services purchased abroad that were digitally ordered (as in Figure 3.7), which may help to identify and quantify potential underestimates in these areas (see Box 3.13).

Similarly, conventional household income surveys could be used to ask households if they provided short-term accommodation services via digital intermediation platforms and the income generated. While such questions would not differentiate (at least initially) between accommodation services provided to

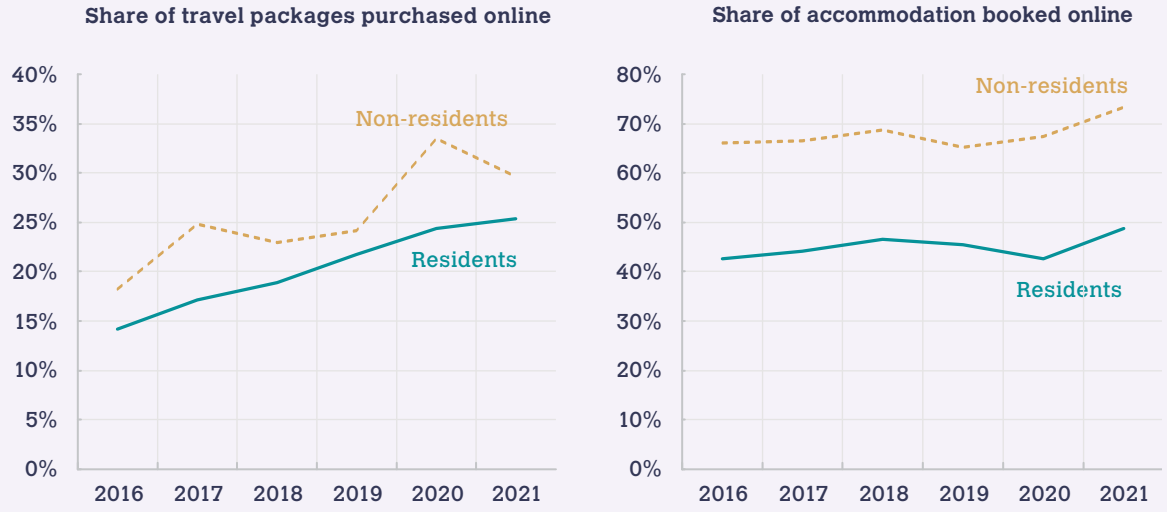
Box 3.13: Compiling digitally ordered travel transactions in Italy

The Bank of Italy has been running an extensive face-to-face border survey since 1996 providing information on various features of Italy's inbound and outbound international tourism, such as the number and characteristics of visitors and visits, the number of night stays, the means of payment used, etc.

Since 2016, specific questions have been added to gather information on the use of online tools for booking or buying travel services. Travellers are asked about: a) online purchases of "all-inclusive" travel packages; b) online booking of accommodation; and c) the channels used to book the accommodation online.

In the period 2016-21, expenditure on "all-inclusive" trips purchased or booked online increased from 14 per cent to 25 per cent for residents in Italy, and from 18 per cent to 30 per cent for non-residents. Online booking of accommodation, in the same period, increased from 43 per cent to 49 per cent (for residents) and from 66 per cent to 73 per cent (for non-residents).

Figure 3.7: Share of travel packages and accommodation booked online in Italy (%)



Source: Bank of Italy.

residents and those provided to non-residents, it would suggest an order of magnitude and an upper estimate.

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

SURVEYS OF GOVERNMENT UNITS AND NPISHS

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

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

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

3.2.2 CUSTOMS DECLARATIONS AND OTHER SOURCES

Although surveys are a promising source for estimating digitally ordered trade, various other sources can

Box 3.14: WCO Framework of Standards on cross-border e-commerce

The WCO's Framework on Standards on cross-border e-commerce is based on eight guiding principles for cross-border e-commerce outlined in the Luxor Resolution[17] adopted at the 2017 WCO Policy Commission meeting. In particular, Principle V – Measurement and Analysis underpins Standard 15: Mechanism of Measurement, which stipulates that: "Customs administrations should work with relevant government agencies in close cooperation with E-Commerce stakeholders to accurately capture, measure, analyse and publish cross-border E-Commerce statistics in accordance with international statistical standards and national policy, for informed decision making." The WCO E-Commerce Package[18] provides Technical Specifications for this Standard. The work to implement this standard has the following aims:

- Establish a set of common terminologies and reliable mechanisms to accurately measure and analyse cross-border e-commerce in close cooperation with international organizations such as the International Civil Aviation Organization (ICAO), Organisation for Economic Cooperation and Development (OECD), United Nations Conference on Trade and Development (UNCTAD), United Nations Statistics Division (UNSD), Universal Postal Union (UPU), World Economic Forum (WEF), World Bank Group and World Trade Organization (WTO), as well as with national statistical organizations and e-commerce stakeholders;
- Use data analytics (including "big data" modules) and the existing capabilities of international organizations, e-vendors/e-platforms, and other stakeholders, with a view to generating trends and analysis for evidence-based decision-making to support the implementation of the Guiding Principles and the efficient and sustainable growth of cross-border e-commerce;
- Establish mechanisms, including supporting legal framework, to capture data at item level to facilitate the development of e-commerce trade statistics, while implementing simplified clearance processes, for example the consolidated simplified summary declaration.

Source: IMF, OECD, UNCTAD and WTO.

provide measures for key components of digitally ordered exports and imports.

In particular, relevant information may be available, or have the potential to be collected through, various administrative and private channels, as set out in the following sub-sections.

CUSTOMS DECLARATIONS

Customs records are the main data source underpinning international merchandise trade statistics. Identifying digitally ordered shipments within customs sources therefore offers the possibility of measuring digitally ordered imports and exports in a way that cuts across institutional sectors and is directly integrated with international merchandise trade statistics.

Among these efforts, the World Customs Organization (WCO), in collaboration with public and private sector actors in international e-commerce, is leading an initiative to better identify and monitor digitally ordered trade in customs records via improved electronic identification of the origin, destination and content of packages, for example via the S10 bar code for postal items, or special (often simplified) declaration forms for e-commerce orders.

The WCO's work is governed by its "Framework of Standards" on cross-border e-commerce (see Box 3.14), which offers, among other things, structural guidance on measuring e-commerce (i.e. digitally ordered) transactions and aims to establish global standards in the e-commerce supply chain, including a harmonized approach to risk assessment, clearance/release, revenue collection, and border cooperation, from both trade facilitation and customs control perspectives.

Several economies have started to explore ways of making digital trade visible in merchandise trade statistics by exploiting specific customs procedure codes. China Customs, which is responsible for the publication of official international merchandise trade statistics in China, is making significant advances in this area, supported by government policy aiming to create an environment conducive to e-commerce development (see Box 3.15 and Chapter 6). Similarly, the Turkish Statistical Institute (TurkStat) and the Ministry of Trade in Türkiye have jointly developed a methodology based on "traditional" customs records (where a specific field was added to identify digitally ordered transactions), electronic customs declarations and postal data to derive reliable estimates of digitally ordered merchandise exports and imports (see Chapter 6).

DE MINIMIS AND LOW-VALUE INTERNATIONAL TRADE ESTIMATES

Digital ordering is a key factor behind the strong growth of international parcel shipments (Boffa, De Borba and Piotrowski, 2021). One illustration of the

Box 3.15: Measuring cross-border merchandise e-commerce using customs data in China

In recent years, e-commerce has flourished in China, making it one of the world's largest e-commerce markets. This growth has brought challenges for the accurate measurement of cross-border e-commerce involving goods, related to high-frequency and low-value transactions. As the institution responsible for producing official Chinese merchandise trade statistics, China Customs has developed new approaches to ensure the statistical coverage of these transactions, covering both B2C and B2B trade (see also Chapter 6).

For B2C cross-border e-commerce transactions, China Customs has established a specialized Cross-border E-commerce Clearance System (CBECS). Specific customs regime codes identify goods that are cleared via CBECS. Customs allow the release of B2C cross-border e-commerce goods via a simple declaration which combines and cross-validates the original orders, logistics and payment data, while e-commerce platforms declare summarized data to customs afterwards for statistical and other purposes.

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

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

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

Source: China Customs.

Box 3.16: Low-value trade estimations in the United States

Since the 1960s, the United States has promoted the reduction of trade flow processing costs by exempting low-value transactions for both imports and exports from the burden of additional procedures and paperwork. The United States Census Bureau provides estimates for low-value trade statistics[25] below a threshold of US$ 2,500 for exports and between US$ 800 and US$ 2,000 for imports. Low-value trade does not include *de minimis* trade, which comprises certain imports below US$ 800 that are exempt from duties and some customs procedures.

Exports statistics are estimated in two parts: trade delivered by small package courier and non-courier country-specific low-value trade. For the low-value trade delivered by small package couriers, research has been undertaken to develop a "courier factor" equal to the ratio of total low-value trade to total high-value trade by small package couriers. Low-value trade transported by small package couriers is estimated by multiplying this factor by the value of high-value trade delivered by small package couriers.

Non-courier low-value trade is estimated by using a country-specific factor multiplied by each country's trade from the prior (or current, if available) month. This is done for US exports to all countries covered except Canada, estimates for which are separately generated under the United States-Canada Data Exchange.

In contrast, import statistics are mostly based on low-value import data, rather than estimated. These data are obtained from excess electronically filed data that are typically omitted from the original statistics because they are reported at a more aggregated level than the vast majority of goods trade data. These data are then supplemented with three additional types of low-value transactions: 1) estimates of low-value data filed via paper; 2) estimates of low-value trade transported by courier; and 3) data on low-value trade transacted within foreign trade zones either via paper or electronically.

Source: United States Bureau of Economic Analysis.

scale and pace of this increase is the rapid growth of the number of small consignments entering Japan, from 12.3 million consignments in 2010 to 63.4 million in 2020.[19]

Many of these shipments are of relatively low value and so fall below customs *de minimis* thresholds – a minimum value, weight, size and/or amount below which customs duties or taxes will not be collected and for which details are therefore not required to be reported to customs authorities. In many cases, *de minimis* thresholds only relate to goods intended for personal use.[20] Digitally ordered trade falling below *de minimis* thresholds will not be covered by measures based on customs declarations and therefore need to be separately measured or estimated in order to arrive at fully representative statistics.

An OECD-IMF Stocktaking Survey (OECD, 2016) showed that *de minimis* thresholds vary widely across countries. For example, among OECD countries, the threshold ranges from GBP 15 (around US$ 17) in the United Kingdom to US$ 2,000[21] in the United States. Some countries also apply a volume threshold, and these can vary for each tax or duty applied. Some countries indicated having different *de minimis* thresholds for postal shipments or which vary by type of transport. In most cases, *de minimis* trade amounts to around 1-3 per cent of total trade, but it can reach over 15 per cent for some economies.

As international trade in merchandise below *de minimis* thresholds is not directly recorded by customs authorities, the value of these flows needs to be separately estimated when merchandise trade statistics are compiled. Overall, around half of OECD countries, as well as several non-OECD countries, produce measures or estimates of *de minimis* or low value trade for balance-of-payments and international merchandise trade statistics purposes.[22]

Various sources are relied upon, including national postal services, administrative reports from customs, card payment information or estimation models (OECD, 2016). The resulting estimates can offer a perspective on digitally ordered trade flows because of the interrelation between increasing *de minimis* trade and digital ordering. However, while there is likely to be a strong correlation between growth in *de minimis* transactions and growth in digital ordering,[23] it is important to note that not all *de minimis* trade will be digitally ordered. Care is therefore needed in using *de minimis* trade estimates as a basis for estimates of digitally ordered trade. In particular, estimates based on information from postal delivery providers can provide relatively robust estimates of overall low value and *de minimis* trade but only if the estimation process covers at least major postal and courier service providers, covering all transport modes.

Some countries have a wider regime for "low-value" international trade under which traders avoid some administrative checks (e.g., customs), and possibly duties and or taxes. For example, in the Republic of Korea, goods imports for personal use and with a value of less than US$ 150 are exempt from tariff and VAT (i.e., are *de minimis*), goods with a value of between US$ 150 and US$ 2,000 are subject to a "simplified import declaration" which has 57 fields (i.e., low-value trade), and goods over US$ 2,000 are subject to the full "General Import Declaration", which has 69 fields and also requires full documentation, e.g., invoices, licences/permits, etc.

Another example is the European Union, which, following an amendment to the Union Customs Code Delegated Regulation, made it possible from 1 January 2021 to declare goods up to EUR 150 using a customs declaration that requires one third of the data compared to a standard declaration[24]. Box 3.16 provides a further example of differentiation between *de minimis* and low value trade from the United States.

Such low-value trade regimes normally collect the information needed to accurately track and measure low-value trade, and in many cases could be enhanced to gather information on digitally ordered low-value transactions as well. For example, since 2012, Türkiye has used electronic trade customs declarations to measure low value digitally ordered trade. Declarations are issued electronically by authorized express airline cargo companies and help to expedite customs processes. There is an upper limit of EUR 15,000/300 kilogrammes for exports and of EUR 150/30 kilogrammes for imports on the eligibility for electronic declaration (see Chapter 6 for more details).

Taking this a step further, some countries have started to apply different administrative procedures specifically for e-commerce enterprises. Such arrangements may offer additional data in the compilation of digitally ordered goods trade statistics. In the Republic of Korea, for instance, registered e-commerce companies are subject to special customs reporting which reduces paperwork and expedites clearance (as well as possibly offering some duty and tax exemptions). Goods arriving in Australia destined for a private individual, which are valued at less than AUD 1000 and which have been ordered through an online supplier, are subject to goods and sales tax (GST), which must be paid by the supplier (see Box 3.17).

VAT RETURNS DATA

Among other things, a business's value added tax (VAT) return includes the value of its total sales and purchases. Sales revenues and expenditures are not typically broken down by channel (e.g., online vs offline). Nevertheless, if businesses selling online can be identified within the total set of VAT returns, their responses can be used to gain insights on the value of e-commerce sales and digitally ordered trade (see Box 3.18).

Box 3.17: Capturing digitally ordered low-value imports via administrative data in Australia

On 1 July 2018, the Australian Taxation Office implemented a vendor collection model for goods and services tax (GST) on low-value imported goods. The model requires certain non-resident suppliers, including platforms, merchants and re-deliverers, to register for, apply and collect GST on low-value imported goods sold to consumers in Australia.

The model does not apply to business customers in Australia, nor to goods valued at over AUD 1,000 (this being the *de minimis* value in Australia). In other words, the model is specifically aimed at digitally ordered imports, to level the playing field for domestic businesses which previously faced unfair competition from non-resident online sellers that were not required to apply GST on the sale of their goods (creating a price advantage).

In simple terms, for goods arriving in Australia that are valued at less than AUD 1,000 and which were digitally ordered by households in Australia through a non resident supplier (e.g., a merchant platform), the GST on the value of the good is expected to be paid by the supplier directly to the Australian Taxation Office (ATO).

Since the introduction of the model, Australia has seen high compliance, with all major platforms among the suppliers registering and completing GST collection and remittance obligations. In the 2020-21 Australian financial year, the ATO collected AUD 225 million in GST revenue from low-value imported goods (up from AUD 161 million collected in the 2018-19 financial year).

Source: Australian Bureau of Statistics.

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

To measure expenditure by Dutch consumers in non-Dutch "webshops" located in the European Union, Statistics Netherlands (Centraal Bureau voor de Statistiek – CBS) used the Dutch VAT returns filed by foreign EU companies, which are mandatory across the European Union for all traders exporting more than a certain threshold (EUR 35,000 or EUR 100,000 per year, depending on the EU member state) to another EU member state.

To identify webshops among all the VAT returns, the information was first combined with data from the Bureau Van Dijk (a private publisher of business information) ORBIS database (see Meertens et al., 2019), to select those enterprises engaged in retail as their primary or secondary activity (and therefore which trade only in goods). In the absence of common identifiers, records were matched using company names. This process required significant editing to avoid false negatives due, for example, to differences in punctuation marks (dots, commas, dashes) or abbreviations (e.g., LTD versus LIMITED). In this process, CBS worked together with the University of Amsterdam and Leiden University to implement big data analytical techniques to achieve faster and more accurate linking.

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

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

Source: Statistics Netherlands.

CARD PAYMENT DATA

Various private sector agents hold data on large volumes of online transactions. In particular, financial institutions, including banks, that issue payment cards, global payment processing networks, such as Visa and Mastercard, and specialist online payment processors, such as Alipay and PayPal, record relevant transactions in their role facilitating online payments. If access for statistical purposes can be agreed, data from these sources can provide a powerful basis for measuring digitally ordered trade. Digital intermediation platforms are also key conduits for a large number of online transactions, as considered in Chapter 5.

Card payment data (also referred to as credit card data) is a source being explored by multiple countries, especially with respect to digital ordering by households. This refers to data on individual purchases paid for using cards (credit cards, debit cards, etc.) issued by providers in a given economy. These data, or summary aggregates, may be made available to statistical compilers under agreements with card issuers.

Alongside the transaction amount, card payment data includes supplementary information. Transactions are recorded as "card-absent" (or "card-not-present") when a card is used online to pay for an order. For these transactions, the "merchant outlet country" is usually available. Combined with information on the country in which the card was issued, this gives a way to identify international transactions and thus to derive an estimate for digitally ordered trade.

Merchant category codes, another component of card payment data, that are used to identify the type of business in which a merchant is engaged, can give an indication of the product that was digitally ordered. This may be of analytical interest and can, potentially, provide a basis for trying to identify payments for digitally delivered services within the estimate of the value of digitally ordered transactions.

Box 3.19 and Box 3.20 provide examples of this approach.

While card payment data hold considerable promise as a tool for measuring household e-commerce expenditures and digital trade, there are various limitations and challenges that must be accepted or managed.

Digital ordering is defined by the order being placed, rather than the payment being made, over computer networks. Although online payment often accompanies the placement of an online order, this is not always the case. Indeed, in some countries, alternative means of payment, such as cash on delivery or wire transfer, are widespread, and differences in the prevalence of the use of cards to pay for digital orders are likely to affect the comparability of measures across economies.

Furthermore, card-absent transactions can arise in some other situations, such as when an order is placed and card details are given by phone, or when an order is placed in person but payment is made online. In addition, households are not the only institutional units that make card payments. While it may be possible to filter out transactions made with corporate or business cards, some transactions on personal cards are made on behalf of businesses (such as when an employee uses their own card to pay for business travel and accommodation that will be reimbursed by their employer). Depending on the prevalence of these various factors in a given economy, there may be a risk of significantly under- or over-estimating digital ordering by households on the basis of card-absent transactions.

Box 3.19: Using credit card data to measure cross-border online purchases in Israel

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

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

Data are separately available showing expenditures by Israeli tourists abroad (providing a measure of tourism expenditures) and expenditures by Israeli residents cleared through foreign websites, providing insights on digitally ordered trade.

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

Source: Israel Central Bureau of Statistics (CBS).

In addition, the merchant outlet country will not always reflect the country in which the seller is located. For example, rules for payments through Visa, a major global card payment network, state that:

"A merchant must use its principal place of business as the merchant outlet location for card-absent transactions – that is the fixed location where the merchant's executive officers direct, control, and coordinate the entity's strategy, operations, and activities. A merchant may have only one principal place of business for it and its

Box 3.20: Using card payment data to measure cross-border online purchases in Spain

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

Online transactions are proxied by card-not-present transactions, implying that the payment card was not physically involved for the transactions, such as when a customer makes an online purchase via a home computer or mobile device.

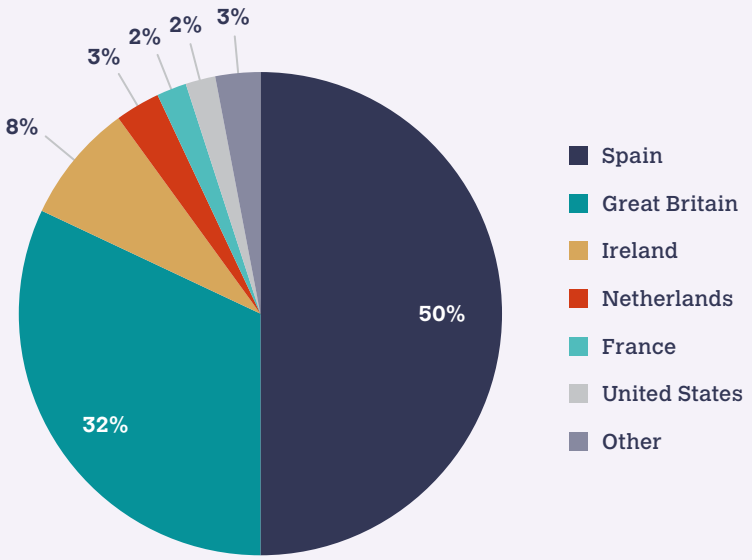
The data available for this analysis was limited to transactions taking place in 2015, though in principle the underlying data would allow the analysis to be repeated even with daily frequency.

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

Cross-border payments from Spain are highly concentrated in only a few countries (Figure 3.8), with Great Britain, Ireland and the Netherlands alone accounting for about 85 per cent of transactions involving foreign merchants. This distribution is partly explained by the fact that the data refers to monetary transactions rather than trade flows. Thus, in many cases, monetary transactions will be linked to the geographic location of merchants' fiscal headquarters and will not resemble the actual shipping route.

Figure 3.8: Online payments made with cards issued in Spain, by destination country, 2015

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



Source: OECD (2019d).

group subsidiaries. In the case of a corporate group, the merchant location is determined at the corporate group level (i.e., as a single entity). For example, this means that a multinational merchant must use its principal place of business as the merchant location and may only use the country of a subsidiary if that country qualifies as an additional merchant location" (Visa, 2021).

For this reason, the location information recorded in card payment data can reflect corporate structures and other distorting factors, rather than geographical reality, as illustrated in Box 3.20.

While this is problematic when measuring bilateral trade flows, it is not necessarily a critical issue if the aim is simply to identify how much money cardholders in a given economy have spent via card-absent transactions with sellers abroad. In that case all that matters is that the seller is outside the economy of the cardholder; the specific country abroad in which they are located is not taken into consideration.

It may also happen that a cardholder in country A may make a purchase from a foreign subsidiary in Country B of a company that has its headquarters in country A, and for which the merchant outlet country is therefore also country A. In this case a digitally ordered trade transaction would be incorrectly labelled as a domestic transaction. This is most likely to create measurement challenges in countries that host headquarters of multinational corporations and/or DIPs.

Transactions routed through DIPs can create additional complications. If both the digital intermediation platform (DIP) and the ultimate seller are located abroad, the transaction would, in any case, be correctly identified as digitally ordered trade. However, it may be that a cardholder in country A makes a purchase from a seller also in country A, but through a DIP with its merchant outlet country abroad. In this case, the purchase would be incorrectly labelled as an international transaction in its entirety, when, in fact, only the fee for intermediation services provided by the DIP should be recorded in digitally ordered (and digitally delivered) trade.

To address this, it may be possible to work with the payment data provider to identify card payments made to popular DIPs for separate treatment. For example, in some cases payments made in the domestic currency via DIPs for services such as ride-sharing, food delivery or accommodation might imply that they are domestic transactions, while payments in foreign currencies could be recorded in digitally ordered trade.

Another limitation of the information available in card payment data is that the merchant category code may not provide an accurate depiction of the products ordered when the merchant or platform offers a wide range of products. For example, the merchant category code assigned to a company that sells computer hardware, software, maintenance services, and training is unlikely to reflect all these products.[26]

Finally, there is the overarching issue that card payment data is held by private sector banks and payment processing companies. Access to these data, subject to suitable data protection arrangements, may require payment or may otherwise need to be negotiated or legislated for. Even if access can be achieved, legislation in third countries can impact the availability of some information, as is the case for Germany in Box 3.20. In addition, although the estimates in Box 3.20 could, in principle, be updated frequently (even on a daily basis), time series analysis was not possible in this case, as the OECD was only granted access to transaction data from 2015. Ongoing access is crucial for card payment data to be useful as a source to produce statistics on digitally ordered trade. In some countries, central banks have such access – see for instance the daily Credit and Debit Card Statistics published by the Central Bank of Ireland.[27]

Overall, a favourable institutional environment, sound understanding of the payment processes and of the nomenclatures, and a widespread use of payment cards are key prerequisites for an appropriate use of payment card data in trade statistics (UN et al., 2010). In the right context, and if the issues outlined can be managed, card payment data have the potential to offer a relatively straightforward means to estimate overall household expenditure on digitally ordered purchases, as well as to estimate households' digitally ordered imports.

3.3 Estimating the overlap between digitally ordered and digitally delivered trade

Digital trade is defined as "all trade that is digitally ordered and/or digitally delivered". As set out in chapters 1 and 2, meeting either of these criteria – being digitally ordered or digitally delivered – is sufficient to qualify a given trade transaction as digital trade. As further elaborated in this chapter, any trade transaction that is digitally ordered should be measured and included when compiling statistics on digitally ordered imports and exports.

Many digitally ordered services are also digitally delivered. Examples include media streaming subscriptions, many consumer telecommunications subscriptions, medical appointments booked online and digital intermediation services (see Chapter 5). Such transactions are therefore also recorded within digitally delivered trade.

This *conceptual overlap* does not pose any particular difficulty when compiling totals for digitally ordered trade and digitally delivered trade. However, it does mean that the two cannot simply be added together to obtain total digital trade, as this would result in double counting. For this reason, measures of imports and exports of services that are *both* digitally ordered *and* digitally delivered should be compiled and entered

under item 4 of the reporting template for digital trade (see Chapter 2). This amount is then subtracted when calculating total digital trade to avoid double counting.

It is, therefore, important to find data sources that can measure not only total digitally ordered trade, but can identify the subset which is also digitally delivered. This chapter has noted several examples of relevance.

The United Kingdom Digital Economy Survey (Box 3.7) breaks down businesses' e-commerce sales abroad and purchases from abroad by product, i.e., goods, digitally delivered services and other services. The second of these will yield an estimate of services that are digitally ordered and digitally delivered.

Canada has also collected a breakdown of the total value of business e-commerce by product types using its business ICT usage survey. In 2021, 62 per cent of private sector firms' gross sales conducted over the internet were sales of physical goods, 18 per cent were digitally delivered services, and 20 per cent were other services (Statistics Canada, 2022d). Although this information does not specifically refer to international e-commerce, it offers a basis for estimating the conceptual overlap between digitally ordered exports and digitally delivered exports, in order to derive an estimate of total digital exports by businesses.

Similarly, surveys of ICT usage in households and by individuals can also collect information on the amounts spent on digitally ordered and digitally delivered services (Box 3.11), as well as online earnings from providing digitally delivered services (Box 3.12).

The product information given by the merchant category codes used in card payment data may also provide a basis for identifying international online (card-absent) payments for digitally delivered services. For example, Visa has a discrete merchant category code for "Cable, Satellite and Other Pay Television/Radio/Streaming Services", as well as codes for merchants providing various products "delivered in an electronic format", including books, films, digital artwork/images, music, games and applications (Visa, 2021).

The product information needed to measure or estimate the subset of digitally ordered trade that is also digitally delivered is an area in which it could be especially useful to combine information from multiple sources. For example, household expenditure surveys could provide an indication of household spending on digitally delivered services, that could in-turn provide a basis from which to derive an estimate of the share of households' international e-commerce expenditures relating to digitally delivered services. Similarly, information from business registers or other business surveys may be useful in identifying firms that produce digitally delivered services and whose e-commerce sales can therefore be treated as digitally delivered.

In all cases, the sources, methods, and assumptions used to measure or estimate services *digitally ordered and digitally delivered* should be clearly communicated to aid user understanding and international comparisons.

3.4 Recommendations

This chapter has examined both survey sources and non-survey sources as bases for measuring digitally ordered trade. No single approach offers direct and complete measurement of all digitally ordered exports and imports. Nevertheless, many relevant examples are available, based on which the following recommendations can be identified:

1. **Digitally ordered trade can involve businesses, households, government units, and NPISHs, as exporters or importers.** Compilers of digital trade statistics should assess the extent to which each of these are engaging in statistically meaningful amounts of digital trade, and should prioritize measurement efforts accordingly. In most cases, transactions involving businesses as sellers (exporters) and buyers (importers) are likely to be the biggest single components of digitally ordered trade. In the absence of evidence to the contrary, these transactions should be prioritized for measurement.
2. **Business ICT surveys can offer a valuable, and in many cases already existing, vehicle with which to measure digitally ordered exports and imports by businesses.** It is recommended that business ICT surveys collect the value of total business e-commerce sales and purchases, as well as a breakdown of these into domestic e-commerce and digitally ordered exports and imports. It is also recommended that information on the products concerned (e.g., goods, digitally delivered services, other services) be collected, as this provides the information prescribed in the reporting template for digital trade. In addition, identifying services digitally ordered and digitally delivered is crucial for the aggregation of total digital trade.
3. It is recommended that statistical compilers ensure that **the coverage of business ICT surveys, and the methods and estimations applied to the responses gathered, are sufficient to derive digitally ordered trade estimates that are representative of all businesses.** Furthermore, to support international comparability, business ICT surveys should follow relevant international guidelines, such as in the UNCTAD Manual for the Production of Statistics on the Digital Economy (UNCTAD, 2021a) and the OECD Model Survey on ICT Usage by Businesses (OECD, 2015a).
4. Statistical compilers are also strongly encouraged to explore whether relevant questions, along the lines of those used in business ICT surveys, could be **mainstreamed in core business surveys** used to derive structural business statistics and/or in international trade in services surveys. Surveys of multinational enterprises can also be useful vehicles for collecting information on digital ordering. Also encouraged are hybrid strategies, in

which representative totals for the value of digitally ordered transactions are collected using core business surveys and combined with breakdown details available from business ICT surveys or other business sources.

5 **In cases where manually typed emails are included, it is recommended that the value of these transactions should be measured separately** from transactions made via e-commerce channels. If that is not possible (e.g., due to respondent burden), it is recommended at least to **specifically ask respondents if they received orders, or made purchases, via email**, as this will give an indication of the prevalence of email ordering and the potential scale of transactions involved.

6 It is recommended that business survey questionnaires are designed with additional guidance or other means of **managing cases where there is a risk that the same transaction will be reported twice** (in part or in whole), such as for respondents receiving orders on behalf of other firms (e.g., operators of online marketplaces, which should only report the fees or commissions earned on the sale), and for respondents in industries where e-commerce concepts may be less straightforward to apply, such as financial services.

7 **Statistical compilers should also seek to measure digitally ordered trade involving households as buyers (importers) and sellers (exporters).** In the absence of that, it is recommended that the value of household e-commerce spending and earnings be measured in total (both domestic and international transactions), to gauge the extent of these transactions in comparison to business e-commerce sales and purchases. This comparison provides some insight into the potential economic significance of digitally ordered imports and exports involving households. Ideally, household surveys should also collect relevant information on the products purchased and sold, as this can give insights relevant to measuring digital trade (most notably whether the product concerned is a good, digitally delivered service or other service).

8 **Household and/or international travel surveys should include questions** asking respondents to identify expenditures on accommodation and (separately) other components related to their foreign travel that were digitally ordered. Non-resident visitors could also be asked, in international travel surveys, for similar (digitally ordered) purchases from residents. In addition, to assist in providing an upper limit for exports of accommodation services provided by resident households, conventional household income surveys should also ask questions about short-term accommodation services they supplied that were ordered through DIPs.

9 It is recommended that statistical compilers ensure that **the coverage of household ICT surveys, and the methods and estimations applied to the responses gathered, are sufficient to derive digitally ordered trade estimates that are representative of all households.** Furthermore, to support international comparability, household ICT surveys should follow relevant international guidelines, such as those of the ITU Manual for measuring ICT access and use by households and individuals (ITU, 2020) and The OECD Model Survey on ICT Access and Usage by Households and Individuals (OECD, 2015b).

10 **Customs records can offer direct measures of e-commerce (goods) shipments captured as they cross the border.** It is encouraged that the WCO Framework of Standards on e-commerce be implemented, including provisions for the identification of shipments ordered by e-commerce. Furthermore, statistical compilers are encouraged to work closely with customs authorities to ensure that statistical needs are taken into account when designing and implementing customs reporting processes.

11 **Many low-value international goods shipments (especially parcel trade), including those that fall below de minimis customs thresholds (or are otherwise not fully recorded in customs data) result from digital ordering.** Countries can therefore endeavour to estimate these transactions to gain a partial perspective on digitally ordered trade. A variety of sources may provide a basis, including in some cases administrative data from customs authorities which provide streamlined declaration forms and procedures for low-value transactions. Information provided by postal and express courier agencies can provide meaningful estimates, as long as coverage of providers is high and all modes of transport are representatively covered, as can tax data, in some cases.

12 **Card payment data provides considerable potential to estimate the total value of digitally ordered expenditures by households.** While there are many challenges involved in identifying the part that is international trade and the type of product covered by the transaction, countries are encouraged to explore this potential, not least as such data can offer a cost-effective way of producing estimates for a component of digitally ordered trade.

13 **Information from different sources should be integrated to derive digitally ordered 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 the coverage of digitally ordered trade estimates in terms of concepts, firm sizes, industries, etc., to enable users to understand the statistics correctly and to facilitate international comparisons.

To support users in considering different sources for measuring digitally ordered trade, Table 3.2 provides a brief overview of the strengths and limitations of the sources set out in this Chapter

TABLE 3.2: STRENGTHS AND LIMITATIONS OF SOURCES FOR MEASURING DIGITALLY ORDERED TRADE

Source	Strengths		Limitations
Business ICT surveys	Can measure the two biggest components of digitally ordered trade – exports and imports by businesses in the compiling economy. Covers both goods and services trade, can be used to measure the conceptual overlap (reporting template for digital trade, item 4 – see Table 2.1 in Chapter 2). Surveys are designed to ensure representative results and to delineate businesses from other institutional sectors according to the relevant statistical definitions. Information on digitally ordered trade in goods and services can be collected on the same survey.	Measurement of digitally ordered trade integrated with the measurement of e-commerce (a closely related concept). May offer more flexibility to introduce new questions than core business surveys.	Covers only transactions involving businesses. Business ICT surveys are primarily designed to collect information on technology use rather than monetary amounts. Some ICT surveys do not cover all industries and firm sizes. Results may be challenging to integrate with economic statistics coming from other sources (e.g., due to a lack of detailed product information).
"Core" business surveys		Measurement of digitally ordered trade integrated in the same surveys used for other macroeconomic statistics. May offer greater industry/firm size coverage and larger sample sizes than ICT surveys.	Covers only transactions involving businesses. Can be more difficult to add new questions than on business ICT or MNE surveys.
MNE surveys	MNEs can account for a significant portion of goods and services trade flows and, as such, are likely to underpin a considerable portion of digitally ordered trade. Information can be collected for trade in goods and in services in the same survey.		Only covers a subset of businesses – does not cover all digitally ordered trade transactions. May be challenging to exclude some transactions e.g., e-commerce sales by affiliates/subsidiaries located in the same economy as the buyer.
Household ICT surveys	Households are active in digitally ordered trade as both buyers and sellers. Covers both goods and services trade, can be used to measure the conceptual overlap (reporting template item 4). Can cover both imports and exports. Surveys are designed to ensure representative results and to delineate households from other institutional sectors according to the relevant statistical definitions – making household surveys a compatible complementary source to business surveys.		Covers only transactions involving households. Households can find it difficult to report the amounts spent or earned online, and especially to identify international transactions.
Surveys of ICT usage in government units and/or NPISHs	Government units and NPISHs can be e-commerce buyers and sellers. Covers both goods and services trade, can be used to measure the conceptual overlap (reporting template item 4). Can cover both imports and exports.		Covers only transactions involving Government units/NPISHs. Surveys of ICT use in Government and/or NPISHs are not widely implemented and have not generally been used to measure spending or income from e-commerce/digitally ordered trade.

Source	Strengths	Limitations
	Surveys are designed to ensure representative results and to delineate government units/ NPISHs from other institutional sectors according to the relevant statistical definitions – making such surveys a compatible complementary source to both surveys of businesses and households.	
Customs records	Customs records are the main data source for merchandise trade statistics; identifying digitally ordered shipments therefore has the potential to yield integrated statistics on digitally ordered trade in goods.	Goods trade only. Excludes goods below relevant customs thresholds (i.e. *de minimis* trade) and in some cases reduced information for low value trade. Estimation of these values will require drawing on complementary sources to estimate the portion of *de minimis* and low value trade relating to digitally ordered goods. Requires implementation of data fields and processes to identify digitally ordered (e-commerce) shipments in customs reporting systems.
VAT returns data	VAT returns can offer a readymade source of data on business sales revenues.	Normally sales (exports) only. Covers VAT registered businesses only. Requires methods to identify businesses selling online from within the total population of VAT returns. These may be imprecise in identifying firms that sell online e.g., by omitting businesses which sell online through channels other than their own website/webshop (e.g. via online marketplaces or EDI). Possible over-coverage - may include offline sales by businesses identified as selling online.
Card payments data	In many countries, cards are the primary means of payment used by households for online purchases; online card payment often accompanies the placement of an online order. Merchant location information can be used to identify international transactions. Card payments data can therefore provide a meaningful proxy for the bulk of household online spending and digitally ordered trade. Breakdown into goods, services, digitally delivered services may be possible based on merchant category codes.	Purchases (imports) only. Proxy measure for digital payment rather than *digital ordering*. Not all "card-not-present" transactions are digitally ordered. Only covers imports paid for by card; imports purchased by other means are excluded. Furthermore, differences in the prevalence of cards as a means of payment for digital orders can affect comparability across countries. Likely to mainly cover household transactions but may also include payments made on corporate/ business cards or payments made on personal cards for business purposes. The location information recorded in card payment data can reflect corporate structures and other distorting factors, rather than geographical reality. Product breakdown based on merchant category codes likely to be inexact. Access to data may require negotiation, payment, or legislation.

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 Electronic data interchange (EDI) is the computer-to-computer transmission of business data – such as shipping orders, purchase orders, invoices, and requests for quotations – in an electronic format using agreed standards. The messages are composed and processed without human intervention, which increases the speed of order processing and reduces errors. EDI is used in a wide variety of industries, including food, retail, logistics, and manufacturing, to manage international supply chains efficiently (e.g., just-in-time inventory management).

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

4 https://stats.oecd.org/Index.aspx?DataSetCode=ICT_HH2.

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

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

7 https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx.

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

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

10 "EDI type sales: an EDI-type order message is created from the business system of the customer" (Eurostat, 2021b).

11 https://ec.europa.eu/eurostat/databrowser/view/ISOC_EC_EVALS__custom_5510498/default/table?lang=en.

12 https://ec.europa.eu/eurostat/databrowser/view/ISOC_EC_EVALN2__custom_5510351/default/table?lang=en.

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

14 Guidelines on household ICT surveys are set out in ITU (2020), OECD (2015b) and the EU Survey on the use of ICT in households and by individuals (https://circabc.europa.eu/ui/group/89577311-0f9b-4fc0-b8c2-2aaa7d3ccb91/library/d3c29c57-2ce2-439d-af80-b74ffd8f5b73) and its associated methodological manual (https://circabc.europa.eu/ui/group/89577311-0f9b-4fc0-b8c2-2aaa7d3ccb91/library/3e098987-039b-402a-b925-f3c9cb0c5059).

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

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

17 https://www.wcoomd.org/-/media/wco/public/global/pdf/about-us/legal-instruments/resolutions/policy-commission-resolution-on-cross_border-ecommerce_en.pdf?la=en.

18 https://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/frameworks-of-standards/ecommerce.aspx.

19 https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/activities-and-programmes/ecommerce/e-commerce-compendium_en.pdf?db=web.

20 Some countries may make a distinction between customs and statistical thresholds. In all cases, compilers are encouraged to estimate, or otherwise quantify, flows below such thresholds to ensure comprehensive coverage of merchandise trade statistics.

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

22 Countries that do not produce *de minimis* estimates often cited limitations in source data or consider these flows as insignificant.

23 The International Post Corporation E-commerce Shopper Survey found that 80 per cent of goods purchased online for international delivery in 2021 had a value of less than Euros 100, see https://www.ipc.be/services/markets-and-regulations/cross-border-shopper-survey/2021.

24 https://taxation-customs.ec.europa.eu/news/new-form-customs-declaration-low-value-consignments-2019-07-11_en.

25 https://www.census.gov/foreign-trade/guide/sec2.html#143.

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

27 https://www.centralbank.ie/statistics/data-and-analysis/credit-and-debit-card-statistics.

4. Digitally delivered trade

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[1]). 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[2]

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[1]		Business ICT surveys[1,2]		Household surveys[3]		Travel surveys[4]		International Transaction Reporting System (ITRS)[5]		VAT data[6]	
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
Digitally delivered trade												
of which: via DIPs												
Digitally ordered and digitally delivered trade												
Digitally deliverable services												
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 [4] components	EBOPS 2010 components
Digitally deliverable services supplied cross-border (Mode 1)		
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
Digitally deliverable services consumed abroad (Mode 2)	*Recorded within* item SD (Travel)	*Recorded within* item 4 (Travel)

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).

"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,[3] 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"[5] 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.[6] Additionally, non-fungible tokens (NFTs - i.e. digital records hosted on a blockchain that are associated with a digital or physical asset)[7] 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:[8]

- 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).[9,10]

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.

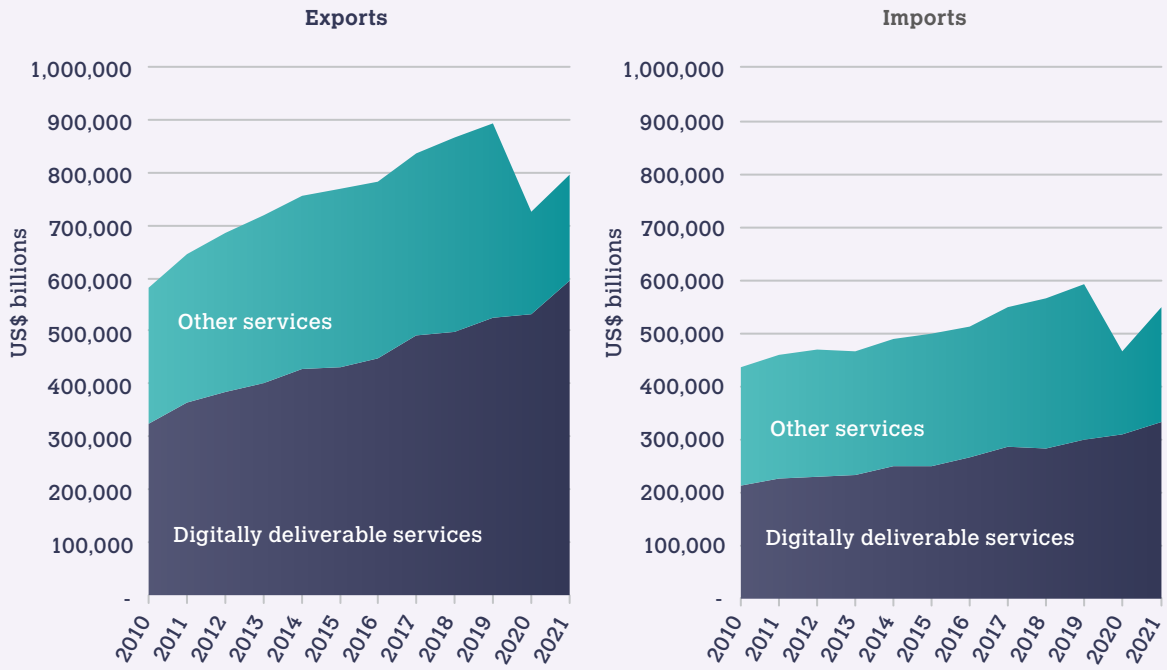
For this reason, the next step is to explore ways to delineate services that are *actually* digitally delivered, in order to measure digitally delivered trade more closely.

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.

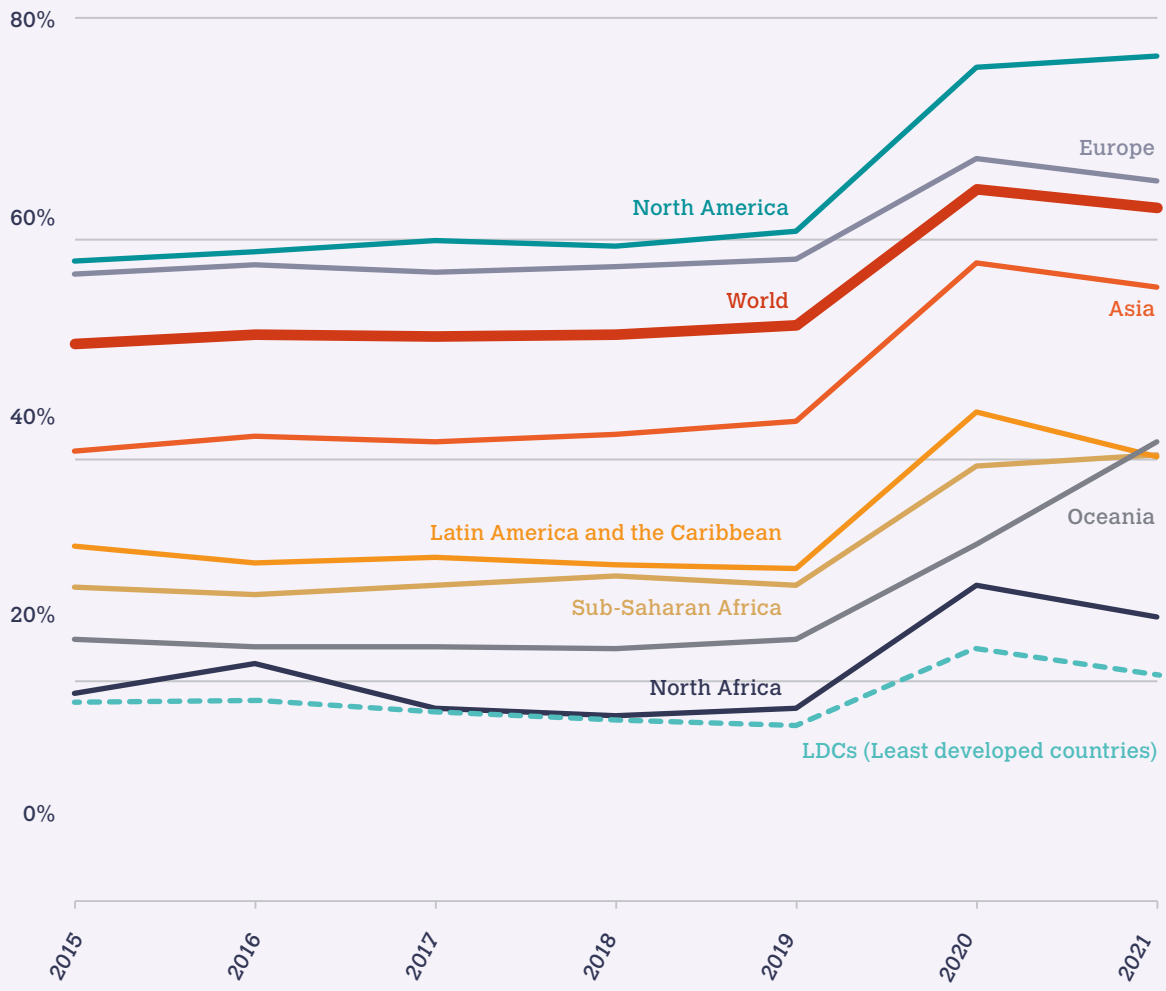
Box 4.5: Global trends in digitally deliverable services trade

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 [11] (TiSMoS) methodology,[12] 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).

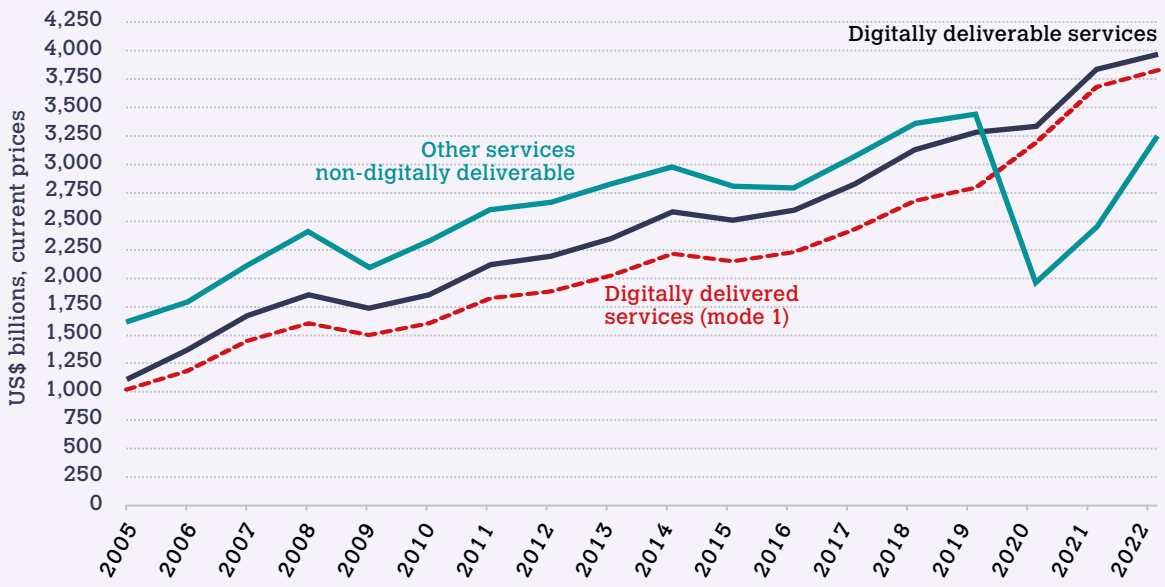
In 2023, the WTO produced a global dataset on digitally delivered services, based on the Eurostat-WTO model and taking into account the impact of the pandemic on services trade, as well as available countries' survey results. Allocation shares were modified accordingly.

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.[13]

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

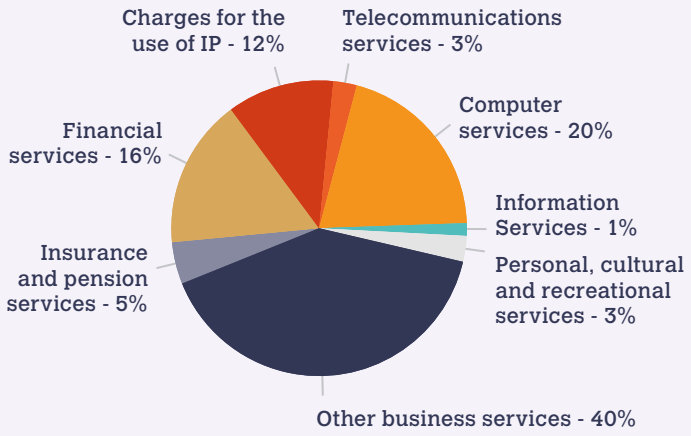
Exports in US$ billions, current prices



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.[14] 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).[15]

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

		Exports		Imports	
Service type	**Eurostat-WTO model (Annex D)**	**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	○	○	○	○	○	○
e. Computer services	○	○	○	○	○	○

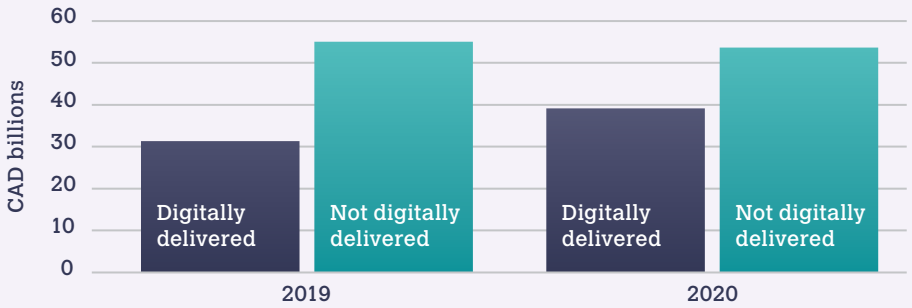
Source: Statistics Canada.

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.

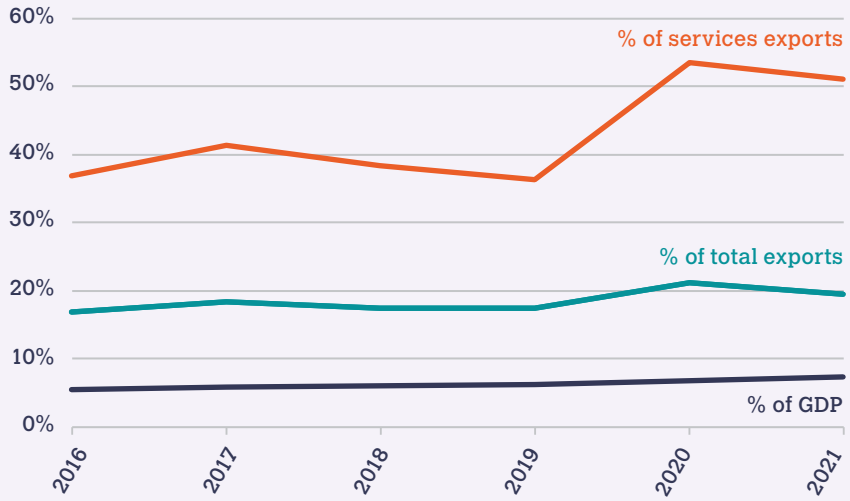
The survey targeted 220 enterprises exporting services included on the list of "potentially ICT-enabled services" developed by the UNCTAD-led Task Group on Measuring Trade in ICT Services and ICT-enabled Services (TGServ) (UNCTAD, 2015). The survey received 171 responses, of which 119 reported exporting 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)[16]. 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)[17] 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., DGNet, 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.

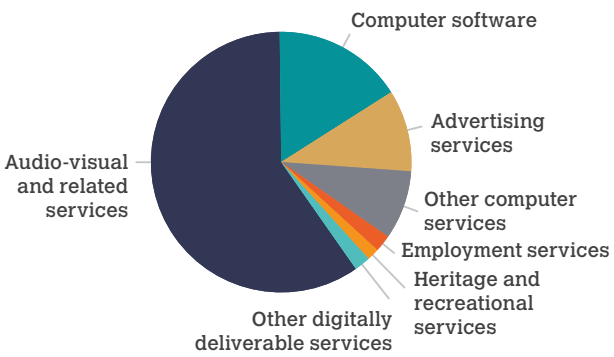
Because of the nature of the digital services provided, and the method of payment (mainly through credit cards), it was assumed that the main resident sector involved was the household sector. Two caveats are needed with this approach in relation to coverage.

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
TOTAL	**208,046,125**



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.[18] 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)[19] 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.[20] 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* _____$

Total _____$

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.[21]

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.	Expert judgement shares offer initial estimates without the need to collect additional data.	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 *digitally ordered* and *digitally delivered trade*.		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.

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/TableViewer/tableView.aspx?ReportId=158358.

10 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 if 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.

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.

5. Digital intermediation platforms (DIPs)

This Handbook includes this separate chapter on digital intermediation platforms (DIPs) because of their importance in facilitating digital trade, the scope they offer for targeted measurement, and their particular compilation challenges. This chapter describes the accounting principles for recording transactions facilitated by DIPs and provides examples of existing initiatives, surveys and big data sources used to measure DIP transactions.

5.1 The role of digital intermediation platforms in digital trade

Chapter 2 defines digital intermediation platforms (DIPs) as:

"Online interfaces that facilitate, for a fee, the direct interaction between multiple buyers and multiple sellers, without the platform taking economic ownership of the goods or rendering the services that are being sold (intermediated)."

DIPs have been key drivers in the digital transformation. They have facilitated access for many producers, in particular micro, small and medium-sized enterprises (MSMEs), to the global marketplace. They have given buyers numerous benefits, including access to a wider variety of products and the ability to compare prices more easily. DIPs have also enabled new activities and business models such as peer-to-peer transactions and sharing of resources between households. Although transactions intermediated by DIPs are, in principle, included in conventional trade statistics and are covered by the concepts of digitally ordered and/or digitally delivered trade, DIPs are separately highlighted both in the conceptual framework (see Chapter 2, Figure 2.1) and in the reporting template for digital trade (see Chapter 2, Table 2.1) because of their significant role in the economy, the policy interest surrounding them and the specific compilation challenges they pose.

Examples of DIPs include:

- marketplace platforms that bring together buyers and sellers to trade goods and services, e.g., platforms facilitating short-term accommodation;
- platforms facilitating ride hailing, similar to taxi services;
- platforms facilitating sharing of household assets, such as car-sharing; and
- platforms that intermediate electronic content (without taking economic ownership of the intellectual property products they distribute), such as app stores.

All institutional sectors in the economy can use DIPs for transactions in goods and services. Non-financial corporations and the household sector in particular use DIPs both as buyers and as sellers.

As the interface hosted by the DIP is specifically designed for placing orders, this Handbook assumes that all transactions (i.e., both goods and services) undertaken via a DIP are digitally ordered. In some cases, transactions (i.e., services) facilitated through DIPs may also be digitally delivered.

As described in Chapter 2, the service provided by DIPs is that of "matching" buyers with sellers and thus facilitating the exchange of goods or the provision of services. Chapter 2 defines these digital intermediation services as:

"Online intermediation services that facilitate transactions between multiple buyers and multiple sellers in exchange for a fee, without the online intermediation unit taking economic ownership of the goods or rendering the services that are being sold (intermediated)."

Digital intermediation services are both digitally ordered and digitally delivered.

DIPs are remunerated for providing digital intermediation services through fees received from the buyer, seller, or both. These fees may or may not be separately invoiced and may be collected at the same time as, or separately from, the main transaction undertaken through the DIP. Often the transaction must be paid for electronically, although the means of payment do not determine whether the underlying transaction is digitally ordered or delivered.

There are other online (digital) operators that do not meet the definition of DIPs given in this Handbook. A description of these can be found in Chapter 2 (see Section 2.4.1).

The measurement of the activity of DIPs remains very challenging and, like several other areas in this Handbook, compilation guidance remains at an exploratory stage. Section 5.2 discusses the classification of DIPs and of digital intermediation services. Section 5.3 describes the accounting principles for recording international transactions related to DIPs. Section 5.4 offers guidance on the measurement of DIPs established in the compiling economy, and some experiences on the compilation of imports of digital intermediation services. Section 5.5 summarizes the main recommendations.

Despite the newness of attempting to compile statistics on DIPs and measure their activities, it is suggested in this chapter that some progress can be made and compilers can collect useful data that will enable the compilation of statistics on international trade in digital intermediation services.

5.2 Classifying DIPs and intermediation services

At the time of writing, discussion is ongoing concerning the industry classification of DIPs and the product classification of the digital intermediation services they provide.

The United Nations Committee of Experts on International Statistical Classifications (UNCEISC), through the dedicated Task Team on International

Standard Industrial Classification of All Economic Activities (TT ISIC) is coordinating the fourth revision of the ISIC (ISIC Rev.4). The definition of non-financial intermediation activities put forward by TT-ISIC is in line with, and encompasses, the definition of DIPs given in this Handbook.[1]

TT-ISIC established that DIPs should not be treated differently from other firms that provide intermediation services via non-digital means, since it was agreed not to use digitalization as a classification criterion in ISIC. The task team recommends that DIPs are classified in the industry producing the products which they intermediate, meaning that DIPs intermediating transactions in goods would be classified in the wholesale or retail trade sector.[2]

Other regional industry classifications follow the same principles as ISIC. For instance, in the 2022 version of the North American Industry Classification System (NAICS) used by Canada, Mexico and the United States, platforms intermediating the sale of goods are classified indistinguishably in the same industries as e-tailers[3] and traditional bricks-and-mortar retailers, with platforms intermediating services classified in the industry of the service they intermediate, as with ISIC.

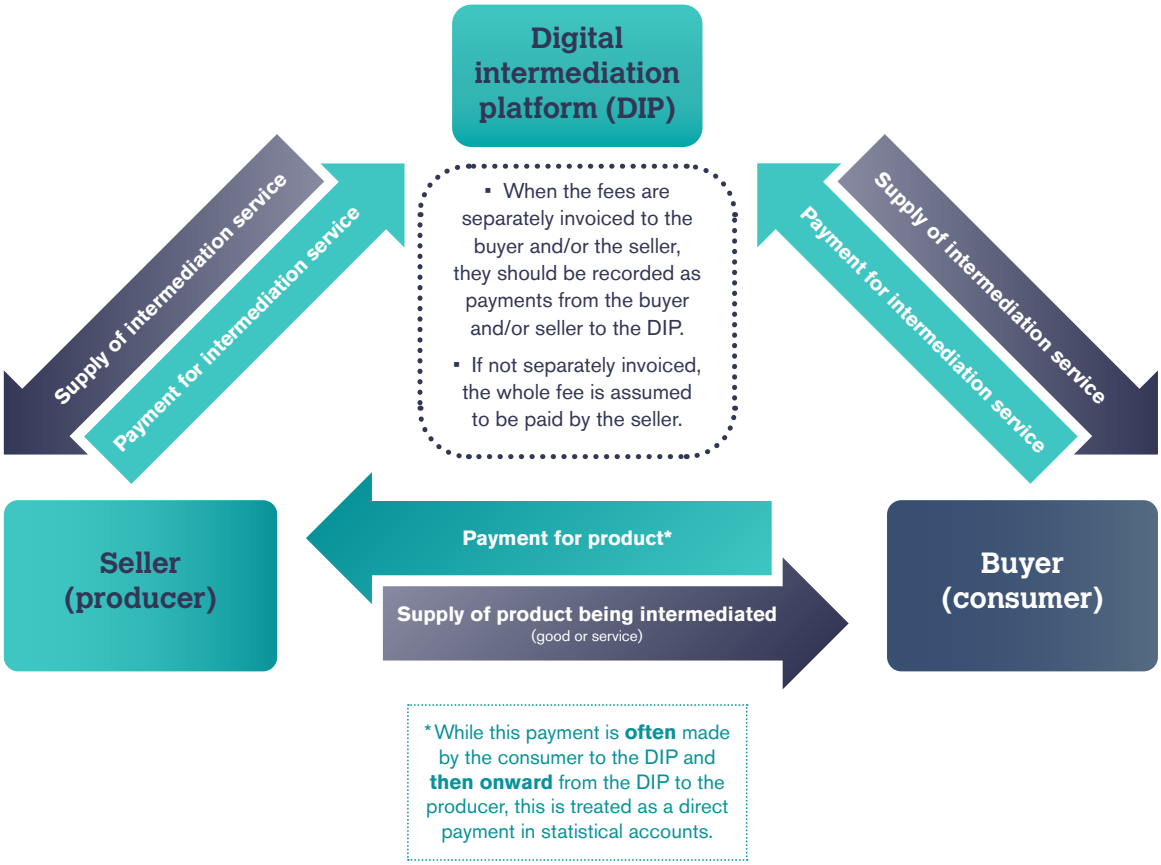
The definition and classification of digital intermediation services is also under discussion in the context of the revision of the Central Product Classification, but is not as advanced as the ISIC revision work.

Guidance developed in view of the update of the *Balance of Payments and International Investment Position Manual. Sixth Edition* (BPM6) (IMF, 2009) recommends classifying digital intermediation services under trade-related services, which at present cover commissions on goods and service transactions payable to merchants, brokers, dealers, auctioneers and commission agents (BPM6, paragraph 10.158) (IMF, 2009). This applies to the intermediation of both goods and services (note that the intermediation of goods has always been in trade-related services).

5.3 Accounting principles for DIP transactions

Transactions facilitated by DIPs involve at least three actors: a buyer (or consumer) of the goods or services being intermediated; a seller (which may also be the producer) of the goods or services being intermediated; and a digital intermediation platform facilitating the transaction and thus providing digital intermediation services. When at least one of these actors is resident in a different economy than the others, the relevant transactions must be recorded in the international accounts.

Figure 5.1: A DIP transaction



Source: IMF, OECD, UNCTAD and WTO.

TABLE 5.1: EXPLICIT AND IMPLICIT FEES PAID TO DIPs

Description	Type	Recording
The fees paid by the buyer and/or the seller are known	Explicit	Show fees paid from buyer and/or seller to DIP
It is known who pays the fee(s) but the amount is not known	Implicit	Estimate fees paid from buyer and/or seller to DIP
It is not known who pays the fee and the amount is not known	Implicit	Estimate total fee and show total paid by the seller to DIP

Note: Explicit (i.e., known) and implicit (i.e., unknown) fees in this table can be understood as meaning what is known to the compiler.
Source: IMF, OECD, UNCTAD and WTO.

The accounting principles for recording transactions related to DIPs and digital intermediation services stem from the defining characteristics of DIPs and of the intermediation service they provide. By definition, DIPs do not take ownership of the goods nor render the services being intermediated. Their facilitating or "match-making" role is assimilated to that of an arranger, as defined in BPM6 (paragraph 3.10): "one unit (an agent) arranges for a transaction to be carried out between two other units in return for a fee from one or both parties to the transaction" (IMF, 2009).

In this case, as outlined in BPM6 (paragraphs 3.10 and 4.149) (IMF, 2009), the main transaction (i.e., the provision of a good or rendering of the service being intermediated) is to be recorded in the accounts of the seller/producer and of the buyer/consumer. The accounts of the agent (i.e., the DIP) will only show the fee charged for the facilitation services rendered. This treatment is in line with the guidance provided in the context of the System of National Accounts (SNA) and Balance of Payments and International Investment Position Manual (BPM) updates,[4] as well as in the first edition (in 2019) of this Handbook.

Figure 5.1 illustrates a typical DIP transaction. As an example, in the "physical world", a customer might procure a taxi ride by interacting directly with the driver, whom they would pay directly for the journey. However, as a result of digitalization, an online intermediary can now be involved in order to match the customer with a driver, and possibly also to manage the payment. The recording of transactions in the international accounts thus depends on the residence of the three actors involved. The transaction between the driver and the customer would often be domestic (taking place in the same economy), but the supporting matching service may be provided by a non-resident DIP, and as such the fee will correspond to the cross-border provision of a digitally ordered and digitally delivered intermediation service. In the case of travellers, the customer may not be a resident (e.g., a tourist) of the same economy as the driver, potentially adding another layer of complexity (see Table 5.3).

5.3.1 UNPACKING DIP TRANSACTIONS

As illustrated in Figure 5.1, a proper recording of transactions facilitated by DIPs requires some attention by compilers. First, it is necessary to distinguish the supply of goods or services (transaction between the seller and the buyer) from the provision of intermediation services (transaction between the DIP and both the seller and the buyer). Second, it is essential to analyse the provision of intermediation services in more detail.

DIPs are remunerated for providing digital intermediation services through fees received from the buyer, seller, or both. These fees may or may not be separately invoiced (i.e., itemized on invoices), and may be collected at the same time as, or separately from, the main transaction undertaken through the DIP.

Correctly identifying and attributing intermediation fees, although challenging, is necessary to measure the role of the DIP. Table 5.1 outlines three different scenarios that may be encountered by compilers. If the fees are explicitly itemized on the invoice and attributable to the seller and/or the buyer, they are referred to as "explicit". If this is not the case, or if the information is not known to the compiler, the fees are considered to be "implicit", and compilers will need to make assumptions both about the value of the fee and about who pays for it.

Explicit fees should be recorded as a payment to the DIP for intermediation services, from the buyer and/or the seller in accordance with Table 5.1.

Implicit fees need to be imputed. The difference between what is paid by the buyer and what the seller receives can be assumed to reflect the value of digital intermediation services. However, since compilers may know, or observe, only one of these amounts, a more practical approach may be to estimate the intermediation fee separately, for instance based on reports by DIPs operating in the reporting economy (as proposed in the BPM6 update guidance).[5] When, because of data limitations, it is not possible to establish who pays the fee, it is assumed that the intermediation fees are entirely incurred by the seller.[6]

Box 5.1: Recording DIP transactions in the reporting template for digital trade

Let us suppose, considering Figure 5.1, that the buyer pays 100 for a good, of which 12 is a fee paid to the DIP. Suppose further that the DIP charges a fee of 8 to the seller for the intermediation services it provides. Let us also suppose for simplicity that the buyer, the seller and the DIP are all resident in different economies, that the transaction facilitated by the DIP is a trade in goods transaction, and the payment is routed through the DIP (although in practice payment by cash on delivery is common in some economies and industries).

1. The buyer makes a payment of 100 to the DIP. Of this, the DIP itemizes that the buyer's payment for the intermediation services provided is 12. The buyer country will record 12 as imports of digital intermediation services and the remainder, 88, as imports of goods.
2. For using the DIP, the seller still becomes liable for a fee of 8. This is itemized by the DIP in the transaction record it provides to the seller. The seller country therefore records 8 as imports of digital intermediation services.
3. In practice, the DIP also forwards the payment for the product to the seller. However, it subtracts the 8 it is owed by the seller for its intermediation services first. As a result, the seller receives 80 from the DIP.
4. Since the supply of the good happens between the seller and the buyer, the payment for the product needs to be rerouted in the statistical reporting. For the net trade of the seller to be correct this must be shown as a payment of 88 from the buyer to the seller. That is, the buyer must be recorded as paying what the seller receives for the good (80) plus the intermediation fee (8) charged by the DIP to the seller.

The recording of the transactions in the reporting template for digital trade is shown in Table 5.2. In the case of intermediation of services, the recording would be similar, but with the main transaction being recorded in items 2.2 and 2.2.a rather than 2.1 and 2.1a, and also in items 3, 3.a and 4 if digitally delivered.

TABLE 5.2: RECORDING OF THE ABOVE TRANSACTIONS IN THE REPORTING TEMPLATE FOR DIGITAL TRADE

			Buyer country		Seller country		DIP country	
Item			Exports	Imports	Exports	Imports	Exports	Imports
1	**Total digital trade**	2+3 minus 4		**100**	**88**	**8**	**20**	
2	**Digitally ordered trade**	2.1+2.2		100	88	8	12+8	
2.1	Goods			88	80+8			
2.1.a	*of which: via DIPs*			88	80+8			
2.2	Services			12		8	12+8	
2.2.a	*of which: via DIPs*							
3	**Digitally delivered trade**			12		8	12+8	
3.a	*of which: via DIPs*							
4	**Services digitally ordered and digitally delivered**			12		8	12+8	
4.a	*of which: digital intermediation services*			12		8	12+8	
	Net income from trade		**-100**		**80**		**20**	

Note: Total imports = 100 + 8 = 108. Total exports = 88 + 20 = 108. Total trade in goods = 88. Total trade in services = 20. The system is balanced, and each country's net trade is correct.

Source: IMF, OECD, UNCTAD and WTO.

Regardless of whether the fee is explicit or implicit, the main transaction (for the intermediated product) between the buyer and the seller[7] should reflect:

- the full value that the buyer pays less the fee paid by the buyer to the DIP (if any); or, otherwise stated:
- the value of the good or service being intermediated plus the intermediation fee paid by the seller to the DIP.

It is important to stress that digital intermediation platforms facilitating sales of goods and those intermediating the supply of services are treated in the same way.

When the DIP facilitates the entire arrangement including the payment, the observed transactions between the buyer and the DIP, and those between the DIP and the seller, need to be rerouted in the statistical reporting to reflect the underlying economic transactions. Box 5.1 provides a numerical example showing the recommended recording according to the reporting template for digital trade (see Table 2.1 in Chapter 2).

Fees can be paid by the buyer and/or the seller to the DIP at the time of the transaction, at an earlier or later time, or through regular payments. The transaction should be recorded in all cases on an accrual basis.

A DIP may offer different levels of service to customers and may charge different fees, including zero fees to some customers. There can be initial periods where all customers pay zero fees with the expectation that actual fees will be introduced later. In some cases, a

TABLE 5.3: RECORDING OF INTERNATIONAL TRADE TRANSACTIONS INVOLVING DIGITAL INTERMEDIATION PLATFORMS

Seller	DIP	Buyer	Treatment of transacted product	Treatment of intermediation services
If the seller pays the intermediation fee OR it is unknown who pays the intermediation fee				
Country A	Country A	Country B	Import by country B from country A	None (domestic transaction)
Country A	Country B	Country B	Import by country B from country A	Import by country A from country B
Country A	Country B	Country A	None (domestic transaction)	Import by country A from country B
Country A	Country B	Country C	Import by country C from country A	Import by country A from country B
If the buyer pays the intermediation fee				
Country A	Country A	Country B	Import by country B from country A	Import by country B from country A
Country A	Country B	Country B	Import by country B from country A	None (domestic transaction)
Country A	Country B	Country A	None (domestic transaction)	Import by country A from country B
Country A	Country B	Country C	Import by country C from country A	Import by country C from country B
If both the seller and the buyer pay the intermediation fee				
Country A	Country A	Country B	Import by country B from country A	Import by country B (of *part of* the intermediation services) from country A (the remainder of the intermediation services reflect a domestic transaction)
Country A	Country B	Country B	Import by country B from country A	Import by country A (of *part of* the intermediation services) from country B (the remainder of the intermediation services reflect a domestic transaction)
Country A	Country B	Country A	None (domestic transaction)	Import by country A from country B
Country A	Country B	Country C	Import by country C from country A	Import by country C (of *part of* the intermediation services) from country B and import by country A (of the remainder of the intermediation services) from country B

Source: IMF, OECD, UNCTAD and WTO.

supplier of digital intermediation services may apply promotional terms giving rise to a partial or total waiving or rebate of fees paid by the buyer and/or seller for a given transaction. This does not change the fact that a digital intermediation service was provided, as a fee would otherwise have been paid. However, such promotions may affect the value of trade in digital intermediation services measured in practice (for example, where the DIP offers discounts, this may imply a negative fee paid by customers, in the same way that retail margins realised on some goods may be negative).

Depending on the residence of the three parties, some or all the transactions between the buyer and the seller and the buyer/seller and the DIP for the intermediation service may be part of international trade. Table 5.3 illustrates the recommended recording of transactions related to DIPs under different possible scenarios.[8]

Finally, it is important to note that transactions facilitated by DIPs can be more complex than that illustrated in Figure 5.1. There could be a role, for instance, for transport services (e.g., a delivery person) or warehousing. The DIP may directly provide one or a number of these further services, in which case the fee paid to the DIP would cover both the intermediation and the further service. The DIP may purchase the further service, and this may give rise to international trade in services (if the service is purchased from non-residents). Or, indeed, the transport or warehousing may be part of another intermediation arrangement between the buyer and another service provider, in which case the amount paid by the buyer would be split between the DIP, the seller and the provider of the further service. In all cases, compilers should carefully examine the arrangements and apply the appropriate recording.

5.4 Measuring DIP transactions

There has been limited experience so far of measuring the activities of DIPs in many countries, including developing economies. At the same time, large DIPs provide their intermediation services in multiple countries, both developed and developing, and there are also examples of DIPs having residency in developing countries. The measurement of international trade transactions involving DIPs is therefore a pressing issue for all economies, regardless of development status and statistical capabilities.

Figure 5.2: Percentage of respondents that can identify resident and non-resident DIPs

Note: The question asked was: "Can you identify, in, for example, your enterprise surveys, how many enterprises use digital intermediaries (either resident or non-resident) to sell their products to foreign markets, and how much trade is involved?".

Source: OECD (2018c).

Box 5.2: Online platforms and the sharing economy in the United Kingdom

A subset of online platforms that is of particular interest (notably because of the regulatory uncertainty around them) includes those that facilitate consumer to consumer (C2C) transactions. These platforms, connecting a large number of potential buyers and sellers, produced a sharp increase in peer-to-peer transactions to share under-used goods or services, a phenomenon often referred to as the "sharing economy".

While there is no widely accepted statistical definition of the sharing economy, the UK Office for National Statistics (ONS) has made efforts to produce and test a statistical definition with the purpose of assessing whether the sharing economy is adequately captured in economic statistics (ONS, 2017). A first working definition, "the sharing of under-used assets through completing peer-to-peer transactions that are only viable through digital intermediation, allowing parties to benefit from usage outside of the primary use of that asset", was published in 2017.

In this context, identifying sharing economy businesses, categorizing them and maintaining a register was a crucial part of the measurement framework. Initial work (manually scanning annual reports, then using statistical learning techniques) resulted in a limited register of (certain) digital intermediation platforms which was subsequently used in several business surveys to collect information on how sharing economy businesses compare to non-sharing economy businesses.

This first definition proved to be too restrictive. Research is underway to expand the working definition as a subset of the wider digital economy. The revamped ONS Digital Economy Survey has become the main instrument for the ONS to collect information for the United Kingdom on the use of information and communications technology (ICT), on the value of e-commerce, and the role of DIPs and other platforms in the economy (see also Box 5.3).

Source: United Kingdom ONS.

A stocktaking survey conducted in 2018 by the Organisation for Economic Co-operation and Development (OECD) and International Monetary Fund (IMF) (OECD, 2018c) found that few compilers are able to identify the amount of trade facilitated by DIPs (either domestic or foreign-owned), and fewer still are able to identify payments to non-resident DIPs (see Figure 5.2). DIPs resident in a given economy should be in the statistical business register of that economy, but they are often included under various industry headings, and formal identification remains difficult.

Nevertheless, countries responding to the survey reported that manual identification of the largest DIPs, based on the name of the business, could be used to facilitate compilation of statistics on goods and services traded via DIPs and on digital intermediation services.

5.4.1 COMPILING INFORMATION FROM DIPS

IDENTIFYING DIPS

Initial efforts to detect DIPs (in the absence of an established definition) were largely based on manual identification. Mainly focused on peer-to-peer online platforms, and without targeting the international trade dimension, early work has provided useful lessons for subsequent measurement efforts.

For instance, a 2017 EU study identified nearly 500 peer-to-peer digital intermediation platforms active in Europe, of which 4 per cent had over 100,000 unique website/app visitors per day.[9] The UK Office for National Statistics (ONS) followed a similar approach in its early work to identify and measure the sharing economy (see Box 5.2).[10]

BUSINESS SURVEYS

Business surveys can be used to measure the prevalence of DIPs in the economy, to collect data on the fees received by the DIPs from residents and from non-residents as well as to gather information on the transacted products.

Among business surveys, international trade in services (ITS) surveys are arguably best placed to collect information on exports (and indeed imports, see Section 5.4.2) of digital intermediation services. Survey instructions should clearly explain that trade-related services cover digital intermediation services, and ideally those should be separately identified. This approach has been applied, for instance, by the US Bureau of Economic Analysis (BEA), in its Benchmark Survey of Selected Services and Intellectual Property Transactions with Foreign Persons, which specifically targets international trade in services.[11] More recently, the BEA has expanded this survey: if the enterprise self-identifies as a DIP, the questionnaire requests information on the income from intermediation fees. It also goes on to request the service type under which the intermediation services are reported elsewhere in the survey (see Box 5.5).

Box 5.3: Questions to enable the measurement of digital intermediation platforms in the United Kingdom

The ONS Digital Economy Survey 2021 includes the following questions targeted specifically at DIPs. These questions gather most of the information needed to estimate the value of intermediation services exported by DIPs.

During 2021, did this business provide a digital intermediary platform service?

During 2021, what was your business's income from fees charged to the following users of your digital intermediary platform?

- Income from fees charged to users located in the United Kingdom
- Income from fees charged to users located outside the United Kingdom

During 2021, what was the value of goods sold through your platform to each of the following?

- Value of goods sold to customers located in the United Kingdom
- Value of goods sold to customers located outside the United Kingdom

During 2021, what was the value of services sold through your platform to each of the following?

- Value of services sold to customers within the United Kingdom
- Value of services sold to customers outside the United Kingdom

Source: United Kingdom ONS. See https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/2021digitaleconomysurveysurveyquestions#digital-intermediary-platform.

Box 5.4: Challenges with measuring fees and commissions earned by DIPs using multinational enterprise surveys in the United States

The BEA has collected the value of fees and commissions earned by companies operating digital intermediation platforms using its surveys of the activities of MNEs. Questions were first introduced on its 2019 Benchmark Survey of United States Direct Investment Abroad[12] for both US parent companies and their foreign affiliates. The questions described digital intermediation platforms based on guidance provided in this Handbook.

> **What are the sales or gross operating revenue for digital intermediation services?**
> Services that are earned from operating a digital intermediation platform, which is an online interface that facilitates, for a fee, the direct interaction between multiple buyers and multiple sellers. The platform does not take economic ownership of the goods, nor does it provide the services that are being sold. Report fees and commissions only, not the value of goods or services sold on the platform.

The BEA has identified several challenges with collected data on DIPs from US MNEs. The most significant challenge has been a lack of responses. Despite the BEA's efforts to engage in outreach efforts prior to the launch of the survey and during the data collection period, the lack of responses has led to incomplete coverage of digital intermediation activities. Always a challenge for survey data collection, a lack of responses is typically more prevalent when a specialized segment of economic activity is targeted, such as the operation of digital intermediation platforms.

A second challenge has been the suspected misinterpretation of the digital intermediation services question by some reporters, who have reported sales of digital intermediation services when they did not in fact act as intermediaries as defined on the survey. In other words, companies that directly provided services may have reported their sales in such activities as digital intermediation services. In addition, digital intermediation services were reported by certain companies that operate a data- or advertising-driven (rather than fee-based) platform that would be properly classified in "other online operators".

Among the digital economy questions added to the 2019 Benchmark survey (see Chapter 3 for other digital economy questions featured on this survey), the question on digital intermediation services was the most challenging for reporters to interpret and provide information on. The BEA is currently researching methods to refine the preliminary BE-10 Benchmark results by estimating values where coverage is incomplete and identifying over-reported values. A similar question has also been included to the BEA's 2022 Benchmark Survey of Foreign Direct Investment in the United States.

Source: United States BEA.

Box 5.5: Measuring sales of intermediation services in the United States

The US BEA is planning to collect the value of fees and commissions earned by companies operating digital intermediation platforms using its 2022 Benchmark Survey of Selected Services and Intellectual Property Transactions with Foreign Persons.[13] Relevant questions are as follows:

12. Does your company operate a digital intermediary platform(s)?

Yes – Continue to the next question.

No – Skip to the next page.

13. Report the value of sales of digital intermediation services to foreign persons reported [on the main sales schedule] that were earned from operating a digital intermediary platform. Reported sales should include fees and commissions only, and not the value of the goods or services sold on the platform.

$ _____

14. Which of the service types listed in [the main sales schedule] include sales of digital intermediation services reported in Question 13.

_____ (drop-down option that includes all service types covered by the survey)

Source: United States BEA.

ITS surveys may, however, not be well suited to collect information on the transacted products. Although, in theory, it may be possible to add questions on the value of exports and imports of goods and services that are facilitated by DIPs into the ITS survey, other types of business surveys may be better placed for this purpose. Information on the value of domestic and international trade in goods or services being intermediated is important for compiling items 2.1.a and 2.2.a of the reporting template on digital trade (see Table 5.2). These data can also be used to derive an average fee for intermediation services charged by DIPs resident in the economy. Box 5.3 shows how some of these questions have been asked by the UK ONS.

In a similar direct approach, the United States Bureau of Economic Analysis multinational enterprise (MNE) surveys collect the value of fees and commissions earned by DIPs (Box 5.4). Although not all DIPs are MNEs, these surveys remain a useful tool for collection of information on DIPs.

5.4.2 COMPILING INFORMATION FROM DIP USERS

Many DIPs operate in economies where they have no physical presence. Fees paid to a non-resident DIP constitute an import of digital intermediation services. However, because the DIP is not resident in the compiling economy, it is especially challenging to measure these flows.

There is limited experience of national approaches to measure international trade in digital intermediation services from the point of view of the buyer because there are several challenges. For example, survey respondents, particularly households, may not know the value of the fee (even if the fee is explicit). Survey respondents may also find it difficult to determine whether their transaction was with a non-resident or resident DIP (the respondent may also think that a transaction is intermediated locally if the seller is a resident or if the DIP has a local domain name).

Some progress has, however, been made with regard to measuring the value of the underlying goods and services that are transacted via the DIP. Countries are exploring ways to gather relevant information predominantly using business and household surveys. This section describes approaches for collecting data on imports and exports of goods and services enabled by DIPs by businesses and households and for estimating the imports of digital intermediation fees when the DIP is non-resident.

BUSINESS SURVEYS

Businesses are key users of DIPs, both as sellers and buyers. It is therefore important to capture information from businesses on goods and services intermediated by DIPs and fees paid by enterprises to DIPs and to identify when these are cross-border transactions. Business surveys can do this effectively. Business surveys can have a stronger legal mandate than household surveys. Enterprises are also more likely than households to know the residency of the DIP.

Current quarterly and annual ITS surveys should capture cross-border payments by enterprises to DIPs. Information notes accompanying the questionnaire should state that fees paid by the enterprise for digital

intermediation services are recorded under trade-related services.

Further information is required, however, to arrive at meaningful results that measure the impact of DIPs on trade in goods and services. In addition to fees paid by enterprises to DIPs for digital intermediation services, it is necessary to provide data on total trade in goods and total trade in services that are facilitated by DIPs. This information provides users with items 2.1.a, 2.2.a and 4.a from the reporting template on digital trade from Chapter 2 (Table 2.1) and as shown in Table 5.2.

Chapter 3 in this Handbook discusses annual enterprise ICT usage surveys as an instrument to gather information on digital trade from enterprises. Because enterprise ICT usage surveys are used to compile statistics on many aspects of the digital economy and on how it affects business, they tend to be modular in layout, with some core modules always present and others less frequent, so as to adapt to new topics and changes in the digital economy. ICT surveys also allow for more detail on digital topics than what may be possible in an international trade in services survey or other mainstream business surveys. For these reasons, enterprise ICT usage surveys could be considered to be a vehicle to collect information on the sale and purchase of goods and services that are facilitated by DIPs, on the part of these sales and purchases that is international, and on the value of fees paid to DIPs for digital intermediation services.

The United Kingdom ONS Digital Economy Survey (see Box 5.6) asks enterprises to state the amounts paid in fees to DIPs to sell their goods and services. The question could be extended to ask about the total goods and services sold and what percentage is exported, as well as what payments were made to non-resident DIPs.

To fully reflect the impact of DIPs on the economy and on international trade, the following information (in values, percentages or a combination of both) could be collected on an enterprise ICT usage survey:

- Sale of goods via DIPs
  Of which exports
- Sale of services via DIPs
  Of which exports
- Purchase of goods via DIPs
  Of which imports
- Purchase of services via DIPs
  Of which imports
- Fees paid to DIPs
  Of which imports

It is not uncommon for mainstream business surveys or enterprise surveys to request extra information on turnover and on purchases (such as how much of the turnover is exported). Another approach that could be explored is to ask questions in mainstream business surveys on how much was sold or purchased via DIPs. Although the detail may not match what can be collected via an ICT usage survey, mainstream business surveys tend to have good coverage, and may provide information from other questions that can be linked to arrive at meaningful results on the imports and exports of goods and services intermediated by DIPs.

Box 5.6: Measuring fees paid by businesses to DIPs in the United Kingdom

The ONS Digital Economy Survey 2021 used the following questions to ask enterprises to state if they have used DIPs to sell their goods and services:

> During 2021, did your business pay a digital intermediary platform to sell your goods and services?
>
> During 2021, how much did your business pay to a digital intermediary platform to sell your goods and services?

Source: United Kingdom ONS. See https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/2021digitaleconomysurveysurveyquestions#digital-intermediary-platform.

HOUSEHOLD SURVEYS

Even though some of the information in a DIP intermediated transaction may be difficult to collect or may not be known by households, some countries have successfully used household surveys to compile statistics on purchases of goods and services intermediated by DIPs. One popular approach, as seen in the examples in this chapter, is to focus on well-known DIPs.

In building up a household survey-based approach to estimating trade facilitated by DIPs and digital

intermediation fees, it is important to gather information on the total value of goods and/or services that are intermediated, what proportion of these goods and services are transacted with non-residents, and ideally, the transaction fee paid to the DIP. This makes it possible to complete the items 2.1.a, 2.2.a and 4.a in the reporting template on digital trade (Table 2.1, Chapter 2).

Travel is a sector in which DIPs have been particularly transformative. Contrary to most other services transactions, which are measured via business surveys, travel transactions are typically captured by surveying the demand-side (for example, using tourism expenditure surveys). Accordingly, Canada collects demand-side information about DIP activity related to transport and accommodations with questions on its Canadian Internet Use Survey (CIUS) (see Box 5.7).

The results from the 2018 OECD-IMF Stocktaking Survey (OECD, 2018c) indicated that several countries use questions in tourism expenditure surveys to measure travel booked through DIPs.

For example, the Spanish National Statistics Institute (INE, see Box 5.8) established that in 2017, 68 per cent of outbound tourists booked accommodation (excluding hotels) using an online intermediation platform. This type of information could contribute to populating the digital trade reporting template.

Italy used a similar approach to collect information on the frequency of using online tools for booking or buying travel-related services on its border survey (see Chapter 3, Box 3.2).

France (see Box 5.9) included similar questions in its household panel survey and targeted domestic and outbound tourism.

In the above examples where information is gathered from households on the use of DIPs to purchase goods and services, questions only include the value of goods and services being intermediated. None of the survey questions asked about the fee paid by the household to the DIP, nor do the questions concern the residency of the DIP.

Information on the fees paid by households to DIPs is also necessary for the reporting template. In some cases, for example where a DIP has intermediated a transaction in accommodation services, the household may know the value of the fee. If the value of the fee is not collected, then some estimation and judgement is required by compilers. The fee can be estimated as a percentage on the value of the goods and services intermediated based on other known examples, perhaps from DIPs in the reporting economy. To estimate the country allocation, expert knowledge may also be required, and applying information based on the activities of a few companies may be appropriate given that DIP activity is often dominated by a few very large companies.

5.4.3 COMPILING INFORMATION ON DIPS FROM OTHER DATA SOURCES

There are some examples where data from third parties or other data sources may be used to gather information on DIPs, and on flows conducted via DIPs.

WEB SCRAPING

One approach to identifying DIPs in the economy is to use web scraping.[15] Countries have, for instance, combined data from commercial providers linking information available on company websites with the

Box 5.7: Measuring spending via platforms in Canada

The Canadian Internet Use Survey (CIUS) asks respondents to report on the purchases they made through certain categories of online platforms. Respondents are also asked about whether they offer services through these platforms (Statistics Canada, 2017):

Questions asked were:

1. In the past 12 months, did you use ride services such as Uber, Lyft, etc.?
2. In the past 12 months, what was the total amount that you personally spent on these ride services in Canada?
3. In the past 12 months, did you use private accommodation services such as Airbnb, Flipkey, etc.?
4. In the past 12 months, what was the total amount that you personally spent on these private accommodation services in Canada?
5. In the past 12 months, what was the total amount that you personally spent on these private accommodation services outside of Canada?
6. In the past 12 months, did you offer ride services such as Uber, Lyft, etc.?
7. In the past 12 months, did you offer private accommodation services such as Airbnb, Flipkey, etc.?

Source: Statistics Canada.

statistical business register. This technique is used to enrich the business register, and particular key words and expressions can be used to identify potential DIPs. Using this approach, the Netherlands developed a 2016 landmark publication on the digital economy (Oostrom et al., 2016).

A more recent example of a web scraping or big data approach is from Statistics Indonesia (see Box 5.10). As with the Netherlands example, these tools were used to gather information for several purposes, including measuring e-commerce, DIPs, price statistics and tourism statistics.

While web scraping can provide opportunities to enrich official statistics at a relatively low cost, compilers should be aware of the challenges (notably legal [16]) that using these data can entail.

PAYMENT CARD DATA

A number of countries have considered or explored the use of credit card data to measure imports of digital intermediation services. This was mentioned in the 2018 OECD-IMF Stocktaking Survey (OECD, 2018c) by Belgium, Estonia, Finland, France, Israel, Latvia and Mexico.

Chapter 3 discusses the use of payment card data to measure digitally ordered trade. Care is however needed if using credit card information to fully unpack a transaction that is intermediated by a DIP. If credit card information were to indicate, for example, that a payment was made to a non-resident DIP, further information or assumptions would be needed to separate the intermediation fee from the good or service that was intermediated. Furthermore, the intermediated good or service may or may not be imported and may or may not already be collected from other sources.

Box 5.8: Use of digital platforms to book accommodation in tourism statistics – a demand approach: experience of the Spanish National Statistics Institute (INE)

The INE conducts the Residents Travel Survey [14] to measure the number of trips made by residents in Spain to a destination within the country (domestic tourism) or abroad (outbound tourism) every month. The main characteristics of these trips are also studied, i.e., length, expenditure, purpose, accommodation, types of transport, etc.

Different forms of accommodation are considered, including those provided on a commercial basis as a paid service (rented accommodation), and those provided on a non-commercial basis (non-rented accommodation), such as accommodation provided without charge by friends or relatives or on the visitor's own account. Linked to the type of accommodation, information is also collected on how the booking was made, including a specific category for digital platforms when the chosen accommodation is a rented holiday home or a room in a private dwelling, as shown in the questions presented below.

Q1. What was the main type of accommodation used during the trip?

- **(1)** Hotels or (2) Similar establishments
- **(3)** Rented dwelling or (4) Rented room in private home
- **(5)** Rural tourism accommodation or (6) hostels
- **(7)** Camping or (8) cruise
- **(9)** Other rented accommodation
- **(10-14)** Non-rented accommodation (Q2 not applicable)

Q2. How did you book the main accommodation?

- **(1)** Directly with the service provider through its web or app
- **(2)** Directly with the service provider in person, by mail or by phone
- **(3)** Via a travel agency or tour operator (or real estate if Q1 was 3 or 4) through its web or app
- **(4)** Via a travel agency or tour operator (or real estate if Q1 was 3 or 4), in person, by mail or by phone
- **(5)** Through a specialized webpage (e.g., AirBnb, Homeaway, Booking.com, Homelidays, Niumba, Rentalia, Housetrip, Wimdu, Interhome, Friendly Rentals, etc.) only if Q1 was = s3 or 4
- **(6)** Face-to-face
- **(7)** Don't know

Results show that the role of digital platforms in booking vacation homes differs depending on whether the destination is within Spain or abroad. When travelling within the country, residents chose to book their holiday home through a digital platform in 49 per cent of cases in 2021. Even so, making the arrangements directly with the service provider offline was still an important choice (26 per cent of trips). On the other hand, when booking vacation homes abroad, platforms were used in 77 per cent of trips.

Figure 5.3: Domestic tourism: trips to rented dwellings by booking channel (2021)

Considering all domestic trips made by residents in Spain in 2021, using any type of accommodation, those who rented holiday homes booked through platforms represented 5.3 per cent of trips, 6.0 per cent of nights spent and 9.7 per cent of total expenditure.

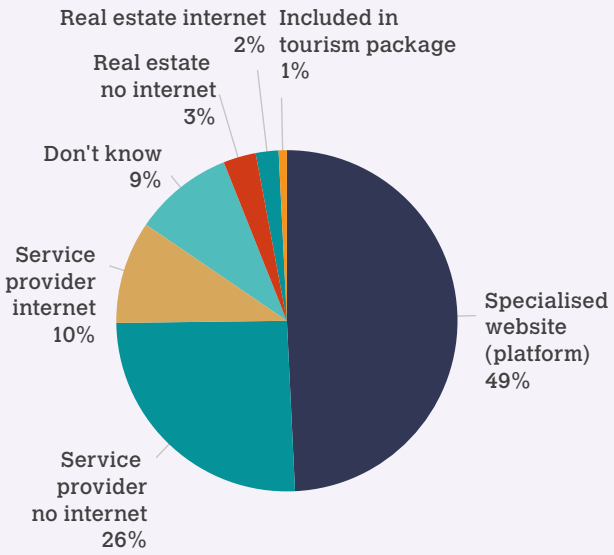
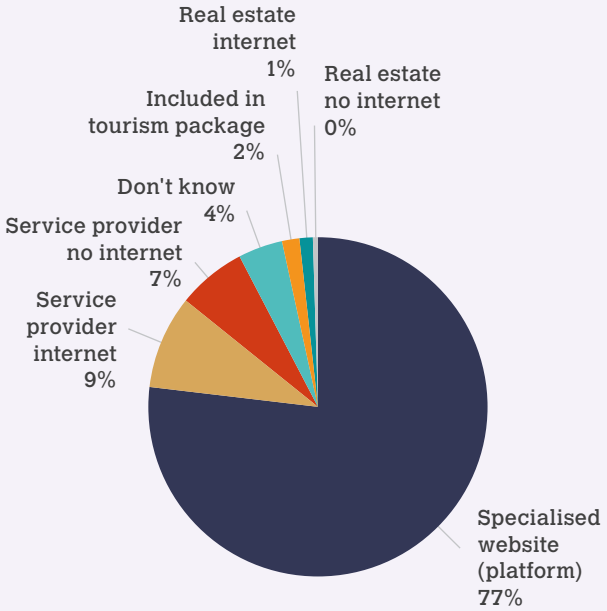


Figure 5.4: Outbound tourism: trips to rented dwellings by booking channel (2021)

In the case of outbound trips, rented holiday homes booked through platforms represented 11.9 per cent of trips, 7.4 per cent of nights spent and 10.1 per cent of total expenditure.



Source: Spanish National Statistics Institute (INE).

TRANSACTIONS IN APPS

App stores, in bringing together multiple buyers and sellers while not taking ownership of the app nor rendering the actual service provided by the app, can be considered to be digital intermediation platforms. As such, when an individual buys an app, part of the payment may be the intermediation fee paid to the app store. There may be opportunities for some countries to access data on transactions of digital services via third-party data providers (which could include transactions of apps). Care needs to be taken in understanding whether the data includes the intermediation service provided by the app store, which may need to be imputed for the buyer transaction (i.e., the import).

TARGETED APPROACH: SURVEYING DIPs

One option to measure the activities of DIPs, that is often suggested, is to target large global DIPs directly with a questionnaire asking for breakdowns of the value of goods and services being intermediated and the intermediation fees, with permission to share country information with other compilers of statistics (for example within a country's national statistical system or between countries, provided that data sharing agreements are in place). Such an approach, assuming that it is feasible (and not too costly), would significantly improve the coverage of DIPs, and estimates of imports and exports of goods and services intermediated by DIPs in international trade statistics. This would particularly benefit countries in which DIPs are not established or where compilers face challenges in sourcing information to compile statistics on DIPs.

There is at least one example of this: Eurostat publishes monthly experimental statistics on short-term accommodation [17] based on data provided to Eurostat by four international platforms following agreements on data exchange. While no monetary information is included, it is a model that could be extended.

Box 5.9: Digital intermediation platforms in tourism: experience of France

By including questions in their panel survey on resident households, which covers both domestic tourism and trips abroad, the Banque de France is able to identify if various travel-related services have been ordered using DIPs (no such questions are included in the border survey on foreign visitors). The survey contains specific questions on the mode of reservation for transportation and for accommodation:

How was the booking of your transportation/accommodation made?

(1) phone
(2) internet / application
(3) face-to-face

What type of operator was used?

(1) travel agent / tour operator (non-digital or online)
(2) directly with the carrier/hotel (non-digital or online)
(3) online intermediation platform (with examples for transport / accommodation)
(4) aggregator / search engine (with examples for transport / accommodation)

Source: Banque de France.

5.5. Recommendations

This chapter sets out how transactions enabled by DIPs should be recorded in the international accounts.

It provides some examples of survey information on exports of digital intermediation services by DIPs resident in the compiling economy, and makes a number of suggestions for gathering information from businesses on exports and imports of goods and services that are intermediated by DIPs.

Furthermore, it acknowledges the challenges in gathering accurate information on imports of digital intermediation services by households, while highlighting the success of some countries in collecting information on the value of goods and services that are purchased via DIPs in household surveys. These data should be used to populate the reporting template on digital trade, and could be combined with estimates of the proportions of intermediation fees based on well-known examples or possibly based on reports of DIPs resident in the reporting country.

The following recommendations are made in this chapter:

1 **Recording DIP transactions.** In analysing transactions facilitated by DIPs, it is necessary to distinguish the supply of goods or services (transaction between the seller and the buyer) from the provision of intermediation services (transaction between the DIP and the seller and the buyer).

   Explicit fees should be recorded as a payment to the DIP for intermediation services, from the buyer and/or the seller as appropriate.

   Implicit fees need to be imputed. Imputations can be based on the difference between what is paid by the buyer and what the seller receives. Alternatively, fees may be separately estimated (for instance based on reports by DIPs operating in the reporting country).

Box 5.10: Development of online web scraping in Indonesia

Statistics Indonesia (BPS) has conducted several exploratory studies using web scraping techniques (Adhinugroho et al., 2020; Bustaman et al., 2020). The first such study collected information from three big online marketplaces regarding e-commerce characteristics, such as, products, shops, details of product category, and sales information for each product.

In addition, Statistics Indonesia conducted studies using web scraping on DIPs to determine the weights to be used in the Consumer Price Index and to calculate occupancy rates of accommodation advertised online for use in tourism statistics.

Based on this experience, Statistics Indonesia recommends having a partnership framework with the DIPs and a legal basis for web scraping to address challenges related to data access. Challenges such as the need for large volumes of data storage, data-quality issues and the different structure of each platform makes automatic navigation and web scraping more complex.

Source: IMF, OECD, UNCTAD and WTO.

When it is not possible to establish who pays the fee, it is assumed that the intermediation fees are entirely incurred by the seller.

Digital intermediation services should be recorded in the balance of payments under trade-related services.

Regardless of whether the fee is explicit or implicit, the main transaction (for the intermediated product) between the buyer and the seller should reflect:

- the full value that the buyer pays less the fee paid by the buyer to the DIP (if any); or, otherwise stated
- the value of the good or service being intermediated plus the intermediation fee paid by the seller to the DIP.

2 **Identifying and surveying DIPs in the compiling economy.** Compilers should gather information on the prevalence of DIPs in the compiling economy. Once identified, business surveys can be used to measure the value of the intermediation services traded (notably on the export side) by those DIPs as well as the underlying goods and services intermediated.

3 **Measuring exports and imports of digital intermediation services by enterprises.** International trade in services surveys should collect exports of intermediation services by resident DIPs and imports of digital intermediation services by enterprises from non-resident DIPs. Survey instructions should clearly explain the coverage of the item "trade-related services". As a complementary source, enterprise ICT usage surveys can also be used to collect information on fees paid to DIPs.

4 **Measuring exports and imports of goods and services via DIPs by enterprises.** Enterprise ICT usage surveys (or other business surveys) should collect details on exports and imports of goods and services that are intermediated by DIPs.

5 **Measuring imports via DIPs and imports of digital intermediation services by households.** Household surveys (including consumption surveys, household ICT usage surveys or labour force surveys) should include questions on the value of goods and services purchased via DIPs, separately identifying domestic and non-domestic purchases, and the value of intermediation fees where known. At a minimum, household surveys should include questions on the value of goods and services purchased through well known DIPs.

6 **Measuring DIPs transactions in the tourism sector.** Compilers of travel and/or tourism statistics should gather information on the value of transport and accommodation services facilitated by DIPs and the associated digital intermediation fees.

7 **Targeting global DIPs directly.** National and international statistics agencies should explore the possibility of targeted surveys of large global DIPs, with cross-border data sharing arrangements.

TABLE 5.4: STRENGTHS AND LIMITATIONS OF SOURCES FOR MEASURING TRADE IN GOODS AND SERVICES VIA DIPS AND TRADE IN INTERMEDIATION FEES

Source	Strengths	Limitations
ITS surveys	Measurement of exports of intermediation services (fees) by country from resident DIPs. Measurement of imports of intermediation services (fees) from non-resident DIPs. Integrated with main source for services trade statistics.	Questions need to be added to collect the value of trade in goods and services intermediated by DIPs. There may be limited scope to add questions to ITS surveys due to the need to manage response rates and respondent burden.
Business ICT surveys	The ICT survey may offer more flexibility than some other business surveys to include detailed questions on trade in goods and services via DIPs and on the intermediation service fee paid to DIPs. DIP facilitated transactions may be covered on an occasional basis or as part of a regular module.	Some ICT surveys do not cover all industries and firm sizes and so may not be suitable for identifying all resident DIPs.
"Core" business surveys	Measurement of sales/purchases of goods and services intermediated by DIPs is possible (with a new question) and can be combined with question on exports/imports. May offer good industry/firm size coverage and larger sample sizes than ICT surveys.	There may be limited scope to add questions to surveys used for core economic statistics due to the need to manage response rates and respondent burden.
MNE surveys	MNEs can account for a significant portion in trade of goods and services with many of the largest DIPs being MNEs. MNE surveys may offer more flexibility to add additional questions than some other types of business surveys.	Covers only a subset of businesses. Requires the addition of new questions.
Household ICT surveys	In principle, a household should know the total amount paid for a given transaction through a DIP. Can focus successfully on transactions with well-known DIPs.	Respondents may have difficulty isolating purchases made through DIPs from broader online spending. Respondents may also have difficulty delineating the amount paid in fees for digital intermediation services. Respondents may also face difficulty in identifying the residency of the DIP and of the supplier of the good or service, to determine whether the transaction concerned is cross-border or domestic.
Tourism surveys	Questions on accommodation and travel expenditures via DIPs are easily integrated into tourism expenditure/border surveys.	Respondents may have difficulty delineating the amount paid in fees for digital intermediation services. Respondents may also face difficulty in identifying the residency of the DIP.

Source: IMF, OECD, UNCTAD and WTO.

Endnotes

1 Non-financial intermediation activities will be defined in the upcoming fifth revision of the International Standard Industrial Classification of All Economic Activities (ISIC Rev.5) as "activities that facilitate transactions between buyers and sellers for the ordering and/or delivering of goods and services for a fee or commission, without supplying and taking ownership of the goods and services that are intermediated. These activities can be carried out on digital platforms or through non-digital channels. The fee or commission can be received directly from either the buyers or sellers, or revenues for intermediation activities can include other sources of income, such as third-party revenues from advertising" (UN, 2022).

2 An alternative considered was to group DIPs under a generic industry providing digital intermediation services. This was rejected on the grounds that digitalization cannot be used as a criterion to classify enterprises in an industry. DIPs will therefore be treated in ISIC in the same way as enterprises that provide similar intermediation services via other means.

3 Retail and wholesale businesses engaged in purchasing and reselling goods or services which receive most of their orders digitally.

4 https://www.imf.org/-/media/Files/Data/Statistics/BPM6/CATT/c4-merchanting-and-factoryless-producers-clarifying-negative-exports-in-merchanting-and-merchanting.ashx and https://unstats.un.org/unsd/nationalaccount/RAdocs/DZ9_GN_Digital_Intermediation_Platforms.pdf.

5 See Guidance Note C.4 "Merchanting and Factoryless Producers; Clarifying Negative Exports in Merchanting; and Merchanting of Services": https://www.imf.org/-/media/Files/Data/Statistics/BPM6/approved-guidance-notes/c4-merchanting-and-factoryless-producers-clarifying-negative-exports-in-merchanting-and-merchanting.ashx.

6 This approach for treating implicit intermediation fees was advocated for by the OECD Advisory Group on Measuring GDP in a Digitalised Economy and has been endorsed in the OECD Handbook on Compiling Digital Supply and Use Tables (OECD, 2023). In the case of implicit fees, the consumer will pay for the goods or services being intermediated, while the seller/producer is assumed to pay for all the intermediation services (treated as intermediate consumption). The output of the producer will therefore be equivalent to the purchaser's price (i.e., including the intermediation fees). This approach ensures a consistent valuation in a supply-use framework and is more feasible from a compilation point of view, since it is easier to collect information on the fees from the producer/seller than from consumers.

7 In the case of payment by cash on delivery direct to the seller, the amount received may include an amount for the intermediation fee which is ultimately transferred to the DIP.

8 Annex B provides a list of possible transactions undertaken by a DIP, and where and how these should be recorded in the digital trade reporting template (see Chapter 2, Table 2.2).

9 http://ec.europa.eu/newsroom/just/item-detail.cfm?item_id=77704.

10 It should be noted with regard to the EU and ONS examples that the platforms may not be involved in international trade.

11 https://www.bea.gov/sites/default/files/2018-04/be120.pdf.

12 See https://www.bea.gov/be-10-benchmark-survey-us-direct-investment-abroad.

13 See https://www.bea.gov/sites/default/files/2018-04/be120.pdf.

14 See https://www.ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736176990&menu=ultiDatos&idp=1254735576863.

15 Web scraping is the use of software to extract data from a website.

16 For example, web scraping may be against the terms of service of some websites.

17 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Short-stay_accommodation_offered_via_online_collaborative_economy_platforms_-_monthly_data#:~:text=In%20total%2C%20450%20million%20nights,of%2057.4%20%25%20compared%20to%202021.

6. Case studies

Several countries have started to apply the core concepts presented in this Handbook to derive measures of digital trade. The detailed case studies put forward in this chapter, contributed by China, Jamaica, Spain, and Türkiye, provide compilers with a range of examples and practical applications to start measuring digital trade.

Case study 1:

Measuring digitally ordered merchandise trade in China[1]

1.1 Introduction

The General Administration of China Customs ("China Customs") is responsible for the compilation and dissemination of international merchandise trade statistics in China. Given that there is significant policy-related interest attached to cross-border e-commerce and its rapid growth, measuring and analysing digital trade in goods has become a priority for China Customs.

First measurement efforts started in 2014 with the implementation of specific customs procedure codes and the release of preliminary results under the label "CBEC [cross-border e-commerce] statistics from customs control perspective". However, although providing useful insights on recent trends, customs records alone could not capture the overall amount of CBEC, since not all digitally ordered goods are declared to customs and released from customs under these specific CBEC procedures.

In order to improve coverage and extend measurement to postal parcels, China Customs, in collaboration with the Ministry of Commerce and the National Bureau of Statistics, conducted a pilot study which resulted in the development of a specific survey targeting enterprises heavily involved in digital trade.

Currently, China Customs compiles statistics on digital trade in goods by combining customs records and survey information, as well as other data sources. These statistics have been published under the label "CBEC statistics from business perspective" since 2021.

This case study illustrates China's experiences with measuring digitally ordered trade in goods, or cross-border e-commerce. Section 1.2 presents the different data sources exploited. Section 1.3 describes the compilation methodology and Section 1.4 showcases preliminary results. Finally, Section 1.5 reflects on the overall experience and outlines future steps.

1.2 Data sources

1.2.1 CUSTOMS RECORDS

In 2014, after a series of interviews and feasibility studies with CBEC stakeholders (including platforms, online vendors, logistics facilitators and relevant government agencies), China Customs introduced a new customs procedure to identify CBEC transactions. A new code for "cross-border direct purchases" (code 9610), streamlining the customs treatment of these purchases, was introduced with the aim of facilitating the customs clearance of digitally ordered B2C goods, improving the efficiency and effectiveness of customs controls, and enhancing customs statistics.

As a result, goods subject to the procedure benefit from simplified clearance and aggregated declarations. CBEC enterprises or their agents, including platforms and payment or logistics facilitators, are required to submit e-orders, e-payment vouchers and e-waybills concerning digitally ordered goods together with a declaration to China Customs. CBEC goods are released instantly from the customs once the documents are verified and matched. By the 15th of every month, CBEC enterprises or their agents summarize all simplified export declarations for the previous month and transform them into a single formal declaration after applying the specific customs procedure of cross-border direct purchase (i.e., code 9610). For code 9610 to be applied, CBEC enterprises or their agents must consolidate their declarations in terms of value and quantity by exporter, mode of transport, country of consignment, country of last-known destination, commodity code and port of export. The aggregated declaration facilitates tax refund formalities. In addition, customs declarations labelled with code 9610 can be easily identified in the database when statistics on CBEC goods are produced.

In late 2014 and 2016, Customs China introduced two additional customs procedure codes, namely the "bonded cross-border purchase" (code 1210) and the "bonded cross-border purchase A" (code 1239). The bonded cross-border purchase code (1210) is utilized in the China cross-border comprehensive pilot zone, while bonded cross-border purchase A (code 1239) is applied in other areas. China Customs designed these two codes specifically for CBEC goods, which are imported in batches and stored in bonded logistics customs centres or bonded zones before being delivered in small parcels to domestic customers. Based on the three new codes (9610, 1210 and 1239), China Customs estimated that the total transaction value of CBEC amounted to US$ 13.3 billion in 2017 and US$ 27.5 billion in 2019.

In June 2020, China Customs introduced two additional customs procedures for CBEC B2B exports goods clearance, namely "cross-border e-commerce between enterprises" (code 9710) and "overseas warehouse

of cross-border e-commerce exports" (code 9810), which extended customs control on CBEC from B2C to B2B. Currently, the five customs procedure codes (9610, 1210, 1239, 9710 and 9810) are the primary sources for CBEC statistics.

1.2.2 ENTERPRISE SURVEY

In order to measure digitally ordered goods which are not explicitly declared as CBEC goods to customs, a survey targeting CBEC enterprises was conducted. China Customs classifies the respondents to the survey into four categories according to their business roles:

a) third-party platforms;
b) self-built/self-operated platforms;
c) e-commerce enterprises providing CBEC-related services such as logistics and customs clearance; and
d) e-commerce vendors selling their goods on third-party platforms.

In cases where one respondent holds all roles, all four respective questionnaires are required. When estimating total trade, only the two questionnaires completed by the platforms (i.e., those in categories a) and b)) are considered, with the remaining data from the other questionnaires being used for cross-validation and analysis purposes. CBEC enterprises of a significant business scale are required to complete detailed questionnaires to report further information on the origin and destination of CBEC products. The survey is conducted twice a year and the questionnaire is available in Annex E.

1.2.3 FINANCIAL REPORTS OF OVERSEAS PLATFORMS

Gross sales (i.e., merchandise value), revenues and other publicly available information are drawn biannually from the financial reports regularly released by large-scale overseas e-commerce platforms such as Amazon, eBay, Shopee and Wish to calculate their CBEC settlements. The settlement value is the amount of money paid by the buyers to vendors for the Chinese goods sold on these platforms, and it normally exceeds the export value (see Section 1.3 for details on the estimation of free-on-board (FOB) values from settlement values). China Customs updates the platform list regularly.

1.2.4 QUALITATIVE INTERVIEWS

By means of interviews with relevant enterprises (mainly service providers), further information on the cost of logistics, payment and platform management can be obtained and deducted from settlements of the platform when FOB-based exports are estimated.

1.2.5 OTHER SOURCES

To obtain the share of CBEC goods in mail parcels and express deliveries declared for personal use, China Customs conducted a telephone survey in 2019, in collaboration with the Ministry of Commerce and the State Postal Administration, of the consignors of about 5,000 randomly selected outbound postal parcels. The survey was carried out in six cities, namely Harbin, Qingdao, Chengdu, Wuhan, Hangzhou and Guangzhou, covering both coastal and inland areas in China. The share of CBEC goods in outbound parcels was determined in the telephone survey, while for inbound parcels it was obtained through industry interviews with postal parcel operators.

Since 2019, CBEC parcels have been included in external merchandise trade statistics. The statistical value is derived by multiplying the average price indicated on the parcels by the number of parcels, thus minimizing the impact of price outliers caused by declaration error. Regarding statutory statistical items derived from sources such as the trade mode and domestic locations (Annex E), China Customs developed a set of proxy codes to ensure coherence and consistency in their statistical database. For instance, if a commodity is essential for data production, but no corresponding HS code is available, an additional code is introduced into the database.

1.3 Compilation methodology

1.3.1 OBJECTIVES AND PRINCIPLES

CBEC statistics are compiled following the International Merchandise Trade Statistics: Concepts and Definitions (IMTS) 2010 (United Nations, 2011). The methodology of CBEC statistics follows four key principles:

- **Integration:** The measurement requires an integrated approach, including statistics for scope, sources, processing methods and release mechanism, to reflect CBEC in a comprehensive manner.
- **Reliability:** Data quality is ensured by a robust survey process and sound processing methods.
- **Innovation:** Beyond conventional practices of identifying customs administrative records related to digital trade, web-scraping techniques (i.e., an automated process of gathering data from the web) are used to extract the share of Chinese goods sold by overseas platforms for estimating the corresponding exports.
- **Independence:** CBEC statistics are a new statistical product, and are already included in external merchandise trade statistics. Produced in a different way compared to CBEC statistics from a customs control perspective and other customs statistics, CBEC statistics display lower granularity and frequency.

1.3.2 COVERAGE

The first step of the measurement is to determine the scope of CBEC. The World Customs Organization (WCO) has been paying great attention to the impact of the development of CBEC on customs clearance modes. A Working Group on E-Commerce was set up by the WCO in 2016 to ensure the facilitation and compliance of CBEC customs clearance. China Customs actively participated in the development of the WCO Framework of Standards on Cross-Border E-Commerce (WCO, 2018). Statistical experts from China Customs led the task force of the "Measurement and Analysis" sub-working group of the Working Group on E-Commerce. This Framework of Standards applies primarily to B2C and C2C transactions and encourages members to apply the same standards to B2B transactions. It points out that customs and relevant government agencies should work closely with e-commerce stakeholders to measure, analyse and publish CBEC statistics in accordance with international statistical standards and national policies in order to facilitate decision-making.

The scope of the CBEC statistics measured by China Customs is consistent with this *Framework of Standards*. Transactions are recorded as CBEC goods when the following criteria are met:

- The transactions are a result of trade conducted between enterprises or individuals within and outside the customs territory of China;
- The transactions are a result of orders placed through an internet platform; and
- The transactions are a result of goods being delivered through various cross-border logistics channels.

As well as coinciding with the basic requirements for coverage of international merchandise trade statistics (i.e., the cross-border movement of goods), the criteria above also align with the definition of digitally ordered trade (or cross-border e-commerce) in this Handbook. As such, CBEC statistics are compiled and presented as a subset of total merchandise trade statistics.

1.3.3 MEASURING CBEC IMPORTS

CBEC imports are estimated based on the following process:

- Step 1: Retrieve customs administrative records with specific customs procedure codes 9610, 1210 and 1239.
- Step 2: Extract survey results of import values on goods not explicitly declared to the customs as CBEC goods.
- Aggregate respectively the customs administrative records retrieved in step 1 as "Vi1" (i.e., "value import 1") and the survey results in step 2 as "Vi2" ("value import 2").
- Divide Vi2 by the coverage rate of the sampled enterprises (Rsi), obtained from an enterprise survey to reduce omissions.
- Rsi is calculated as the estimated share of the transactions by the sampled enterprises in total CBEC goods.
- The total import value Vi is derived using the formula Vi = Vi1 + Vi2 / Rsi

The results can be verified by comparing the shares of the main platforms in major markets with those of the previous measurements in total trade of consumer goods.

1.3.4 MEASURING CBEC EXPORTS

Measuring exports ordered via domestic platforms (Ve1)
The export value reported in the questionnaire by domestic platforms is aggregates as Ve1. Domestic platforms include both third-party platforms and self-run/self-built platforms not operated through a third-party like Alibaba, Jindong, DHgate, Youzan and Shein.

Measuring exports ordered via overseas platforms (Ve2)
The data sources listed in Section 1.2 are used to estimate the value of exports ordered via overseas platforms like Amazon, eBay, Shopee and Wish.

Taking Amazon as an example, the calculation process of CBEC exports is as follows:

- Extract revenue turnover of Amazon online stores and third-party seller services from financial reports regularly released by Amazon.
- Apply Amazon commission, storage fee, distribution fee and other expenses on the products sold via Amazon (obtained by interviewing Chinese sellers) and convert revenue turnover into a settlement value for Amazon third-party and self-operated goods (Ea, the ratio of Chinese goods sold via Amazon).
- Analyse the address information of Amazon sellers to derive an estimate on the sales of Chinese goods via Amazon (Ra, the value of the goods themselves, excluding any services), which is provided by a third party, and then derive the settlement value of Chinese goods on Amazon (S1'). The settlement value is the amount of money paid by buyers to vendors for the Chinese goods sold on platforms, which exceeds the export value.

$$S1' = Ea * Ra$$

- Convert S1' into FOB-based exports (S1) by applying the charges expressed as a percentage (C). The charges include platform fees, logistics costs and customs clearance fees, taxes and other fees paid in the CBEC process.

$$S1 = S1' * (1 - C)$$

- Summarize the Chinese exports ordered by different platforms (as S1, S2… Sn) to get the CBEC total export sold on major overseas platforms (Ve2).

Data integration of CBEC exports both from domestic and overseas platforms

- Add exports ordered from domestic platforms (Ve1) to those from overseas platforms (Ve2).
- Adjust the sum by the sample enterprises coverage rate (Rse), which is obtained by enterprise surveys to reduce omissions, to get the total CBEC export (Ve).

$$Ve = (Ve1+Ve2)/Rse$$

1.3.5 DATA VERIFICATION

Over the years, the process has seen the development of relatively robust CBEC statistics. From time to time, business interviews are conducted to adjust the market proportions of the major platforms, which are compared with the ratio of domestic and overseas platforms. If the results from the interviews and estimations differ greatly, China Customs further investigates if there are omissions or errors. Since the majority of the CBEC goods are consumer products, the ratio of the CBEC imports and exports with total consumer products imports and exports and the percentage changes are checked.

1.4 Results

1.4.1 PRELIMINARY AGGREGATE RESULTS

In 2022, China's total international CBEC trade was about US$ 309 billion, up by 3.8 per cent year-on-year. CBEC exports increased by 6.7 per cent to US$ 230 billion. CBEC imports shrank by 3.8 per cent to US$ 79 billion (Table 6.1).

The main markets for China's CBEC exports are the United States, the United Kingdom, Malaysia, France, Germany, Japan, Spain and Russia in order of size of export markets, while CBEC imports mainly come from the United States, Japan and the Republic of Korea. Consumer goods account for 93 per cent of the CBEC exports, with clothing, shoes and bags, textiles and other household items, and electronic products also counting as major products. The share of consumer goods in imports is 98 per cent, mainly consisting of perfumes, make-up and other personal care and toiletry items, health products, and maternal and children's products.

1.4.2 DISSEMINATION OF STATISTICS

CBEC statistics are compiled and released annually, with preliminary estimations made available every quarter. The quarterly preliminary data are not revised. CBEC imports and exports data are produced with a four-month lag due to the availability of sources, while China Customs statistics on total merchandise trade are usually released within one month. In order to improve the timeliness of the CBEC statistics, a mechanism of quarterly estimation was established in 2021.

The preliminary statistics of CBEC imports and exports are derived on the basis of the previous measurements of CBEC and the merchandise trade statistics of the reference period, produced with customs administrative records, including trade totals, volume of consumer goods and CBEC statistics from a customs control perspective, as well as CBEC parcels imported and exported as personal effects. Due to the lack of data availability, there are no breakdowns in the preliminary CBEC estimation. The annual estimation will be updated by the statistics produced with survey data and the other sources.

1.4.3 BREAKDOWN OF CBEC STATISTICS

CBEC imports and exports are broken down by trading partner (country/region), end use, import and export

TABLE 6.1: IMPORTS AND EXPORTS OF CBEC IN CHINA, 2019-22

Year	Value in billion US$			Year-on-year (%)		
	Total	Export	Import	Total	Export	Import
2019	187	116	71	17.0	24.9	6.1
2020	234	157	77	25.2	35.5	8.7
2021	297	215	82	27.0	37.4	6.1
2022	309	230	79	3.8	6.7	-3.8

Source: China Customs.

modes, and domestic locations for comprehensive analysis. The information obtained from the survey helps to establish the proportion of the breakdown. Big data methods are introduced to improve the quality of data coming from domestic locations (at a provincial level). To facilitate the reporting, CBEC goods are classified into consumer goods and inputs of production in the questionnaire, where the former is further divided into 10 sub-groups.

Consumer goods of CBEC imports are classified as following:

- Food and drinks;
- Milk powder;
- Nappies;
- Perfumes, make-up and other personal care and toiletry items;
- Medicines and health products like food supplements;
- Mobile phones, computers and other digital products, household appliances and peripheral products;
- Textiles and other household items;
- Clothing, shoes and bags;
- Toys, infant and children's products other than milk powders;
- Other consumer goods.

Consumer goods of CBEC exports are classified as following:

- Clothing, shoes and bags;
- Mobile phones, computers and other digital products, household appliances and peripheral products;
- Textiles and other household items;
- Jewellery, clocks and watches, glasses;
- Toys, infant and child products other than milk powders;
- Articles for entertainment and sports;
- Perfumes, make-up and other personal care and toiletry items;
- Utensils for gardening and home use;
- Peripheral products of automobiles;
- Other consumer goods.

1.5 Conclusions: lessons learned, challenges and future steps

1.5.1 LESSONS LEARNED

Sound cooperation between different stakeholders is crucial for measuring digital trade. China Customs received support in compiling CBEC statistics, as these cannot be produced solely by customs administrative records, in the way that conventional merchandise trade statistics are. Government agencies responsible for commerce, postal services and statistics helped in the determination of the sample for respondents and provided sources for data cross-validation. The Chamber of Commerce supported the relationship-building between China Customs and CBEC industry stakeholders. The respondents were identified based on their sales volume. The National Statistics Bureau helped to design the methodology and data quality control mechanisms. Valuable insights on CBEC were shared in the interviews with CBEC stakeholders to help establish estimation parameters.

Incorporating the survey responses by major domestic CBEC platforms into the measurement proved to be cost-effective and efficient in preventing the omission and duplication of data. Among all the stakeholders interviewed, CBEC platforms are the most appropriate in providing data on digitally ordered imports and exports. This is one of the core contributions of CBEC statistics and cannot be captured by customs administrative records. Major e-vendors and CBEC service providers also provide useful information for data verification.

CBEC statistics follow the standards of international merchandise trade statistics. According to IMTS 2010 (United Nations, 2011) and the *Regulations on Customs Statistics of the People's Republic of China*, as a part of international merchandise trade statistics, the CBEC goods are included in the data after having physically moved across borders. The valuation for exports is on a FOB basis, while imports are valued on a cost-insurance and freight (CIF) basis. Statistics sourced from CBEC platforms are collected at retailers' prices, which contain platform fees, logistics fees like home delivery, taxes and other fees occurring after the export or import declared in customs declarations. The values obtained from the survey completed by domestic platforms and the gross merchandise values from the financial reports of the overseas platforms are harmonized and adjusted. The CBEC statistics can thereby be analysed in the context of the external merchandise trade from various dimensions.

1.5.2 CHALLENGES

The key challenges are establishing effective collaboration with data producers, disaggregating the data and improving data quality:

- Collaboration with data producers abroad: It is more difficult to establish a cooperative mechanism to obtain detailed data with overseas platforms than with domestic platforms, even though surveys responded to by domestic platforms can never be as detailed and as timely as administrative records.
- Granularity of data: As they are limited by the compilation methodologies, CBEC statistics are of low frequency and low granularity and sometimes fail to meet the demands of data users who are accustomed to the high frequency and multiple dimensions of conventional merchandise trade statistics derived from customs administrative records.
- Measures to improve data quality: There is no sufficient way to check the reliability of the parameters applied in the estimation. More efforts should be put into the maintenance of reliable parameters to assure quality estimation. A sustainable and cost-effective method for parameter updating needs to be established.

1.5.3 FUTURE STEPS

China Customs will continue to compile CBEC statistics on a regular basis. Measures will be taken to improve the data quality, including but not limited to:

- Applying big data technology to improve data quality and compilation methodology for better measuring totals and data breakdowns;
- Holding more interviews with independent "station construction service providers" (a type of self-operated platform which knows its clients) and enterprises specialized in providing services with respect to logistics and payment to find more platforms to enhance the coverage of the survey respondents;
- Differentiating the survey questionnaires by different types of respondents to reduce the response burden and obtain consistent information; and
- Strengthening partnerships with data-holders.

Case study 2:

Towards a better measurement of digitally delivered trade: China's experience and prospects[2]

2.1 Introduction

China's Ministry of Commerce (MOFCOM) is responsible for promoting foreign trade and international economic cooperation, participating in the WTO e-commerce negotiations, and advancing the development of digital trade in China.

In 2006, MOFCOM launched the "Thousand-Hundred-Ten project",[3] with the aim of promoting exports – here referred to as "service outsourcing" – of three categories of ICT services deemed as digitally deliverable, i.e., information technology outsourcing (ITO), business process outsourcing (BPO) and knowledge process outsourcing (KPO).[4] As a result of this package of policies, over 67,000 enterprises have been engaging in these activities, with over 10 million jobs created, and exports reaching 200 economies worldwide.

In order to better monitor developments in this area, MOFCOM introduced the Investigation System on Service Outsourcing (hereafter, the Investigation System) in 2007 to collect data. In 2009 MOFCOM introduced the Online Monitoring System on Service Outsourcing, an online data collection system. Since then, MOFCOM has been regularly carrying out data compilation and conducting countrywide personnel training, and it reviews the Investigation system every three years.

This case study is structured as follows. Section 2.2 outlines the compilation process and the data sources. Sections 2.3 presents some preliminary results and validation process. Finally, Section 2.4 reflects on the overall experience and future steps.

2.2 Compilation process and data sources

2.2.1 INTERNATIONAL SERVICES OUTSOURCING: CONCEPTS AND DEFINITIONS

MOFCOM categorizes services outsourcing into international services outsourcing and domestic services outsourcing. International services outsourcing refers to the services provided by Chinese enterprises to their overseas clients, whereas domestic services outsourcing denotes the services provided to domestic customers.

According to the nature of business activities, MOFCOM classifies services outsourcing into three categories, namely ITO, BPO, KPO, as described in Table 6.2.

TABLE 6.2: CLASSIFICATION OF SERVICES OUTSOURCING IN CHINA

Main category	Sub-category	Delivery method
Information technology outsourcing (ITO)	IT research and development services	All/almost all digitally delivered
	IT operation and maintenance services	
	IT application development services	
Business process outsourcing (BPO)	Internal management services	Partially digitally delivered
	Business operation services	
	Repair and maintenance services	
Knowledge process outsourcing (KPO)	Business services	Partially digitally delivered
	Design services	
	Research and development (R&D) services	

Source: MOFCOM.

As defined in this Handbook, digitally delivered trade refers to international transactions delivered remotely through computer networks. According to this definition, international service outsourcing undertaken by Chinese enterprises is regarded as digitally deliverable and is mostly supplied via Mode 1. However, while ITO is considered to be almost fully digitally delivered in practice, BPO and KPO still require some on-site deliveries. MOFCOM has not yet launched a survey to collect the shares of digital delivery for the two latter categories.

2.2.2 STATISTICAL PRINCIPLES

When compiling service outsourcing statistics, the following principles are applied:

- **Completeness:** MOFCOM sets up statistical scope, indicator list, measurement approach and data dissemination via its Investigation System to achieve better coverage.
- **Timeliness:** Taking into account evolving information technology, the Investigation System, including the registration forms, is upgraded every three years. Emerging digital business modes will be included in the system as and when they are developed. New contracts and completed services deliveries are required to be updated and disseminated on a monthly basis.
- **Accuracy:** MOFCOM has established a three-layer review mechanism to validate submissions, detect anomalies and ensure compliance.

2.2.3 DATA SOURCES

The Online Monitoring System on Service Outsourcing, launched in 2009, is the main data source used in this context. Enterprises are required to register their basic information in the online system and to provide details of their service outsourcing contracts on a monthly basis. Regular reviews are conducted by the governmental commercial departments to ensure that declarations made by enterprises meet the requirements of the system. Validated data are summarized subsequent to governmental reviews and made available for inquiries of enterprises and governmental commercial departments.

By 2021, over 67,000 enterprises had been registered in the system and required to submit the breakdown of data by business type and trading partner. On the basis of these data, reports are generated on a granular level for analytical purposes. About 10,000 enterprises participate in the survey each year, some of them regularly.

Surveys are conducted by MOFCOM at the central government level and by commercial departments at the local level. Local governments take charge of data validation and submission and MOFCOM reviews this at a later stage. The questionnaire is composed of several forms, which collect information on each enterprise, on the details of the services provided, on the clauses agreed in contracts, such as contracting parties and values, implementation status of the contracts and information on personnel and international certifications. This questionnaire is available in Annex F.

2.3 Preliminary results

As illustrated in Table 6.3, in 2022 the value of international service outsourcing in China reached US$ 136.8 billion, a leap from US$ 96.9 billion in 2019 (an average annual growth of 12 per cent). International information technology outsourcing (international ITO), which accounts for over 40 per cent of the total, rose from US$ 42.7 billion to US$ 56 billion, growing at an average annual rate of 9.5 per cent.

TABLE 6.3: INTERNATIONAL SERVICE OUTSOURCING IN CHINA, 2019-22

Year	International service outsourcing		International ITO		International BPO		International KPO	
	Value (US$ billion)	YoY change	Value (US$ billion)	YoY change	Value (US$ billion)	YoY change	Value (US$ billion)	YoY change
2019	96.9	9	42.7	6	17.5	28	36.7	5
2020	105.8	9	46.3	9	17.1	-2	42.3	15
2021	130.3	23	55.0	19	19.8	16	55.5	31
2022	136.8	5	56.1	0.2	22.4	13.1	58.3	7.0

Source: MOFCOM.

Table 6.4 presents a further breakdown of ITO exports by sub-category. IT research and development services registered the largest share in international ITO in 2019-22, accounting for over 80 per cent of total international ITO. IT research and development services surged at an average rate of 9.3 per cent from US$ 34.4 billion in 2019 to US$ 44.9 billion in 2022. IT operation and maintenance services rank second and grew from US$ 7.1 billion in 2019 to US$ 9.6 billion in 2022, an average rate of 10.5 per cent. IT application development services is a new category since 2019, with the compilation process subject to further enhancement. It was valued at US$ 1.2 billion, US$ 0.8 billion, US$ 0.9 billion and US$ 1.6 billion, respectively, for the period from 2019 to 2022.

Since international ITO refers to the remote delivery of IT services, the data can be compared to and cross-validated with the export value of telecommunications, computer and information services (EBOPS 2010 Item SI) as defined in MSITS (2010) and recorded in the Chinese balance of payments. International ITO accounts for 65 to 80 per cent of total exports of this item, which is deemed plausible since telecommunications services are not included in ITO exports (Table 6.5).

TABLE 6.4: INTERNATIONAL ITO BY CATEGORY IN CHINA, 2019-22

Category	2019		2020		2021		2022	
	Value (US$ billion)	YoY change	Value (US$ billion)	YoY change	Value (US$ billion)	YoY change	Value (US$ billion)	YoY change
International ITO	42.7	6	46.3	9	55.0	19	56.1	0.2
IT research and development services	34.4	-0.1	37.8	10	45.4	20	44.9	-1.0
IT operation and maintenance services	7.1	36	7.7	7	8.7	14	9.6	9.4
IT application development services	1.2	155	0.8	-29	0.9	9	1.6	8.2

Source: MOFCOM.

TABLE 6.5: EXPORTS OF ITO COMPARED TO EXPORTS OF TELECOMMUNICATIONS, COMPUTER AND INFORMATION SERVICES IN CHINA, 2019-22

	International ITO (US$ billion)	Telecommunications, computer and information services exports (US$ billion)	Ratio
2019	42.7	53.9	79%
2020	46.3	60.8	76%
2021	55.0	79.5	69%
2022	56.1	86.2	65%

Source: MOFCOM.

2.4 Conclusions: lessons learned, challenges and future steps

2.4.1 LESSONS LEARNED

MOFCOM's experience highlighted three main factors contributing to the success of this approach:

- **Statistical collection mandated by law:** Under the guidance of the National Bureau of Statistics of China, MOFCOM launched the Investigation System on Service Outsourcing in 2007 to carry out statistical investigation on International ITO at country level. Enterprises are mandated to register business information to enable MOFCOM to compile, process, analyse and disseminate data on services outsourcing.
- **Implementation of an online system:** MOFCOM established the Online Monitoring System on Service Outsourcing in 2009 to compile data in a timely and accurate manner. This system is reviewed and upgraded every three years, and a user manual is provided to enterprises and local governments.
- **Training regularly conducted:** Each year, MOFCOM provides nationwide trainings to local officials on the latest developments in service outsourcing and the up-to-date requirements in statistical work. The local governments then provide training for their enterprises. A contact group has been established on social media to facilitate exchange of practices.

2.4.2 CHALLENGES

The challenges encountered relate mostly to the technical implementation of collection and compilation. The state-of-the-art technology deployed in the collection process enables services to be delivered through a cloud platform. However, emerging business models are not always covered in time. In addition, currently international ITO covers only digitally delivered exports.

2.4.3 FURTHER SUGGESTED IMPROVEMENTS

In the future, MOFCOM plans to further enhance and improve the measurement of digitally delivered trade. The following steps are being considered:

1. **Enhancing the Investigation System by:**
   - requesting enterprises to provide information in the forms on the shares of digitally delivered services in the total services to facilitate the measurement of digital delivery of R&D, design, audio and video, as well as of creative services;
   - adding digital intermediation platforms as a category to the forms to obtain the transaction values of digitally delivered trade through digital intermediation platforms from enterprises;
   - compiling imports of services outsourcing.
2. **Diversifying data sources:** MOFCOM aims to facilitate data-sharing with public data-holders such as China Customs, the State Taxation Administration and the Ministry of Industry and Information Technology. MOFCOM will also examine the feasibility of applying big data technology to fill in data gaps.
3. **Reinforcing international cooperation:** MOFCOM aims to strengthen partnerships with international organizations and to exchange experiences and practices with other countries.

Case study 3:

Digital trade in Jamaica: exploring new measurement approaches[5]

3.1 Introduction

In 2021, Tax Administration Jamaica (TAJ) coordinated a stocktaking exercise aimed at identifying a range of possible data sources relevant for estimating digital trade in Jamaica, involving official information as well as experimental data. The exercise highlighted the feasibility of deriving estimates of digital trade by exploiting existing data sources, without developing costly new survey instruments.

Most of the sources identified, including the living conditions survey, border surveys, payment card data and administrative sources, could be used to estimate digitally ordered trade (Table 6.6). In addition, there has been some progress in exploring the measurement of digitally delivered trade and trade via digital intermediation platforms, although these efforts are still at an early stage. It is important to note that the approaches described in this case study have not yet been implemented.

The stocktaking exercise was intended to promote the synchronization of national data collection processes and to leverage the use of existing statistical datasets, especially those used for the compilation of the balance of payments and of the national accounts in Jamaica. The intention is to derive policy-relevant measures of digital trade without creating excessive burdens either for the statistical compilers or for the survey respondents. Drawing on information provided by the key stakeholders in the statistical system in Jamaica, and following the recommendations of the Handbook of Measuring Digital Trade (OECD, WTO, IMF, 2019), this approach may be relevant to countries with similar statistical capabilities to Jamaica.

The case study is structured as follows. Section 3.2 introduces the key data sources that could be exploited to derive estimates of digitally ordered trade and, to a lesser extent, digitally delivered trade. Section 3.3 gives a brief outlook on future challenges and the way forward.

3.2 Data sources

3.2.1 SURVEY ON LIVING CONDITIONS

The Survey on Living Conditions (SLC) is conducted once per year and includes questions on internet and communication technology (ICT) usage by households. It is conducted via internet, regular mail and face-to-face interviews by the Jamaican Statistical Institute (STATIN).

At the time of writing, one question in Part L Section 6 of the survey asks household members whether the internet was used to purchase/order goods or services online, which gives some information concerning digitally ordered trade. Additional questions related to the consumption of various services, including streaming movies and accessing educational and financial services (see Figure 6.1), allow for some insights into digitally delivered trade. STATIN is currently working on an adaptation of the questionnaire to include information on the value of purchases made via the internet, which would enable a more precise assessment of the value of digitally ordered goods and services.

TABLE 6.6: LIST OF DATA SOURCES PROPOSED TO MEASURE DIGITAL TRADE IN JAMAICA, 2022

Category	National Source	Type of trade
Household surveys	Survey of Living Conditions (SLC)	Digitally ordered
Border surveys	Tourist Expenditure Survey (TES)	Digitally ordered
	Tourist Satisfaction Survey (TSS)	Digitally ordered
Credit card data	Bank of Jamaica	Digitally ordered/Digitally delivered
Administrative data	Tax Administration Jamaica (VAT tax forms)	Digitally ordered/Digitally delivered
	Jamaican Customs Agency (customs data)	Digitally ordered

Source: Tax Administration Jamaica.

Figure 6.1: Survey of Living Conditions - Part L Section 6 - Question on ICT usage

For which of the following personal activities did you use the Internet in the past 3 months (from any location)?

Sending or receiving email.....A
Information search/Browsing.....B
Telephoning over the internet.....C
Participating in social networks.....D
Accessing chat sites, blogs, news groups or online discussions.....E
Purchasing/ordering goods or services.....F
Internet banking or other financial services.....G
Education,research and related activities.....H
Reading/downloading online newspapers,magazines,books.....I
Streaming or downloading images,movies, videos, music; playing or downloading games.....J
Seeking jobs, submitting job applications,participating in professional networks .....K
Using storage space on the internet to save documents, pictures, music, video or other files.....L
Using software run over the internet for editing documents, spreadsheets or presentations.....M
Other(Specify).....N

YES.....1
NO.....2

MULTIPLE RESPONSES

A	B	C	D	E	F	G	H	I	J	K	L	M	N

Source: STATIN.

As is the case for most household surveys, this source does not provide any monetary values and therefore cannot be used to identify digital trade transactions. Additional limitations include the level of disaggregation and the lack of geographical scope. In fact, goods and services are not separately identified in the digital ordering question, and there is no information to distinguish between the domestic and the international dimension (see Table 6.7).

TABLE 6.7: DIGITAL TRADE DIMENSIONS IN THE SURVEY OF LIVING CONDITIONS IN JAMAICA

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in living conditions statistics but monetary value on digital flows is excluded.
Nature (How?)	Partial	Digitally ordered is partially covered, and digitally delivered can be approximated.
Product (What?)	No	Goods and services are not differentiated.
Actors (Who?)	Partial	Households.
Flow (Sales/Purchases)	Partial	Purchases are covered.
Online channel	No	The questionnaire does not make a distinction between the different channels.
Geography (Domestic/Cross-border)	No	Geographical breakdown for e-commerce into domestic and cross-border transactions is not provided.

Source: Bank of Jamaica.

3.2.2 TOURIST EXPENDITURE SURVEY AND TOURIST SATISFACTION SURVEY

The Jamaica Tourist Board (JTB) conducts both a Tourist Satisfaction Survey (TSS) and a Tourist Expenditure Survey (TES) on an annual and bi-annual basis respectively.

The TSS measures the overall satisfaction of tourists visiting Jamaica and provides important information on the channels through which tourists visiting Jamaica book their accommodation, thus offering insights into exports of digitally ordered services in Jamaica.

The TES assesses the estimated expenditure of visitors on a monthly and seasonal basis to produce an annual estimate. The survey breaks down short- and long-term stays and differentiates by residents, armed forces and non-resident Jamaicans. These estimates play an important role in compiling travel-related export data in the services account of the balance of payments. This data source only covers inbound tourism flows (exports). Information on Jamaican residents involved in tourism abroad could, in the future, be assessed using additional data sources, such as credit card data.

3.2.3 CREDIT CARD DATA

The Bank of Jamaica (BOJ), mandated by the BOJ Act, collects information on credit card transactions of Jamaican residents (Bank of Jamaica, 1960). Currently, four international credit card companies (namely Visa, Mastercard, Japan Credit Bureau and American Express) are required to submit information on credit card transactions to the BOJ. Credit card companies provide monthly data expenditures by Jamaican residents cleared through foreign websites, which can be seen as a proxy for digitally ordered imports.

However, at this stage of exploration, the BOJ faces key limitations (Table 6.8). First, although the information reported by the credit card companies is broken down by merchant category code categories (i.e., four-digit numbers that classify the type of goods or services a business offers), the available level of detail does not allow a precise identification of products. Moreover, resident and non-resident disaggregation are difficult because the credit card information only indicates the country of residence of the bank issuing the card, rather than the residency of the card-user. At this stage, the share of cross-border expenditures is approximated, as an exact distinction is not possible.

In the future, Jamaica plans to use data from payment gateway companies to better disaggregate the credit card data in terms of goods and services. A payment gateway is a technology used by merchants to accept debit or credit card purchases from customers. The term includes not only the physical card-reading devices found in brick-and-mortar retail stores, but also the payment processing portals found in online stores. Data from payment gateways can be used to access additional information on the average transaction value and the exact location where the

TABLE 6.8: DIGITAL TRADE DIMENSIONS CAPTURED BY CREDIT CARD DATA IN JAMAICA

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Data are not disaggregated by product nor sector. Partial disaggregation could be made available using payment gateway data.
Nature (How?)	Partial	Expenditure items for both goods and services ordered via the internet. Digitally delivered services can be identified based on the list of digitally deliverable services as recommended in this Handbook.
Product (What?)	Partial	Information on credit card transactions for both goods and services is collected. Classification by products/sectors is difficult and is currently being explored.
Actors (Who?)	No	A breakdown by residency is not available from credit card data. In the future, additional information from the payment gateway data could be used to identify the share of cross-border transactions.
Flow (Sales/Purchases)	Partial	Only purchases.
Online channel	No	No distinction of the type of online channel.
Industries	No	No industry breakdown.
Geography (Domestic/Cross-border)	No	Geographical breakdown for into domestic and cross-border transactions is not provided.

Source: Bank of Jamaica.

payment was made. Combining credit card data with the more detailed data from payment gateways is currently being investigated and has not yet been tested in the Jamaican system. Jamaica then plans to use the credit card data to complement the balance of payment statistics with enhanced information on digitally ordered and delivered trade.

3.2.4 CUSTOMS DATA

The Jamaica Customs Agency (JCA), mandated by the Customs Act 1941, collects information on goods imported and exported across Jamaica's borders. As part of this mandate, the JCA also collects information from the couriers who physically deliver digitally ordered goods. The data collected by the JCA help estimate the percentage of goods ordered. Based on current data, JCA estimates that over 90 per cent of the courier services are used for goods ordered from abroad.

Information is compiled using the UNCTAD Automated System for Customs Data (ASYCUDA), as well as data from business registers. The data enable the identification of enterprises which register the provision of courier services as their core business function. The imports of companies registered as courier services are added up and then divided by the total imports as recorded in the balance of payment statistics. The shares of imports by courier services are currently included in the balance of payment statistics and serve as a proxy for digitally ordered trade in goods (see Table 6.9).

3.2.5 ADMINISTRATIVE DATA ON TAX DECLARATIONS

The Tax Authority Jamaica (TAJ) operates under a comprehensive legislative framework governing the effective and efficient administration of taxes. The TAJ can obtain information from tax declarations

TABLE 6.9: EXTRACT OF JAMAICA BALANCE OF PAYMENTS DATA ENRICHED BY CUSTOMS DATA (MONTHLY 2020-21 DATA)

US$ millions	Mar-20	Jun-20	Sep-20	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21
Goods and services (balance)	-339.9	-691.6	-711.3	-825.5	-708.9	-579.9	-763.0	-976.7
Credits	1465.2	482.2	630.6	764.9	850.5	1147.0	1180.8	1206.9
Debits	1805.1	1173.8	1341.9	1590.4	1559.4	1727.0	1943.8	2183.6
Goods (balance)	-853.3	-614.2	-660.0	-821.0	-647.2	-556.6	-577.9	-1043.9
Exports	358.2	264.7	306.4	321.2	360.3	422.9	371.5	286.0
Imports	1211.6	878.9	966.4	1142.2	1007.5	979.5	9494.4	1329.9
Services (balance)	513.4	-77.4	-51.3	-4.5	-61.8	-23.3	-185.1	67.2
Credits	1107.0	217.5	324.2	443.8	490.1	724.2	809.3	920.9
Debits	593.6	294.9	375.4	448.3	551.9	747.5	994.4	853.7
Total exports of goods	358.2	264.7	306.4	321.2	360.3	422.9	371.5	286.0
Total imports of goods	1211.6	878.9	966.4	1142.2	1007.5	979.5	949.4	1329.9
Total imports of couriers	122.0	115.7	106.6	184.0	156.6	118.5	118.5	45.7
Courier imports as a % of total imports	10%	13%	11%	16%	16%	12%	12%	3%

Source: Bank of Jamaica (2022).

(general consumption tax, commonly referred to as value-added tax) on services. More specifically, the revenue collected through tax payments on goods and services exported/imported by non-resident suppliers and resident importers are captured on these returns for the respective reporting period (Tax Administration Jamaica, 2022).

This approach could be implemented in the future to estimate a proxy for digitally ordered and delivered trade, and would require the implementation of a reporting mechanism between the TAJ, the BOJ and STATIN to reconcile statistical information. A proxy for digitally ordered trade could be derived by matching the value of products indicated in the declaration to the list of ICT-enabled goods as defined by UNCTAD. However, this would require additional information about the good or service. For digitally delivered trade, STATIN would first need to derive a list of enterprises that typically sell digitally deliverable services (e.g., financial intermediaries). STATIN could impose a threshold on exports under the assumption that amounts below this threshold represent delivered services. This could make it possible to avoid covering services that are not actually digital.

The proposed approaches are limited due to a lack of product detail on the tax declaration. To derive first estimates, the tax declaration form should be adapted to retrieve additional information on whether the product was digitally ordered or digitally delivered and a clearer description of what type of product is declared. In addition, administrative data from the tax returns need to be mapped to the categories of services based on the type of enterprises filling the declarations and as defined in the BPM6 to derive proxies for the share of services digitally delivered for exports. An initial mapping is available in Annex G.

3.2.6 BALANCE-OF-PAYMENTS ENTERPRISE SURVEY

The quarterly Enterprise Survey is the main data source to compile exports and imports of services by service item in the Jamaican balance of payments. The sample size includes resident enterprises, namely 400 of the largest enterprises in Jamaica, based on asset size and gross profits. The questionnaire is administered directly to companies via email or an online survey portal and provides information on income and expenditure of enterprises.

The questionnaire does not explicitly distinguish between digitally ordered or digitally delivered services. It is, however, possible to derive a proxy for digitally delivered services by considering the type of EBOPS 2010 services items that are digitally deliverable (Table 6.10). Within this group, particularly relevant in the Jamaican context are business process outsourcing (BPO) services, recorded under other business services. Since these services can be delivered both digitally and physically (Mode 4), combining balance of payment survey data with information from Jamaica's national statistical business register (which includes enterprises' nature of business) can provide first estimates on digitally delivered services (Mode 1) for this specific category.

TABLE 6.10: DIGITAL TRADE DIMENSIONS CAPTURED IN THE ENTERPRISE SURVEY IN JAMAICA

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digitally delivered services.
Nature (How?)	Partial	Digitally delivered services can be estimated by considering the type of EBOPS 2010 services items supplied by Mode 1 that are digitally deliverable.
Product (What?)	Partial	Services according to EBOPS 2010.
Actors (Who?)	Partial	No breakdown by type of client is available. However, exports cover all B2B, B2C and B2G transactions, while imports cover B2B and B2G.
Flow (Sales/Purchases)	Total	Both flows (exports/imports) are included.
Online channel	No	The questionnaire does not collect any information on the channel of digital trade (website, mobile application or digital intermediation platform).
Geography (Domestic/Cross-border)	Total	Only cross-border services are considered as the Enterprise Survey covers services transactions between residents and non-residents.
Industries	Total	All industries.

Source: Tax Administration Jamaica.

3.3 Challenges and way forward

Building on the exploration of different data sources outlined above, Jamaica intends to advance the measurement of digital trade. Yet, the institutions involved face challenges in methodological development and implementation of compilation practices. In the future, Jamaica sees three key areas of future statistical improvements:

1. **To reform the statistical law:** There is a need to amend existing legislation on administrative data to improve the measurement of digitally ordered trade (especially *de minimis* trade).
2. **To improve measures of digitally delivered trade:** Jamaica intends to start building measures of digitally delivered trade. Currently, different statistical sources, such as tax administrative data, are being explored. The BOJ also aims to measure the use of cloud technologies and to better identify the source of imported services as components of digital trade.
3. **To improve the measurement of trade via digital intermediation platforms:** Currently, the BOJ has access to innovative data sources that can enable the measurement of digital trade via digital intermediation platforms. Most notably, data coming from two payment gateways that provide online payment solutions and international credit card processing are explored. Further research will focus on how to extract relevant information and enrich existing balance of payment statistics to derive a proxy measure of digital trade via digital intermediation platforms.

Case study 4:

Measuring digital trade in Spain: a stock-taking exercise[6]

4.1 Introduction

The Spanish Instituto Nacional de Estadística (INE) performed a stock-taking exercise in 2022 to identify existing official statistics that could be leveraged to measure digital trade in Spain. The approach builds on existing household and enterprise surveys, as well as border surveys, to reduce the burden on statistical offices to design new instruments on digital trade and avoid the potential duplication of estimates (see Table 6.11). Furthermore, this approach builds on existing data collection efforts in Spain to reach additional analytical insights related to digital trade.

At the time of writing, this approach remains exploratory and has not yet been applied to statistical production processes at INE. Nevertheless, the approach could be applied to other members of the European Union (EU), exploiting the methodologically homogeneous and comparable statistical sources across the EU.

Sections 4.2 and 4.3 of this case study demonstrate how existing sources can be used to gather insights related to digitally ordered and digitally delivered trade. Section 4.4 concludes with a summary of the strengths and weaknesses of this approach.

4.2 Data sources related to digitally ordered trade

4.2.1 SURVEY ON ICT USAGE AND E-COMMERCE IN ENTERPRISES

The annual Information and Communications Technology (ICT) usage and E-commerce in Enterprises (ICT-E) survey measures the use of ICT and electronic commerce in companies in all EU member states. In line with Eurostat recommendations, the survey captures variables with a double temporal scope: variables on ICT use refer to the first quarter of the year in which the survey is carried out, while the general information on the company, electronic commerce and ICT training refer to the previous year. The sample size depends on the companies targeted: for companies with 10 or more employees, around 15,000 companies are included, and for those with less than 10 employees, around 11,000 companies are included. The survey is collected via the internet and regular mail (Instituto Nacional de Estadística, 2022b).

The ICT-E provides information on digitally ordered trade in its e-commerce section, covering both goods and services. The definition of digitally ordered trade (e-commerce) adopted in the survey aligns with the definition in Chapter 1 of this Handbook (i.e., the international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders). The availability of a geographical breakdown (i.e., domestic, intra-EU and rest of the world) allows the survey to collect information on e-commerce imports and exports, with more detailed classifications for exports. The sales channel can also be identified, with imports broken down by online store, web application or electronic data interchange (EDI), and with exports disaggregated into web exports

TABLE 6.11: OVERVIEW OF DATA SOURCES ASSESSED IN SPAIN, 2022

Category	National source	Type of trade
Enterprise surveys	Survey on Information and Communications Technology (ICT) Usage and E-commerce in Enterprises (ICT-E)	Digitally ordered
	Statistics on Products in the Trade Sector (SPTS): Retail module	Digitally ordered
	International Trade in Services Survey (ITSS)	Digitally delivered
Household surveys	Survey on Equipment and Use of Information and Communication Technologies in Households (ICT-H)	Digitally ordered and (potentially) digitally delivered
	Household Budget Survey (HBS)	Digitally ordered
	Residents Travel Survey (RTS)	Digitally ordered
Border surveys	Tourist Expenditure Survey (EGATUR)	Digitally ordered
	Tourist Movement on Borders Survey (FRONTUR)	Digitally ordered

Source: INE (2022).

(website, application or marketplace) and EDI. Table 6.12 showcases the data retrieved from the survey for several industry sectors. All of the e-commerce data are expressed as a percentage of total exports and imports respectively (Instituto Nacional de Estadística, n.d.(a)).

A key limitation of the survey is that it does not distinguish between goods and services. Furthermore, the structure of the survey inhibits cross-panel analysis over certain variables. For instance, it is not possible to combine information on e-commerce

TABLE 6.12: DIGITALLY ORDERED TRADE ESTIMATES RETRIEVED FROM THE ICT-E SURVEY IN SPAIN

Survey on ICT usage and e-commerce in enterprises (2019-20)

	E-commerce sales (1000 of EUR)	% e-commerce sales on total sales	% e-commerce sales within Spain on total e-commerce sales	% e-commerce sales to the rest of the EU on total e-commerce sales	% e-commerce sales to the rest of the world on total e-commerce sales
Total enterprises	307,424,523	18.34	81.27	13.94	4.78
1. Total industry (NACE 10-39)	158,067,721	24.52	80.62	15.02	4.36
1.1 NACE 10-18	32,785,664	21.17	90.62	8.61	0.77
1.2 NACE 19-23	56,160,480	33.92	89.06	7.43	3.51
1.3. NACE 24-25	5,451,762	7.98	62.85	29.59	7.56
1.4 NACE 26-33	43,342,464	29.27	54.95	35.01	10.04
1.5 NACE 35-39	21,327,351	19.2	98.51	1.49	0.01
2. Total construction (NACE 41-43)	1,308,940	1.42	76.36	7.77	15.87
3. Total services (NACE 45-82, excluding NACE 56, 66, 75 and 64-66)	148,047,863	17.37	82.02	12.85	5.14
3.1 NACE 45-47	86,164,894	17.27	91.58	6.59	1.83
3.2 NACE 49-53	21,521,676	22.55	68.69	19.92	11.39
3.3. NACE 55	10,913,935	48.35	41.43	44.2	14.37
3.4. NACE 58-63	9,930,396	12.88	89.12	5.7	5.18
3.5. NACE 68	971,699	11.55	72.05	21.8	6.16
3.6. NACE 69-74	4,140,697	5.52	74.33	18.9	6.76
3.7. NACE 77-82	14,404,568	19.17	73.45	18.53	8.02
4. ICT sector (261-264, 268, 465, 582, 61, 6201, 6202, 6203, 6209, 631, 951)	14,705,099	17.41	86.21	9.55	4.24

Note: The data displayed are freely available from https://ine.es/jaxi/Datos.htm?tpx=37743#!tabs-tabla.
The ICT-E questionnaire is available at https://ine.es/metodologia/t09/eticce1_19.pdf. NACE is Nomenclature of Economic Activities.

Source: INE.

TABLE 6.13: DIGITAL TRADE DIMENSIONS IN THE ICT-E SURVEY IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional trade/business statistics. Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered is covered.
Product (What?)	No	Goods and services are not differentiated in the ICT-E questionnaire.
Actors (Who?)	Partial	Businesses. For sales, a breakdown by type of client (business-to-business (B2B), business to consumer (B2C) and business to government (B2G)) is provided.
Flow (Sales/Purchases)	Partial	Both e-commerce flows are included but more dimensions of digital trade are provided for sales than for purchases.
Online channel	Total	Web/app, digital intermediation platform and EDI flows are distinguished from one another.
Geography (Domestic/Cross-border)	Total	Geographic breakdown for e-commerce into domestic (Spain) and cross-border (rest of the European Union and rest of the world) transactions is provided, allowing domestic e-commerce to be differentiated from e-commerce imports, though not by country.
Industries	Partial	ICT-E covers the following sections of NACE Rev. 2: C, D, E, F, G, H, I, J, L, M(69-74), N, S(95.1). Financial corporations are excluded.

Source: INE (2022).

exports, actors per transactions, digital intermediation platforms (DIPs) and geography, as the information is not collected for all of these dimensions in the questionnaire (see Table 6.13).

4.2.2 STATISTICS ON PRODUCTS IN THE TRADE SECTOR: RETAIL MODULE

The Statistics on Products in the Trade Sector (SPTS) is a yearly structural survey carried out in Spain and targeted at companies engaged in wholesale and retail trade, including in the maintenance and repair of motor vehicles and motorcycles (section G of the Nomenclature of Economic Activities (NACE) Rev.2, referred to as the "trade" sector). The survey is integrated in the structural business statistics. The variables contained in the survey include a breakdown of turnover by product, by sales system (which includes e-commerce), by sector of activity of the customer and by other specific variables for each sub-sector. The sample size includes approximately 60,500 companies and is collected with an online questionnaire (Instituto Nacional de Estadística, 2021).

The retail trade module of the SPTS survey includes a breakdown of exports in goods, providing information on total e-commerce for enterprises classified in NACE G47 (Table 6.14). Although the cross-border dimension is not covered by the survey, total turnover from e-commerce is broken down by broad product category and by type of customer or actor, thus distinguishing B2B from B2C. Table 6.15 provides an example of the data on e-commerce exports according to the NACE G47 divisions in retail trade. It is important to note that it is not possible to extract cross-collected information on e-commerce sales by actor, sale channel, geographic breakdown or product. In addition, the e-commerce sales estimated from the retail trade module of STPS for the G47 division of NACE should be checked against e-commerce sales obtained by ICT-E for G47 to avoid double counting.

4.2.3 SURVEY ON EQUIPMENT AND USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN HOUSEHOLDS

The Survey on Equipment and Use of Information and Communication Technologies in Households (ICT-H) is an annual household survey that measures the development and evolution of the information society. Dimensions include measurements of ICT equipment in households and of internet usage in the Spanish population. The survey has been carried out on an annual basis since 2002. The ICT-H is financed by Eurostat and, since 2006, has followed its methodological recommendations, which allow for comparisons between Spain and other EU countries. The sample size includes 2,500 census sections,

TABLE 6.14: DIGITAL TRADE DIMENSIONS IN THE RETAIL MODE OF SPTS IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional trade/business statistics. Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered goods are covered.
Product (What?)	Partial	Only goods are captured as SPTS is about retailers (G47).
Actors (Who?)	Partial	Sales carried out by corporations is included as SPTS is part of the structural business survey. For sales, a breakdown by type of client (B2B and B2C) could be estimated from the type of customer information collected in the questionnaire.
Channel	Partial	Distinction between e-commerce and other off-line channels is included. No distinction is made between web/app, EDI or digital intermediation platform (DIP).
Flow (Sales/Purchases)	Partial	Only e-commerce sales are available.
Geographical (Domestic/Cross-border)	No	Geographical breakdown is not directly observable in SPTS, but it could be estimated by taking the geographical distribution of the structural business survey for the trade sector (i.e., for Spain, rest of the European Union and the rest of the world)
Industries	Partial	SPTS retail module only covers G471-G479 of NACE Rev.2.

Source: INE (2022).

corresponding to around 25,000 dwellings (Instituto Nacional De Estadística, 2010).

The ICT-H provides information on the behaviour of households with regard to digitally ordered trade (e-commerce), as defined in this Handbook (see Table 6.16). Module VII of the survey, concerning e-commerce, provides information on e-commerce purchases (imports) only, and covers transactions by households and by natural persons who are resident in Spain. It includes a distinction between goods and services, with a product breakdown compatible with the EU classification of products by activity (CPA) (see Annex H). Although this survey is mainly used to produce estimates of digitally ordered trade, in the case of services, it is possible to identify those that could potentially be digitally delivered. Furthermore, a geographical breakdown allows cross-border e-commerce (imports) to be distinguished from domestic e-commerce (domestic purchases), as well as allowing for a breakdown by e-commerce actors (i.e., business-to-consumer (B2C) and consumer-to-consumer (C2C)).

A key limitation of this survey is that almost all the e-commerce data are qualitative. Certain qualitative variables, such as the time horizon of purchases by e-commerce, the number of purchases within the time frame, and the value range for the goods and services purchased or ordered via the internet within the time frame, can be quantified using information from a question on the total value of e-commerce in the last three months (see Annex H). Furthermore, the data do not contain a breakdown according to the channel of e-commerce (website, mobile application, or digital intermediation platform (DIP)).

4.2.4 HOUSEHOLD BUDGET SURVEY

The Household Budget Survey (HBS) provides information on the nature and destination of consumption expenses, as well as on a range of features related to household living conditions. The main aim of the survey is to produce the measures used in the Consumer Price Index. The variables include total expenditure and average expenditure per household, per person and per consumption unit, according to different levels of disaggregation and different socio-demographic variables. The survey is conducted every five years, according to Eurostat methodological recommendations. The sample size is approximately 24,000 households per year (Instituto Nacional de Estadística, n.d.(b)).

The HBS provides information on e-commerce purchases for many consumption products according to the ECOICOP (European Classification of Individual Consumption by Purpose) (see Table 6.17). Goods and services can be distinguished, which means

TABLE 6.15: E-COMMERCE INFORMATION IN RETAIL TRADE – STPS SURVEY IN SPAIN

Retail trade except motor vehicles and motorcycles (47th division of NACE) (in percentages)

	Total	Retail trade in non-specialized stores (471 NACE)	Retail trade of food, beverages and tobacco in specialized stores (472 NACE)	Retail trade of automotive fuel in specialized stores (473 NACE)	Retail trade of ICT equipment in specialized stores (474 NACE)	Retail trade of other household goods in specialized stores (475 NACE)	Retail trade of cultural and recreational goods in specialized stores (476 NACE)	Retail trade of other goods in specialized stores (477 NACE)	Retail trade in sale stands and in street markets (478 NACE)	Other retail trade (479 NACE)
Total	100	100	100	100	100	100	100	100	100	100
Traditional	63.5	39.1	90	66.2	90.4	82	90.3	89.8	23.9	7.2
Self service	29.5	59.7	5.1	27.1	0.2	13.7	3.4	5.6	4.3	1.4
E-commerce	**3.5**	**0.8**	**0.4**	**0**	**6.4**	**2.2**	**4.8**	**3.1**	**1.2**	**56**
Mail, catalogue, or telesales	0.3	0.1	0.2	0	0.3	0.2	0.5	0.2	0.2	5.8
Home delivery	1.5	0.2	1.4	4.5	1.3	1.6	0.7	0.5	4.4	15.7
Vending machines	0.8	0	2.6	1.9	0	0	0.1	0	0.3	9.7
Hawkers	0.5	0	0.2	0	0	0.1	0	0.1	65	1.3
Other types of retail	0.4	0	0.3	0.2	1.4	0.2	0.8	0.8	0.6	2.8

Note: The data displayed in gross figures are freely available from https:/ine.es/jaxi/Datos.htm?tpx=48756. The questionnaire is available at https://ine.es/metodologia/t09/cues_epsc_cmenor.pdf.

Source: INE.

TABLE 6.16: DIGITAL TRADE DIMENSIONS IN THE ICT-H SURVEY IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional household statistics (in ICT-H, most variables are qualitative but there is only one that is quantitative in terms of value ranges for e-commerce purchases (question 13)). Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered goods and services are covered. Digitally delivered services are indirectly covered by the type of services purchased, as some of them can be identified as digitally deliverable services.
Product (What?)	Total	Goods and services. Most of them can be very easily classified according to a standard product classification (Extended Balance of Payments Services Classification (EBOPS) for services)
Actors (Who?)	Partial	E-commerce carried out by households/natural persons is included in ICT-H. A breakdown by type of supplier (B2C and C2C, or "sharing economy") is provided for some services.
Flow (Sales/Purchases)	Partial	Only purchases.
Online channel	Partial	No explicit distinction among web/app or DIP, but C2C transactions are clearly traded via DIP.
Geographical (Domestic/ Cross-border)	Total	Geographical breakdown for e-commerce into domestic (Spain) and cross-border (rest of the European Union and rest of the world) transactions is provided, allowing domestic e-commerce to be differentiated from e-commerce imports, though not by country.
Industries	No	Not applicable, as ICT-H is a household survey.

Source: INE (2022). The questionnaire is available at https://ine.es/metodologia/t25/t25p450_tich_cues_20.pdf.

TABLE 6.17: DIGITAL TRADE DIMENSIONS IN THE HBS IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional household statistics. Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered goods and services are covered because HBS asks for the ECOICOP items which are purchased by e-commerce. Digitally delivered services are covered by the type of services purchased, as some of them are digitally deliverable services.
Product (What?)	Total	Goods and services. ECOICOP codes can be easily classified according to other standard product classifications (CPA or EBOPS 2010 for services).
Actors (Who?)	Partial	E-commerce carried out by households/natural persons is included, as HBS is a household survey. A breakdown by type of supplier (B2C and C2C or "sharing economy") is not provided.
Flow (Sales/Purchases)	Partial	Only purchases are available.
Online channel	Partial	No explicit distinction between web/app and DIP.
Geography (Domestic/Cross-border)	No	The geographic origin of e-commerce purchases is not provided.
Industries	No	Not applicable, as HBS is a household survey.

Source: INE (2022). The questionnaire is available at https://ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736176806&menu=metodologia&idp=1254735976608.

that ECOICOP items can be converted into other standard product classifications (e.g., Central Product Classification (CPC), CPA, Extended Balance of Payments Services Classification (EBOPS) 2010). As for the HBS, it is possible to identify digitally deliverable services. However, the lack of geographical breakdown precludes the possibility of distinguishing cross-border e-commerce from domestic e-commerce. Furthermore, the information does not allow for a breakdown by the channel of e-commerce nor by the actors involved.

4.2.5 RESIDENTS TRAVEL SURVEY

The Residents Travel Survey (RTS) is a survey with the main objective of providing monthly, quarterly and annual estimates of the number of trips made by Spanish residents and the main characteristics of those trips (destination, duration, purpose, accommodation, means of transport, expenditure, socio-demographic characteristics of the travellers, etc.). The RTS, together with credit card information from residents travelling abroad, plays an important role in estimating the value of travel debits (imports) in the Spanish balance of payments.

The RTS collects dimensions of digital trade linked to the reservation channel used by the traveller to book transport, main accommodation, tour packages (if any) and other digitally ordered travel-related goods and services. As a household survey, the RTS can distinguish between domestic and cross-border tourism services for residents, but as it only covers imports, it provides only partial coverage of digitally ordered trade (see Table 6.18).

4.2.6 TOURIST EXPENDITURE SURVEY AND THE TOURIST MOVEMENT ON BORDERS SURVEY

The statistics of Tourist Movements at Borders (FRONTUR) and the Tourism Expenditure Survey (EGATUR) were integrated to provide statistics on tourist movements at the borders of Spain and tourist expenditure. The objective of this joint survey is to measure the number of non resident visitors arriving in Spain each month, distinguishing the various access routes and the various trips undertaken, as well as expenditure. The survey records non-residents in Spain who enter or leave the country, having made an overnight stay or not, as well as non-residents in Spain who pass through the country in transit. EGATUR plays an important role in the estimation of the travel credits in the Spanish balance of payments. FRONTUR and EGATUR share the same questionnaire (Instituto Nacional de Estadística, 2022).

The two surveys offer insights into digitally ordered trade related to the channel through which accommodation and travel are booked, only covering non-resident expenditure in Spain. While the delivery of services

TABLE 6.18: DIGITAL TRADE DIMENSIONS OF THE RTS

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional household statistics (in the RTS, the most important quantitative variable is tourism expenditure broken down by certain components such as average expenditure per trip, average expenditure person etc.). Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered goods and services related to specific expenditure items (accommodation, transport and package tours) which are reserved via the internet (websites or apps).
Product (What?)	Partial	Goods and services related to tourism are included. They can be classified according to the presentation of travel by product in EBOPS 2010.
Actors (Who?)	Partial	Resident households/natural persons are included, as the RTS is a household survey. A breakdown by type of supplier (B2C and C2C or "sharing economy") might be estimated only for accommodation services.
Flow (Sales/Purchases)	Partial	Residents' purchases are included, under the assumption that reservations via the internet become real purchases.
Online channel	Partial	There is an explicit distinction between web/app or DIP only in the case of accommodation services.
Geographic (Domestic/Cross-border)	Total	Covers domestic and cross-border tourism services for residents. Geographic origin of the web/app or DIP used for reservation is not explicitly collected in RTS. Only the final country of destination (Spain/foreign country) of the resident traveller is known.
Industries	No	Not applicable, as the RTS is a household survey.

Source: INE (2022). The questionnaire is available at https://ine.es/en/daco/daco42/etr/etr_cuestionario_en.pdf.

is undertaken by people at the destination (mostly supplied via Mode 2), the expenditure flows can be considered to be digitally ordered trade. It is important to note that as FRONTUR/EGATUR is only focused on inbound tourism, a limited number of tourism products (mostly services) are considered (see Table 6.19).

4.3 Data sources related to digitally delivered trade

The International Trade in Services Survey is a quarterly business survey that captures exports and imports of services by service item, partner country, modes of supply, main economic activity and number of employees. The sample includes 9,500 resident enterprises. The questionnaire is directly addressed to companies via mail, fax or e-mail or by means of the IRIA software application (Instituto Nacional de Estadística, 2015).

The questionnaire collects information on digitally deliverable services (see Chapter 4) that are supplied via Mode 1 (see Table 6.20). For all services which are digitally deliverable, Mode 1 supply constitutes a reasonable proxy for digital delivery. Furthermore, using the economic activity variable and specific industry classifications (NACE Rev.2 and the International Standard Industrial Classification (ISIC) Rev.4), a refined analysis can identify the active traders in ICT sectors and in high- and medium-high-technology industries that produce knowledge-intensive services according to the NACE Rev.2. Table 6.21 gives an example of the shares of services exports and imports available supplied by Mode 1 in the survey. However, the questionnaire does not capture digital ordering.

4.4 Conclusions

Overall, this stock-taking exercise demonstrated that the Spanish statistical system provides a range of data sources that can be used to generate meaningful estimates of digital trade. Several different data sources can be used to identify digitally ordered trade, while estimates of digitally delivered trade can be largely derived from the existing international trade in services survey.

In terms of digitally ordered trade, most of the sources can help to measure total e-commerce (domestic and cross-border). In some cases, the cross-border dimension is readily available, while in others it needs to be estimated. Many sources can provide information broken down by product (goods/services) and flow (exports/imports). However, the ICT-E only provides

TABLE 6.19: DIGITAL TRADE DIMENSIONS IN EGATUR/FRONTUR IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional household/border surveys (in FRONTUR/EGATUR, the most important quantitative variable is tourism expenditure broken down by some components). Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered goods and services are covered because FRONTUR/EGATUR asks for those expenditure items (accommodation, transport and activities) that were reserved via internet.
Product (What?)	Partial	Although goods and services related to tourism are collected, the question on those reserved via the internet refers only to services. They can be classified according to the presentation of travel by product in EBOPS 2010.
Actors (Who?)	Partial	Non-resident natural persons, as FRONTUR/EGATUR is a border survey on tourism addressed to those visitors leaving Spain. A breakdown by type of service supplier (B2C, C2C) is not available.
Flow (Sales/Purchases)	Partial	Non-residents' purchase of tourist goods at destination and tourist services at origin and destination (Spain), corresponding to balance of payments travel credits. It is about the expenditure items which are searched, reserved (ordered) and paid via internet.
Online channel	Partial	Only internet (no distinction between web/app and DIP).
Geography (Domestic/Cross-border)	Partial	FRONTUR/EGATUR aims for an estimation of inbound tourism, so only cross-border tourism is considered.
Industries	No	Not applicable, as FRONTUR/EGATUR is a border survey.

Source: INE (2022). The questionnaire is available at https://ine.es/en/daco/daco42/frontur/frontur_egatur_cuestionario_en.pdf.

TABLE 6.20: DIGITAL TRADE DIMENSION IN THE INTERNATIONAL TRADE IN SERVICES SURVEY IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional trade/business statistics. Non-monetary digital flows are excluded.
Nature (How?)	Partial	An upper bound for digitally delivered services can be estimated by considering the type of EBOPS 2010 services items supplied by Mode 1 that are digitally deliverable. No information on digitally delivered services which are also digitally ordered.
Product (What?)	Partial	Services according to EBOPS 2010.
Actors (Who?)	Partial	Mainly enterprises are included in this business survey, even though other juridical persons, such as NPISH (i.e., non-profit institutions serving households) or public bodies, are included whether or not they trade cross-border services. No breakdown by type of client is available. However, exports cover all B2B, B2C and B2G transactions. Imports only cover B2B and B2G transactions. B2C imports (where consumers are the importers) or C2C (the sharing economy) are not covered, as households and natural persons are outside of the scope of the survey.
Flow (Sales/Purchases)	Total	Both flows (exports/imports) are included.
Online channel	No	No specific distinction. However, the EBOPS 2010 item trade-related services can include intermediation services (in the form of commissions/fees) charged by DIPs.
Geography (Domestic/Cross-border)	Partial	Only cross-border services are considered, as the survey covers services transactions between residents and non-residents.
Industries	Total	Covers all industries.

Source: INE (2022). The questionnaire is available at https://ine.es/en/metodologia/t37/t373019801_cues_en.pdf.

TABLE 6.21: SHARE OF EXPORTS/IMPORTS OF SERVICES SUPPLIED BY MODE 1 AND MAIN EBOPS 2010 ITEMS

International Trade in Services Survey 2014-19 (in percentages)

	Exports	Imports
Total	85.3	94.5
1. Manufacturing services on physical inputs owned by others	5.1	14.4
2. Maintenance and repairs	1.8	6.3
3. Transport	86.0	96.6
4. Construction	35.0	36.8
5. Insurance services	95.7	95.5
6. Financial services	99.5	99.8
7. Charges for the use of intellectual property	99.6	98.5
8. Telecommunications, computer and information services	98.1	96.9
9. Other business services	91.2	97.9
9.1 Research and development	99.4	99.2
9.2. Professional and management consultancy	94.0	98.4
9.3. Technical, trade-related and other business services	88.9	97.5
10. Personal, cultural and recreational services	92.3	74.9
11. Government goods and services n.i.e.	90.8	28.9

Note: respondents of this survey identified Mode 1 supply for a number of service categories which are not considered as relevant for Mode 1 in MSITS 2010 (e.g., construction). "n.i.e." refers to "not included elsewhere".

Source: INE.

aggregate products, and all household surveys as well as the border survey only record the import side.

Some statistical sources allow for insights on DIP-enabled trade, although only for certain flows. For instance, the ICT-E survey only allows for the disaggregation of platform-enabled digital trade for exports.

While the mix of surveys allows for a good coverage of actors across corporations, households and NPISHs, data on digital trade transactions by the government are not yet accessible, with the exception of the transactions covered in the EBOPS 2010 item "Government goods and services n.i.e.".

A clear advantage of this approach is that it reduces the burden on national statistical institutes to design new instruments and engage in additional data collection. However, those surveys were originally designed for purposes other than measuring digital trade. For this reason, some limitations naturally occur and are discussed below.

Most of the surveys analysed do vary in their coverage of digital trade. While enterprise surveys mostly capture goods, household and border surveys are better placed to record services. In some cases, as with the survey on ICT usage and e-commerce in enterprises, the difficulty in distinguishing explicitly between goods and services remains. For those sources that cover services, it is still a challenge to capture both the delivery and the ordering dimension.

There is an imbalance in the possibilities of disaggregation across surveys, which may limit the level of granularity that can be achieved across all sources analysed. Some surveys do not include a geographical breakdown into domestic and cross-border trade, which makes it difficult to link it directly to the reporting template. Developing those survey questionnaires further is key to including these breakdowns or deriving methods to estimate the breakdowns after the data have been collected.

Furthermore, the surveys presented here do not provide enough information on transactions facilitated by DIPs.

Although some household and enterprise surveys have started to include DIPs among the ordering channels, this information is not comprehensive and, importantly, it is not possible at this stage to derive estimates of the intermediation services provided by DIPs. Additional, targeted questions would be needed to quantify this important aspect of digital trade.

A final point concerns the need for validation and reconciliation of sources to ensure robustness and avoid duplication of estimates.

For instance, e-commerce exports and imports to natural persons (B2C) derived from household and border surveys should be analysed and compared to estimates based on alternative data sources. Similarly, e-commerce purchases (imports) of enterprises should be checked against sales (exports) to obtain coherence between supply and demand. A decision about which data source is better suited to provide reliable estimates of digital trade should be taken.

Case study 5:

Measuring digitally ordered merchandise trade in Türkiye[7]

5.1 Introduction

In Türkiye, official international trade in goods statistics on a cross-border basis, also referred to as merchandise trade statistics, are produced in cooperation between the Turkish Statistical Institute (TurkStat) and the Ministry of Trade. They cover both the general and the special trade system and are collected by the Ministry of Trade using administrative records. However, at present, official statistics on trade in goods do not specify the share of digitally ordered trade.

Reacting to the demand for timely statistics on digital trade, TurkStat, together with the Ministry of Trade, carried out a pilot study to produce estimates of digitally ordered trade – as defined in this Handbook (see Chapter 1) – focusing on merchandise trade. The collaboration between TurkStat and the Ministry of Trade was set up to facilitate data compilation, analysis and dissemination processes on digitally ordered trade. The methodology applied makes use of administrative records – specifically, customs data, electronic customs declarations and postal data – and applies quality and robustness checks at the country/product levels to derive reliable estimates. At the time of writing, the approach is still being tested, and official estimates at country, sector and product-level are planned for release by the end of 2023.

This case study gives an overview of the key steps taken in measuring digitally ordered trade. Section 5.2 introduces the data sources used in the data collection and compilation process. Section 5.3 presents first preliminary results and Section 5.4 discusses challenges and next steps.

5.2 Data sources

As a first step, TurkStat examined available sources following the recommendations of the UNCTAD *Manual for the Production of Statistics on the Digital Economy* (UNCTAD, 2020) and of the previous version of this Handbook (OECD, WTO, IMF, 2019). Three different administrative sources were identified as suitable data sources to measure digitally ordered trade in goods.

5.2.1 CUSTOMS DECLARATIONS (DETAILED DECLARATIONS)

Customs records are the main data source from which to derive digitally ordered trade estimates for goods, as they record all kinds of cross-border trade in goods. The Ministry of Trade is responsible for collecting these records. Up until now, digitally ordered transactions have been included in customs declarations, but the share of digitally ordered goods could not be separated from the total goods trade declared.

For this reason, the Ministry of Trade has improved the customs data collection system and extended the questions asked in required custom declaration forms. More specifically, the question "Is this import/export electronic trade (e-trade)?" was added to the declaration form in 2019 and revised in December 2021 to identify digitally ordered transactions. Within the scope of the pilot study, the responses to this question were analysed and further feedback from the businesses completing the declarations was requested in the form of interviews. The Ministry of Trade, in cooperation with TurkStat, also prepared a guidance note and a training video in Turkish to help customs counsellors in the companies responsible for completing the customs declarations (the video can be accessed at https://tagm.ticaret.gov.tr/duyurular/sinir-otesi-elektronik-ticaret-e-ticaret-rehberi-ve-tanitim-videosu-yayinlandi).

As part of the pilot study, the Ministry of Trade streamlined the collection process of customs data. Since the beginning of 2022, data on digitally ordered trade identified via the customs declarations were directly provided to TurkStat. Subsequently, TurkStat and the Ministry of Trade jointly engaged in data analysis and evaluation processes, using data mining methods to ensure data quality throughout the collection and compilation process.

Quality assurance processes were introduced to ensure that the data derived from the customs data align with the standards of official statistics. Initial clustering analysis and outlier detection approaches helped to verify the data and ensure that declarations were completed accurately. Variables such as customs regimes and products were used to control the accuracy of data declared as having been derived from digital orders. Further manual checks at product and firm level were used to verify submitted declarations. Most importantly, the questionnaire design includes control questions to designate whether the product is digitally ordered or not. If the answers were missing or incorrect, the company that filled in the declaration was contacted to verify the declaration.

Over time, it was noticed that there are product-specific patterns in the inaccurate declarations. For example, aerospace products or live animals were rarely ordered digitally and had to be manually verified to ensure that these products are not wrongly

specified as digital trade. Similarly, the statisticians observed that custom declarations of business-to-consumer (B2C) products which have a high value are usually not traded digitally. These checks help to monitor the share of correctly completed declarations and to optimize the data collection and compilation processes, as well as the verification processes.

5.2.2 ELECTRONIC TRADE CUSTOMS DECLARATIONS

A second source used to measure digitally ordered trade is electronic trade customs declarations (ETCDs). ETCDs have been used since 2012 and are especially useful to identify digital trade transactions at the micro level. They are issued electronically by authorized express airline cargo companies and ensure that all transactions are carried out quickly. Transactions that are eligible to be filed via electronic declarations have an upper limit of 15,000 euros/300 kilogrammes for exports and 150 euros/30 kilogrammes for imports.

Since the beginning of 2021, data obtained via ETCDs are available and include information on the following aspects: country of origin (for imports), destination country (for exports), value, quantity and product (up to Harmonized System (HS) six-digit codes) breakdowns. Using new legal and IT infrastructure, the Ministry of Trade can provide the data collected via ETCDs directly to Turkstat. In order to detect erroneous records, outlier detection methods were added in the data processing system.

5.2.3 DATA FROM POSTAL SERVICES

Finally, the processes of electronic trade custom declarations could be further improved to capture digitally ordered trade from postal services. The General Directorate of Post and Telegraph Organization (PTT) is responsible for completing the respective ETCD for exports. On the import side, declarations do not follow the ETCD standards yet, as they are completed by authorities of partner countries. Currently, the PTT is exploring ways of harmonizing the process of completing declarations coming from different countries. For this reason, data compilation is still pending at the time of writing.

5.3 Preliminary results

As the approach is currently being tested, this case study only shows preliminary aggregate results for a small sample of digitally ordered statistics obtained via ETCDs, the second channel used by the Ministry of Trade to measure digitally ordered trade. At this stage, TurkStat plans to publish complete statistics on digitally ordered trade by the end of 2023.

According to preliminary results obtained from ETCDs:

- The monthly average value of exports is US$ 110 million.
- The monthly average number of export transactions is 1.4 million.
- The monthly average value of imports is US$ 16 million.
- The monthly average number of import transactions is 0.3 million.
- The share of total ETCD exports (by value) in total exports is 0.58 per cent.
- The share of total number of ETCD export transactions in total exports transactions is 41 per cent.
- The share of total ETCD imports (by value) in total imports is 0.07 per cent.
- The share of total number of ETCD imports transactions in total imports transactions is 21.3 per cent.
- The average transaction value for exports is US$ 78.
- The average transaction value for imports is US$ 55.

5.4 Conclusions, challenges and future work

Although the approach is still under development, TurkStat has been successful so far in leveraging customs and postal data to separately identify digitally ordered transactions in its merchandise trade statistics.

However, some limitations were identified in the analysis of the three data sources described.

First, transactions performed by enterprises via EDI cannot be detected. A new question currently being tested in the customs declaration system may help in the future to identify digitally ordered trade separately via EDI.

Secondly, transactions conducted via DIPs cannot be identified. Moreover, B2B, B2C and C2C transactions cannot be distinguished separately, and in some cases product codes are not declared at a sufficiently detailed level.

At the same time, building the infrastructure and workflow to compile digital trade statistics provided TurkStat with valuable lessons which could be useful to other compilers. It is key to develop a clear understanding of the definition of cross-border digital trade statistics and to determine its scope using different practical scenarios and examples. To ensure data quality, it is necessary to make sure that the people who fill out the custom declarations have sufficient knowledge about digital trade (specifically "digital ordering"). The Ministry of Trade and TurkStat have provided extensive material to raise awareness

and educate custom counsellors, including a training video and a specific guide. Extensive quality assurance processes are indispensable to verify the submitted custom declarations.

Moving forward, TurkStat plans the following future steps:

1. To increase the coverage of all data sources.
2. To implement measures to ensure that customs declarations are completed correctly. The Ministry of Trade plans to conduct study visits to customs officials that file custom declarations registering a high value of digitally ordered goods to harmonize the data collection process. Additional training is also planned for the officials responsible for completing the declarations. Moreover, measures are being considered to penalize companies which consistently complete declarations wrongly.
3. To analyse the data after its compilation across all three sources (i.e., customs records, ETCDs and data from postal services) and obtain initial results. Currently, the objective is to generate a coherent time series and deploy quality assurance checks.
4. To carry out the necessary research to enable further breakdowns of B2B, B2C and C2C transactions.
5. To carry out studies of how to include digital intermediation platforms in the compilation of trade data.

Endnotes

1 This case study was prepared by Xiaoyuan Zhai, Qian Li, Zheng Fang and Weiguo Qi from the General Administration of China Customs.

2 This case study was prepared by Xuyang Wang, Yanhui Jing and Yizhen Xie from China's Ministry of Commerce (MOFCOM).

3 The Thousand-Hundred-Ten project is a government project with the objective of cultivating 1,000 large and medium-sized enterprises with international qualifications, encouraging 100 multinational corporations to transfer service outsourcing business to China, and building 10 cities with international competitiveness in service outsourcing.

4 ITO refers to the delivery of information technology services. BPO refers to auxiliary design, management and execution services outsourcing, such as call centres or supply chain management services. KPO refers to auxiliary research and design, scientific and technological innovation outsourcing, such as pharmaceutical research and development (R&D) outsourcing or industrial design.

5 This case study was prepared by Esmond McLean (Bank of Jamaica), Hank Williams and Diedre Campbell (Tax Administration Jamaica [TAJ]).

6 This case study was prepared by José Antonio Isanta Foncuberta from the National Statistics Institute of Spain (INE).

7 This case study was prepared by Çaglayan Aslan (Türkiye Ministry of Trade); Aylin Kolbası, Eyüp Mehmet Dinç and Esengül Tanrikulu (Turkish Statistical Institute (TurkStat)).

Annexes

Annex A: Measuring the digital economy

Annex B: Accounting for digital trade transactions

Annex C: Expanded table on digitally deliverable services in EBOPS 2010

Annex D: Table of allocation by mode of supply of digitally deliverable services

Annex E: Questionnaire – General Administration of China Customs ("China Customs")

Annex F: Questionnaire – China's Ministry of Commerce (MOFCOM)

Annex G: Questionnaire – Tax Administration Jamaica (TAJ) and Bank of Jamaica

Annex H: Questionnaire – Instituto Nacional de Estadística (National Statistics Institute)

Annex A: Measuring the digital economy

Towards a definition of the digital economy [1]

The term "digital economy" is widely, but loosely, used to refer to parts of the economy that are impacted by the digital transformation. However, the lack of a single, generally accepted definition of what the digital economy encompasses hinders measurement efforts and can encourage the misperception that parts of the economy may go under-recorded because of digitalization. This absence of agreement partly stems from the multi-dimensional nature of the digital economy: digitalization is affecting the production, ordering, delivery and consumption of many goods and services, to the point that any modern economy can now be considered a "digital economy".

There are two common approaches to defining and measuring the digital economy (OECD, 2020). The first, a "bottom-up" approach, considers the digital economy to be limited to a finite set of economic activities that produce information and communications technology (ICT) goods and digital services [2] that facilitate the digitalization of the economy. This contrasts to the broader "top-down" view, in which the digital economy includes any economic activity enabled by the use of ICT goods and digital services, reflecting the spread of digitalization across the whole economy.

From a measurement point of view, the first approach is relatively straightforward to implement. ICT goods and digital services are simply a grouping of central product classification (CPC) product classes – consisting of products which "must primarily be intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display" (United Nations, 2015). The ICT sector is, similarly, a grouping of International Standard Industrial Classification of All Economic Activities (ISIC) industries – those primarily engaged in producing ICT products (2008b). However, while ICT has generally grown much faster than the wider economy, and is worthy of policy attention, a narrow focus on the ICT sector is missing the wider impacts of digitalization on the production and consumption of other goods and services. An analysis of the "digital economy" that focuses only on the ICT sector will therefore understate the impact of digitalization on the economy.

In 2020, the G20 Digital Economy Ministers Meeting recognised in a Ministerial Declaration of 22 July 2020 a broader ("top-down" type) definition of the digital economy as:

"all economic activity reliant on, or significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services, and data; it refers to all producers and consumers, including government, that are utilising these digital inputs in their economic activities". [3]

Building on previous work by Bukht and Heeks (2018), this definition is accompanied by a tiered framework, which further delineates the impacts of digitalization on the economy and aids in its operationalization. These tiers separate firms into those that *produce* ICT goods and digital services, those that are *reliant* on these digital inputs, and, finally, those whose productive activities are *enhanced* by the use of digital inputs.

Making digitalization visible in macroeconomic statistics: the conceptual framework behind the Digital Supply and Use Tables

The Digital Supply and Use Tables (Digital SUTs) framework has emerged as a tool to increase the visibility of digitalization within the existing macroeconomic statistics without establishing a hard frontier around the "digital economy". The framework focuses on developing a better understanding of how digitalization impacts all transactions being measured in economic statistics.

The choice of supply and use tables as a framework for measuring digital activity reflects their coverage of all economic transactions from multiple angles. They record not just what is produced and consumed, but also who is producing and consuming.

The multi-dimensional nature of the digital economy requires a framework that can reflect both the production and the consumption of digital products, as well as the production and consumption of the non-digital products that are obtained through digital means, whether digitally ordered, digitally delivered or both. SUTs are flexible enough to allow the inclusion of additional product and industry breakdowns without disrupting the inherent balance of the SUTs. In this respect, output, value-added and other components can simply be moved between rows and columns as required and therefore the task is one of "reallocation" rather than of estimation.

As depicted in Figure A.1, the digital SUTs framework, like the measurement framework for digital trade (see Figure 2.1 in Chapter 2), encompasses three basic dimensions:

- The nature of the transaction ("How");
- The product ("What"); and
- The digital industries explicitly identified in the digital SUTs ("Who").

THE NATURE OF THE TRANSACTION ("HOW")

The nature of the transaction is a fundamental element of the digital SUTs framework. Conventional SUTs focus on what product was produced, who produced it, and who it was sold to. However, digital ordering and digital delivery are now commonplace, and it is arguably just as important now to know how those products were bought and delivered – i.e., the nature of the transaction.

Mode of ordering

Digitally ordered transactions are defined as *"the sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders"*, based on the OECD definition of e-commerce in OECD (2011), and it is fully in line with this Handbook's definition of digitally ordered trade.

In the digital SUTs, transactions in goods and services are further broken down into six ordering modes, as shown in Table A.1 and A.2. Theoretically, such a breakdown is conceivable for each product in the SUTs, but it is particularly encouraged for the subset of products for which digital ordering and/or delivery are considered most relevant.

Importantly, transactions occurring through digital intermediation platforms (DIPs) are distinguished from those occurring directly with producers/sellers. By definition, DIPs do not take economic ownership of the goods, nor do they render the services being intermediated and they generate revenue by facilitating the transaction between the seller (producer) and the buyer (consumer).

As DIPs are a key example of the rise of digitalization, and may have a large impact on the economy, transactions involving them are separately identified in the digital SUTs, in the same way that they are separately identified in digital trade.

Mode of delivery

Regardless of the ordering mode, a product can be delivered to a consumer digitally or non digitally.

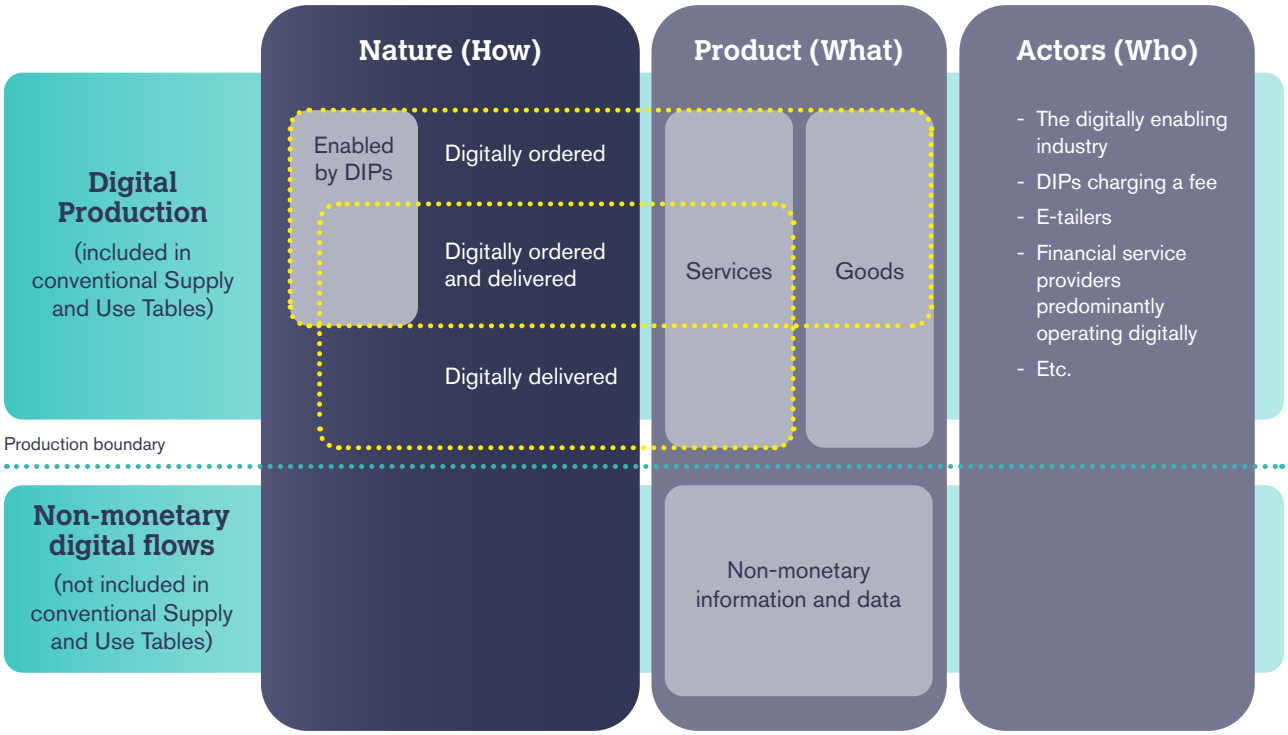
Digital delivery is defined as *"all transactions that are delivered remotely over computer networks"*. This definition is consistent with this Handbook's definition of digitally delivered trade.

While the mode of ordering is reflected as a breakdown of the product rows in digital SUTs, the mode of delivery is represented as a breakdown of the columns for total output, total imports, total exports and total household consumption, including "of which" items on the mode of delivery (see Table A.1). The inclusion of import and exports provides a direct link to the digital trade framework.

THE PRODUCT ("WHAT")

All goods and services produced in the economy are included in the digital SUTs. Nevertheless, the digital SUTs framework focuses particularly on ICT goods and services, as well as on certain other goods and

Figure A.1: The conceptual framework of digital SUTs



Source: OECD Handbook on Compiling Digital Supply and Use Tables, based on IMF, OECD, UNCTAD and WTO (2023).

services that are most likely to be digitally ordered and/or digitally delivered.

ICT goods and digital services, as defined in the CPC Ver. 2.1 (United Nations, 2015), should be aggregated in two high level product rows rather than being recorded in multiple product rows, as in conventional SUTs. In addition, two products within ICT goods and digital services are of considerable policy interest and are therefore shown separately in the digital SUTs: digital intermediation services and cloud computing services. Neither of these products is currently identified in existing product classifications, but they are of interest to users because they represent the production and consumption of a service that has fundamentally altered the way businesses operate. The digital SUTs also encourage the provision of separate breakdowns for non-digital goods and services that are more likely to be digitally ordered and/or digitally delivered. Examples include transport, accommodation and food services.

TABLE A.1: THE NATURE OF THE TRANSACTIONS IN DIGITAL SUTs - SUPPLY TABLE

Transaction perspective	Nominal values						Share					
	Total output	of which, digitally delivered	**Imports**	of which, digitally delivered	**Total supply**	of which, digitally delivered	**Total output**	of which, digitally delivered	**Imports**	of which, digitally delivered	**Total supply**	of which, digitally delivered
Total products							100%		100%		100%	
Total products - digitally ordered												
Direct from a counterparty												
Via a digital intermediation platform												
Via a resident digital intermediation platform												
Via a non-resident digital intermediation platform												
Not digitally ordered												

TABLE A.2: THE NATURE OF THE TRANSACTIONS IN DIGITAL SUTs - USE TABLE

Transaction perspective	Nominal values											
	Intermediate consumption	Of which, digitally delivered	**Government final consumption**	Of which, digitally delivered	**Capital formation**	Of which, digitally delivered	**Household final consumption**	Of which, digitally delivered	**Exports**	Of which, digitally delivered	**Total use**	Of which, digitally delivered
Total products												
Total Products - digitally ordered												
Direct from a counterparty												
Via a digital intermediation platform												
Via a resident digital intermediation platform												
Via a non-resident digital intermediation platform												
Not digitally ordered												

Source: OECD Handbook on Compiling Digital Supply and Use Tables (OECD, 2023).

A final consideration concerns three products that are outside the current SNA production and asset boundary. These are: data; zero-priced digital services provided by enterprises; and zero-priced digital services provided by the community. The measurement of these products is addressed as part of the overall revision of the SNA. While data are to be acknowledged as a class of asset in the central framework of the revised SNA, the production and consumption of zero-priced digital services (provided by both private enterprises and the community) will remain outside of the central SNA framework.[4]

The digital industries explicitly identified in the digital SUTs ("Who")

Digital SUTs, like conventional SUTs, do not have an institutional sector dimension. Through this, the digital SUTs framework reflects that economic activity of a digital nature can be undertaken by all sectors in the economy.

The additional "who" perspective provided in the digital SUTs relates to the identification of seven "digital industries". These are:

- Digitally enabling industry (producers of ICT goods and digital services);
- Digital intermediation platforms (charging a fee);
- Data- and advertising-driven digital platforms;
- Producers dependent on digital intermediation platforms;
- E-tailers;
- Financial service providers predominantly operating digitally; and
- Other producers only operating digitally.[5]

These have been separated out from the industry columns where they are recorded in conventional SUTs in order to quantify specific aspects of digital activity that are not otherwise visible. Importantly, in the digital industries, firms are classified based on how they use digital technologies in their business models or to interact with consumers, rather than based on the fundamental economic activity they undertake, which is the basis for classification in the conventional SUTs. For example, a retailer becomes an e-tailer if the majority of its sales revenues are from orders placed digitally.

In practice, this means that two institutional units that would be in two separate ISIC industries, due to differences in their fundamental activities, may be placed in the same digital industry within the digital SUTs due to similarities in the way they make use of digital technology. For example, an online bookmaker and an e-learning provider would be classified separately under "gambling services" and "education services" in the SUTs, but would be placed together under "other producers only operating digitally" in the digital SUTs. This re-allocation of firms into digital industries provides important perspectives on the amount of output, value-added, compensation of employees and even employment being provided by firms that are reliant on digital technology.

Digital SUTs in practice: applications and priorities

Digital SUTs are not designed to produce a single measure of the "digital economy". Rather, they provide a multidimensional framework that can generate a range of indicators to show how an economy is affected by the digital transformation.

Focusing on user needs, and recognising that populating a full set of digital SUTs is a challenging endeavour, a number of indicators have been identified as "high priority":

- **Output and gross value-added (including its components) of the seven digital industries:** These indicators quantify the size of the seven digital industries listed above, and help to understand their production structure.
- **Intermediate consumption of digital intermediation services, cloud computing services, ICT goods and digital services:** These indicators provide insights into the evolution of the digital transformation across industries. For instance, an increase of intermediate consumption of ICT goods and digital services relative to other products can be a proxy for higher digitalization of production processes. Similarly, measuring the intermediate consumption of digital intermediation services and cloud computing services is important for a better understanding of which industries are undergoing the greatest transformation as a result of the use of DIPs, or are most reliant on cloud services to do business.
- **Expenditure by nature of transaction:** Indicators of expenditure (exports, imports and household final consumption) broken down according to the nature of transaction are also considered highly relevant because digital ordering and delivery are among the most pervasive elements of the digital economy for consumers and policymakers.

Since Digital SUTs were first put forward by the OECD Informal Advisory Group on Measuring GDP in a Digitalised Economy in 2017, several countries have started to produce experimental statistics consistent with the framework.[6] Digitalisation being one of the main drivers of the SNA research agenda, the Digital SUTs framework has also been endorsed in the formal SNA 2008 update process and so Digital SUTs will be incorporated as supplementary tables in the revised SNA.[7]

Annex B: Accounting for digital trade transactions

Understanding the annex table

This annex has been included to help compilers use the "Reporting template for digital trade" (Table 2.1 in Chapter 2), reproduced below.

Annex Table B.1, included hereafter, enumerates the following: what is being transacted (i.e., goods or services); the nature of the transaction (i.e., digitally ordered and/or digitally delivered); and who the parties involved in the transaction are (i.e., business-to-business (B2B), business-to-consumer (B2C), etc.). The annex table demonstrates how digital trade transactions should be recorded in the "Reporting template for digital trade" (Table 2.1) based on these factors.

Examples are given in Annex Table B.1 to help in interpreting and applying the recording of transactions in the reporting template. References to the template item(s) according to which any given transaction should be recorded are provided in parentheses.

Some digital trade transactions should be recorded in more than one line of the reporting template. A key example is when the transaction is both digitally ordered (item 2) and digitally delivered (item 3) and therefore must be subtracted (item 4) to avoid double-counting when calculating total digital trade (item 1).

Digital intermediation services are, by definition, both digitally ordered and digitally delivered, and should therefore be recorded in the following items in the reporting template:

- Item 2.2: "Digitally ordered trade; Services"
- Item 3: "Digitally delivered trade"
- Item 4: "Services digitally ordered and digitally delivered"
- Item 4.a: "Services digitally ordered and digitally delivered; *Of which digital intermediation services"*.

Digital intermediation services are, by definition, provided by the digital intermediation platform (DIP) to both the buyer and the seller. It should be noted, however, that the fee for the digital intermediation service may be paid by the seller, the buyer, or both. If it is not known who paid the fee, the recommendation of this Handbook is that the fee should be recorded as having been paid by the seller. This can affect which countries need to record the digital intermediation service when completing the reporting template.

TABLE 2.1 (CHAPTER 2): REPORTING TEMPLATE FOR DIGITAL TRADE

Item			Total exports	Total imports
1	**Total digital trade**	2+3 minus 4		
2	**Digitally ordered trade**	2.1+2.2		
2.1	Goods			
2.1.a	*of which: via DIPs*			
2.2	Services			
2.2.a	*of which: via DIPs*			
3	**Digitally delivered trade**			
3.a	*of which: via DIPs*			
4	**Digitally ordered and digitally delivered trade**			
4.a	*of which: digital intermediation services*			
	Addendum items			
A.1	Digital trade in services	2.2+3 minus 4		
A.2	Digitally deliverable services	>3		

Note: Transactions should be broken down by relevant product groupings (Extended Balance of Payments Services Classification (EBOPS) 2010 for services and, for example, the Harmonized Commodity Description and Coding System (HS) or Central Product Classification (CPC) for goods).

Source: IMF, OECD, UNCTAD and WTO.

Additional guidance on the recording of the digital intermediation service fee is included in Chapter 5, Table 5.3, and a fully worked-up example, including statistics, can be viewed in Table 5.2, within Box 5.1.

Compilers have the flexibility to populate the template according to the sources and details available. For example, it is not essential to have separate measures of transactions involving digital intermediation platforms in order to record overall "digitally ordered trade" or "digitally deliverable trade", or to calculate "total digital trade".

TABLE B.1: HOW TO RECORD DIGITAL TRADE TRANSACTIONS IN THE ACCOUNTS AND IN THE "REPORTING TEMPLATE FOR DIGITAL TRADE" (TABLE 2.1)

	What	How			Who	Description	Example of transaction	What is recorded in the "Reporting template for digital trade" (Table 2.1 of Chapter 2)		
		Digitally ordered	DIP	Digitally delivered				Country A	Country B	Country C
1	Good	Y	N	N	B2B	An enterprise in Country A makes a purchase directly from a supplier in Country B.	A firm purchases a component used in its production from a non-resident supplier via its EDI.	Digitally ordered imports from Country B (2.1).	Digitally ordered exports to Country A (2.1).	N/A
2	Service	Y	N	N	B2B	An enterprise in Country A makes a purchase directly from a supplier in Country B.	A firm purchases transportation services used in its production from a non-resident supplier via its EDI.	Digitally ordered imports from Country B (2.2).	Digitally ordered exports to Country A (2.2).	N/A
3	Good	Y	N	N	B2C	A consumer in Country A makes a purchase directly from a supplier in Country B.	A consumer purchases an article of clothing from a non-resident company's website.	Digitally ordered imports from Country B (2.1).	Digitally ordered exports to Country A (2.1).	N/A
4	Service	Y	N	N	B2C	A consumer in Country A makes a purchase directly from a supplier in Country B.	A consumer purchases a hotel stay from a non-resident company's website.	Digitally ordered imports from Country B (2.2).	Digitally ordered exports to Country A (2.2).	N/A
5	Good	Y	Y	N	B2B	An enterprise in Country A makes a purchase from a resident supplier in Country A via a DIP located in Country B. In this case it does not matter whether the buyer or the seller pays for the digital intermediation services.	A firm orders a computer from a resident supplier via a non-resident DIP. Only the digital intermediation services are recorded as international trade.	Digital intermediation services imports from Country B (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).	N/A
6	Good	Y	Y	N	B2B	An enterprise in Country A makes a purchase from a supplier in Country B via a resident DIP located in Country A. The digital intermediation services are paid for by the seller.	A firm orders office furniture from a non-resident supplier via a resident DIP.	Digitally ordered imports from Country B (2.1 & 2.1.a); digital intermediation services exports to Country B (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.1 & 2.1.a); digital intermediation services imports from Country A (2.2; 3; 4 & 4.a).	N/A

	What	How			Who	Description	Example of transaction	What is recorded in the "Reporting template for digital trade" (Table 2.1 of Chapter 2)		
		Digitally ordered	DIP	Digitally delivered				Country A	Country B	Country C
7	Good	Y	Y	N	B2B	An enterprise in Country A makes a purchase from a supplier in Country B via a DIP located in Country B. The digital intermediation services are paid for by the seller.	A firm orders stationery from a non-resident supplier via a non-resident DIP.	Digitally ordered imports from Country B (2.1 & 2.1.a).	Digitally ordered exports to Country A (2.1 & 2.1.a).	N/A
8	Good	Y	Y	N	B2B	An enterprise in Country A makes a purchase from a supplier in Country B via a DIP located in Country C. The digital intermediation services are paid for by the buyer.	A firm orders new chairs from a non-resident supplier via a non-resident DIP (located outside the buyer's or seller's countries).	Digitally ordered imports from Country B (2.1 & 2.1.a); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.1 & 2.1.a).	Digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).
9	Good	Y	Y	N	B2B	An enterprise in Country A makes a purchase from a supplier in Country B via a DIP located in Country C. The digital intermediation services are paid for by both the buyer and seller.	A firm orders office furniture from a non-resident supplier via a non-resident DIP (located outside the buyer's or seller's countries).	Digitally ordered imports from Country B (2.1 & 2.1.a); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.1 & 2.1.a); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A and Country B (2.2; 3; 4 & 4.a).
10	Service	Y	Y	N	B2B	An enterprise in Country A makes a purchase from a resident supplier in Country A via a DIP located in Country B. In this case it does not matter whether the buyer or seller pays for the digital intermediation services.	A firm orders transportation services from a resident supplier via a non-resident DIP. Only the digital intermediation services are recorded as international trade.	Digital intermediation services imports from Country B (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).	N/A
11	Service	Y	Y	N	B2B	An enterprise in Country A makes a purchase from a supplier in Country B via a resident DIP located in Country A. The digital intermediation services are paid for by the buyer.	A firm orders manufacturing services from a non-resident supplier via a resident DIP.	Digitally ordered imports from Country B (2.2 & 2.2.a).	Digitally ordered exports to Country A (2.2 & 2.2.a).	N/A
12	Service	Y	Y	N	B2B	An enterprise in Country A makes a purchase from a supplier in Country B via a DIP located in Country B. The digital intermediation services are paid for by the seller.	A firm orders sea transportation services from a non-resident supplier via a non-resident DIP.	Digitally ordered imports from Country B (2.2 & 2.2.a).	Digitally ordered exports to Country A (2.2 & 2.2.a).	N/A

	What	How			Who	Description	Example of transaction	What is recorded in the "Reporting template for digital trade" (Table 2.1 of Chapter 2)		
		Digitally ordered	DIP	Digitally delivered				Country A	Country B	Country C
13	Service	Y	Y	N	B2B	An enterprise in Country A makes a purchase from a supplier in Country B via a DIP located in Country C. The digital intermediation services are paid for by both the buyer and seller.	A firm orders maintenance or repair services from a non-resident supplier via a non-resident DIP (located outside the buyer's or seller's countries).	Digitally ordered imports from Country B (2.2 & 2.2.a); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.2 & 2.2.a); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A and Country B (2.2; 3; 4 & 4.a).
14	Good	Y	Y	N	B2C	A consumer in Country A makes a purchase from a resident supplier in Country A via a DIP located in Country B. In this case it does not matter whether the buyer or seller pays for the digital intermediation services.	A consumer buys a mobile phone from a resident supplier via a non-resident platform.	Digital intermediation services imports from Country B (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).	N/A
15	Good	Y	Y	N	B2C	A consumer in Country A makes a purchase from a supplier in Country B via a resident DIP located in Country A. The digital intermediation services are paid for by the seller.	A consumer orders a bicycle from a third-party seller via Amazon Marketplace.	Digitally ordered imports from Country B (2.1 & 2.1.a); digital intermediation services exports to Country B (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.1 & 2.1.a); digital intermediation services imports from Country A (2.2; 3; 4 & 4.a).	N/A
16	Good	Y	Y	N	B2C	A consumer in Country A makes a purchase from a supplier in Country B via a DIP located in Country B. The digital intermediation services are paid by the seller.	A consumer orders shoes from a non-resident supplier via a non-resident platform.	Digitally ordered imports from Country B (2.1 & 2.1.a).	Digitally ordered exports to Country A (2.1 & 2.1.a).	N/A
17	Good	Y	Y	N	C2C	A consumer in Country A makes a purchase from a consumer in Country B via a DIP located in Country C. The digital intermediation services are paid for by the seller.	A consumer purchases second-hand goods from a non-resident via eBay (located outside the buyer's and seller's countries).	Digitally ordered imports from Country B (2.1 & 2.1.a).	Digitally ordered exports to Country A (2.1 & 2.1.a); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country B (2.2; 3; 4 & 4.a).
18	Service	Y	Y	N	B2C	A consumer in Country A makes a purchase from a resident supplier in Country A via a DIP located in Country B. In this case it does not matter whether the buyer or seller pays for the digital intermediation services.	A consumer orders an Uber driven by a resident via the non-resident app. Only the digital intermediation services are recorded as international trade.	Digital intermediation services imports from Country B (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).	N/A

	What	How			Who	Description	Example of transaction	What is recorded in the "Reporting template for digital trade" (Table 2.1 of Chapter 2)		
		Digitally ordered	DIP	Digitally delivered				Country A	Country B	Country C
19	Service	Y	Y	N	B2C	A consumer in Country A makes a purchase from a supplier in Country B via a resident DIP located in Country A. The digital intermediation services are paid for by both the buyer and seller.	A consumer purchases computer repair services from a non-resident supplier via a specialist resident DIP.	Digitally ordered imports from Country B (2.2 & 2.2.a); digital intermediation services exports to Country B (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.2 & 2.2.a); digital intermediation services imports from Country A (2.2; 3; 4 & 4.a).	N/A
20	Service	Y	Y	N	B2C	A consumer in Country A makes a purchase from a supplier in Country B via a DIP located in Country B. The digital intermediation services are paid for by the buyer.	A consumer orders shipping services from a non-resident supplier via a non-resident platform.	Digitally ordered imports from Country B (2.2 & 2.2.a); digital intermediation services imports from Country B (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.2 & 2.2.a); digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).	N/A
21	Service	Y	Y	N	C2C	A consumer in Country A makes a purchase from a consumer in Country B via a DIP located in Country C. The digital intermediation services are paid for by both the buyer and seller.	A consumer buys accommodation services for a stay at a non-resident property via Airbnb (located outside the buyer's or seller's countries).	Digitally ordered imports from Country B (2.2 & 2.2.a); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.2 & 2.2.a); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A and Country B (2.2; 3; 4 & 4.a).
22	Service	Y	N	Y	B2B	An enterprise in Country A purchases a service online directly from a supplier in Country B; service is delivered digitally.	A firm purchases standardized computer services directly from a non-resident supplier's website.	Digitally ordered imports from Country B (2.2); digitally delivered imports from Country B (3); digitally ordered and delivered imports from Country B (4).	Digitally ordered exports to Country A (2.2); digitally delivered exports to Country A (3); digitally ordered and delivered exports to Country A (4).	N/A
23	Service	Y	N	Y	B2C	A consumer in Country A purchases a service online directly from a supplier in Country B; service is delivered digitally.	A consumer purchases an insurance policy directly from a non-resident insurer's website.	Digitally ordered imports from Country B (2.2); digitally delivered imports from Country B (3); digitally ordered and delivered imports from Country B (4).	Digitally ordered exports to Country A (2.2); digitally delivered exports to Country A (3); digitally ordered and delivered exports to Country A (4).	N/A
24	Service	Y	Y	Y	B2B	An enterprise in Country A purchases a service from a resident supplier in Country A via a DIP located in Country B; service is delivered digitally. In this case it does not matter whether the buyer or seller pays for the digital intermediation services.	A firm orders a logo design from a resident designer via a non-resident DIP for graphical designers. Only the digital intermediation services are recorded as international trade.	Digital intermediation services imports from Country B (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).	N/A

	What	How			Who	Description	Example of transaction	What is recorded in the "Reporting template for digital trade" (Table 2.1 of Chapter 2)		
		Digitally ordered	DIP	Digitally delivered				Country A	Country B	Country C
25	Service	Y	Y	Y	B2B	An enterprise in Country A purchases a service from a supplier in Country B via a resident DIP located in Country A; service is delivered digitally. The digital intermediation services are paid for by the buyer.	A firm orders specialized accounting software from a non-resident software company via a resident DIP.	Digitally ordered imports from Country B (2.2 & 2.2.a); digitally delivered imports from Country B (3 & 3.a); digitally ordered and delivered imports from Country B (4).	Digitally ordered exports to Country A (2.2 & 2.2.a); digitally delivered exports to Country A (3 & 3.a); digitally ordered and delivered exports to Country A (4).	N/A
26	Service	Y	Y	Y	B2B	An enterprise in Country A purchases a service from a supplier in Country B via a DIP located in Country B; service is delivered digitally. The digital intermediation services are paid for by both the buyer and seller.	A firm orders consultancy services from a non-resident firm via a specialized non-resident DIP.	Digitally ordered imports from Country B (2.2 & 2.2.a); digitally delivered imports from Country B (3 & 3.a); digitally ordered and delivered imports from Country B (4); digital intermediation services imports from Country B (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.2 & 2.2.a); digitally delivered exports to Country A (3 & 3.a); digitally ordered and delivered exports to Country A (4); digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).	N/A
27	Service	Y	Y	Y	B2B	An enterprise in Country A purchases a service from a supplier in Country B via a DIP located in Country C; service is delivered digitally. The digital intermediation services are paid for by both the buyer and seller.	A firm orders market research services from a non-resident firm via a non-resident market researcher DIP (located outside the buyer's or seller's countries).	Digitally ordered imports from Country B (2.2 & 2.2.a); digitally delivered imports from Country B (3 & 3.a); digitally ordered and delivered imports from Country B (4); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.2 & 2.2.a); digitally delivered exports to Country A (3 & 3.a); digitally ordered and delivered exports to Country A (4); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A and Country B (2.2; 3; 4 & 4.a).
28	Service	Y	Y	Y	B2C	A consumer in Country A purchases a service from a resident supplier in Country A via a DIP located in Country B; service is delivered digitally. In this case it does not matter whether the buyer or seller pays for the digital intermediation services.	A consumer purchases medical services (telemedicine) from a resident firm via a specialized non-resident DIP. Only the digital intermediation services are recorded as international trade.	Digital intermediation services imports from Country B (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).	N/A
29	Service	Y	Y	Y	B2C	A consumer in Country A purchases a service from a supplier in Country B via a resident DIP located in Country A; service is delivered digitally. The digital intermediation services are paid for by both the buyer and seller.	A consumer purchases online education services supplied by a non-resident via a resident DIP specialized in education.	Digitally ordered imports from Country B (2.2 & 2.2.a); digitally delivered imports from Country B (3 & 3.a); digitally ordered and delivered imports from Country B (4); digital intermediation services exports to Country B (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.2 & 2.2.a); digitally delivered exports to Country A (3 & 3.a); digitally ordered and delivered exports to Country A (4); digital intermediation services imports from Country A (2.2; 3; 4 & 4.a).	N/A

	What	How			Who	Description	Example of transaction	What is recorded in the "Reporting template for digital trade" (Table 2.1 of Chapter 2)		
		Digitally ordered	DIP	Digitally delivered				Country A	Country B	Country C
30	Service	Y	Y	Y	B2C	A consumer in Country A purchases a service from a supplier in Country B via a DIP located in Country B; service is delivered digitally. The digital intermediation services are paid for by the buyer.	A consumer purchases an app from a non-resident supplier via a non-resident app site.	Digitally ordered imports from Country B (2.2 & 2.2.a); digitally delivered imports from Country B (3 & 3.a); digitally ordered and delivered imports from Country B (4); digital intermediation services imports from Country B (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.2 & 2.2.a); digitally delivered exports to Country A (3 & 3.a); digitally ordered and delivered exports to Country A (4); digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).	N/A
31	Service	Y	Y	Y	B2C	A consumer in Country A purchases a service from a supplier in Country B via a DIP located in Country C; service is delivered digitally. The digital intermediation services are paid for by the seller.	A consumer purchases health services from a non-resident supplier via a specialized non-resident DIP (located outside the buyer's or seller's countries).	Digitally ordered imports from Country B (2.2 & 2.2.a); digitally delivered imports from Country B (3 & 3.a); digitally ordered and delivered imports from Country B (4).	Digitally ordered exports to Country A (2.2 & 2.2.a); digitally delivered exports to Country A (3 & 3.a); digitally ordered and delivered exports to Country A (4); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country B (2.2; 3; 4 & 4.a).
32	Service	Y	Y	Y	C2C	A consumer in Country A purchases a service from a consumer in Country B via a DIP located in Country C; service is delivered digitally. The digital intermediation services are paid for by both the buyer and seller.	A consumer orders a knitting pattern from a non-resident consumer via Ravelry (located outside the buyer's and seller's countries).	Digitally ordered imports from Country B (2.2 & 2.2.a); digitally delivered imports from Country B (3 & 3.a); digitally ordered and delivered imports from Country B (4); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digitally ordered exports to Country A (2.2 & 2.2.a); digitally delivered exports to Country A (3 & 3.a); digitally ordered and delivered exports to Country A (4); digital intermediation services imports from Country C (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A and Country B (2.2; 3; 4 & 4.a).
33	Service	Y	Y	Y	C2C	A consumer in Country A purchases a service from a consumer in Country A via a DIP located in Country B; service is delivered digitally. In this case it does not matter whether the buyer or seller pays for the digital intermediation services.	A consumer orders digitally downloadable software (e.g. photo software) from another resident consumer via a non-resident DIP. Only the digital intermediation services are recorded as international trade.	Digital intermediation services imports from Country B (2.2; 3; 4 & 4.a).	Digital intermediation services exports to Country A (2.2; 3; 4 & 4.a).	N/A
34	Service	N	N	Y	B2B	An enterprise in Country A places an offline order for a service directly from a supplier in Country B; service is delivered digitally.	A firm purchases bespoke consultancy services from a non-resident supplier, via a manually typed email.	Digitally delivered imports from Country B (3).	Digitally delivered exports to Country A (3).	N/A
35	Service	N	N	Y	B2C	A consumer in Country A purchases a service offline directly from a supplier in Country B; service is delivered digitally.	A foreign student purchases, via a telephone call, education services from a non-resident with online lectures.	Digitally delivered imports from Country B (3).	Digitally delivered exports to Country A (3).	N/A

Source: IMF, OECD, UNCTAD and WTO

Annex C

TABLE C.1: EXPANDED TABLE ON DIGITALLY DELIVERABLE SERVICES IN EBOPS 2010

	Statistical Data and Metadata eXchange Balance of Payments Data Structure Definition (SDMX BOP DSD) components	Extended Balance of Payments Services classification (EBOPS 2010) components
Insurance and pension services	SF	6
Direct insurance	SF1	6.1
Life insurance	SF11	6.1.1
Freight insurance	SF12	6.1.2
Other direct insurance	SF13	6.1.3
Reinsurance	SF2	6.2
Auxiliary insurance services	SF3	6.3
Pension and standardized guarantee services	SF4	6.4
Pension services	SF41	6.4.1
Standardized guarantee services	SF42	6.4.2
Financial services	SG	7
Explicitly charged and other financial services	SG1	7.1
Financial intermediation services indirectly measured (FISIM)	SG2	7.2
Charges for the use of intellectual property n.i.e.	SH	8
Franchises and trademarks licensing fees	SH1	8.1
Licences for the use of outcomes of research and development	SH2	8.2
Licences to reproduce and/or distribute computer software	SH3	8.3
Licences to reproduce and/or distribute audio-visual and related products	SH4	8.4
Licences to reproduce and/or distribute audio-visual products	SH41	8.4.1
Licences to reproduce and/or distribute other products	SH42	8.4.2
Telecommunications, computer, and information services	SI	9
Telecommunications services	SI1	9.1
Computer services	SI2	9.2
Computer software	SI21	9.2.1
Of which: Software originals	SI21z	9.2.1.a
Other computer services	SI22	9.2.2
Information services	SI3	9.3
News agency services	SI31	9.3.1
Other information services	SI32	9.3.2
Research and development services	SJ1	10.1
Work undertaken on a systematic basis to increase the stock of	SJ11	10.1.1
Provision of customized and non-customized research and development services	SJ111	10.1.1.1
Sale of proprietary rights arising from research and development	SJ112	10.1.1.2
Patents	SJ1121	10.1.1.2.1
Copyrights arising from research and development	SJ1122	10.1.1.2.2

	Statistical Data and Metadata eXchange Balance of Payments Data Structure Definition (SDMX BOP DSD) components	Extended Balance of Payments Services classification (EBOPS 2010) components
Industrial processes and designs	SJ1123	10.1.1.2.3
Other sales of proprietary rights arising from research and development	SJ1124	10.1.1.2.4
Other research and development services	SJ12	10.1.2
Professional and management consulting services	SJ2	10.2
Legal, accounting, management consulting and public relations services	SJ21	10.2.1
Legal services	SJ211	10.2.1.1
Accounting, auditing, bookkeeping and tax consulting services	SJ212	10.2.1.2
Business and management consulting and public relations services	SJ213	10.2.1.3
Advertising, market research and public opinion polling services	SJ22	10.2.2
Of which: Convention, trade fair and exhibition organization services	SJ22z	10.2.2.1
Architectural, engineering, scientific and other technical services	SJ31	10.3.1
Architectural services	SJ311	10.3.1.1
Engineering services	SJ312	10.3.1.2
Scientific and other technical services	SJ313	10.3.1.3
Trade-related services	SJ34	10.3.4
Other business services n.i.e.	SJ35	10.3.5
Of which: Employment services, i.e., search, placement and supply of personnel services	SJ35z	10.3.5.1
Audio-visual and related services	SK1	11.1
Audio-visual services	SK11	11.1.1
Of which: Audio-visual originals	SK11z	11.1.1.a
Artistic-related services	SK12	11.1.2
Health services	SK21	11.2.1
Education services	SK22	11.2.2
Heritage and recreational services	SK23	11.2.3
Digitally deliverable services consumed abroad (Mode 2) *Travel: by purpose of travel*		
Business	SDA	4.1
Acquisition of goods and services by border, seasonal and other short-term workers	SDA1	4.1.1
Other (Business travel)	SDA2	4.1.2
Personal	SDB	4.2
Health-related	SDB1	4.2.1
Education-related	SDB2	4.2.2
Other (Personal travel)	SDB3	4.2.3
Travel - alternative presentation: by product		
Other services	SD5	4a.5
Of which: Health services	SD5z	4a.5.1
Of which: Education services	SD5y	4a.5.2

Annex D: Table of allocation by mode of supply of digitally deliverable services

TABLE D.1: RECOMMENDED DEFAULT ALLOCATION BY MODE OF SUPPLY OF DIGITALLY DELIVERABLE SERVICES IN EBOPS 2010 IN THE EUROSTAT-WTO MODEL

Percentage of total trade in each EBOPS 2010 component

Component	EBOPS 2010 Description	Mode 1	Mode 2	Mode 3	Mode 4
Digitally deliverable services supplied cross-border (Mode 1)					
SF	Insurance and pension services	100			
SF1	Direct insurance	100			
SF11	Life insurance	100			
SF12	Freight insurance	100			
SF13	Other direct insurance	100			
SF2	Reinsurance	100			
SF3	Auxiliary insurance services	100			
SF4	Pension and standardized guarantee services	100			
SF41	Pension services	100			
SF42	Standardized guarantee services	100			
SG	Financial services	100			
SG1	Explicitly charged and other financial services	100			
SG2	Financial intermediation services indirectly measured (FISIM)	100			
SH	Charges for the use of intellectual property n.i.e.	100			
SH1	Franchises and trademarks licensing fees	100			
SH2	Licences for the use of outcomes of research and development	100			
SH3	Licences to reproduce and/or distribute computer software	100			
SH4	Licences to reproduce and/or distribute audio-visual and related products	100			
SH41	Licences to reproduce and/or distribute audio-visual products	100			
SH42	Licences to reproduce and/or distribute other products	100			
SI	Telecommunications, computer and information services	80			20
SI1	Telecommunications services	100			
SI2	Computer services	75			25
SI21	Computer software	75			25
SI21z	*Of which: Software originals*	100			
SI22	Other computer services	75			25
SI3	Information services	100			
SI31	News agency services	100			
SI32	Other information services	100			
SJ	Other business services	80			20
SJ1	Research and development services	90			10
SJ11	Work undertaken on a systematic basis to increase the stock of knowledge	90			10
SJ111	Provision of customized and non-customized research and development services	90			10
SJ112	Sale of proprietary rights arising from research and development	100			
SJ1121	Patents	100			

Component	EBOPS 2010 Description	Mode 1	Mode 2	Mode 3	Mode 4
SJ1122	Copyrights arising from research and development	100			
SJ1123	Industrial processes and designs	100			
SJ1124	Other sales of proprietary rights arising from research and development	100			
SJ12	Other research and development services	90			10
SJ2	Professional and management consulting services	75			25
SJ21	Legal, accounting, management consulting and public relations services	75			25
SJ211	Legal services	75			25
SJ212	Accounting, auditing, bookkeeping, and tax consulting services	75			25
SJ213	Business and management consulting and public relations services	75			25
SJ22	Advertising, market research and public opinion polling services	75			25
SJ22z	*Of which: Convention, trade fair and exhibition organization services*	75			25
SJ3	Technical, trade-related and other business services	80			20
SJ31	Architectural, engineering, scientific and other technical services	75			25
SJ311	Architectural services	75			25
SJ312	Engineering services	75			25
SJ313	Scientific and other technical services	75			25
SJ34	Trade-related services	100			
SJ35	Other business services n.i.e.	75			25
SJ35z	*Of which: Employment services, i.e., search, placement and supply services of personnel*	75			25
SK	Personal, cultural and recreational services	75			25
SK1	Audio-visual and related services	70	10		20
SK11	Audio-visual services	70	10		20
SK11z	*Of which: Audio-visual originals*	100			
SK12	Artistic-related services	70	10		20
SK2	Other personal, cultural and recreational services	75			25
SK21	Health services	75			25
SK22	Education services	75			25
SK23	Heritage and recreational services	75			25
Digitally deliverable services consumed abroad (Mode 2) recoded under Travel (SD)					
Travel: By purpose of travel					
SDA	Business		100		
SDA1	Acquisition of goods and services by border, seasonal and other short-term workers		100		
SDA2	Other (Business travel)		100		
SDB	Personal		100		
SDB1	Health-related		100		
SDB2	Education-related		100		
SDB3	Other (Personal travel)		100		
	Travel - alternative presentation: By product		100		
SD5	Other services		100		
SD5z	*Of which: Health services*		100		
SD5y	*Of which: Education services*		100		

Note: For explanations of the four services modes of supply, see Box 2.2 in Chapter 2.
Source: Chapter 4-Eurostat (2021a).

Annex E: Questionnaire – General Administration of China Customs ("China Customs")

1 Basic information						
1.1 Trade flow	☐ Export only		☐ Import only		☐ Export and Import	
1.2 Business Type	☐ Self-built/Self-operated Platform		☐ Third-party platform	☐ E-commerce Vendor	☐ E-commerce Facilitator	
1.3 Parties involved	1.3.1 Platforms	Serial No.	Name		Website Address	
		1			(Where the goods are ordered)	
		2				
		…				
	1.3.2 Vendors	Serial No.	Name		Website Address	Share (%)
		1			(Where the goods are ordered)	
		2				
		…				
	1.3.3 Facilitators					
	1.3.3.1 Types	☐ Logisitics	☐ Customs formalities only	☐ Payment	☐ Other_____	
	1.3.3.2 Clients					
	1.3.3.2 1 Platforms	Serial No.	Name		Website Address	Share (%)
		1			(Where the goods are ordered)	
		2				
		…				
	1.3.3.2.1 Vendors	Serial No.	Name		Registration No.	Share (%)
		1				
		2				
		…				

2 Export and Import by Mode of Customs Release		
Mode of Customs Release	Export (Value)	Import (Value)
2.1 Totals		
2.2.1 Declared and Released as CBEC goods (Customs procedure code 9610, 1210, 1239, 9710 and 9810)		
2.2.2 Released other than CBEC goods		
2.2.2.1 Released as general cargo		
2.2.2.2 Released as express or mail parcels		

3 Export and Import by Partner Countries and Territories

Major Destination of Export			Major Origin of Import		
Serial No.	Name	Share (%)	Serial No.	Name	Share (%)
1			1		
2			2		
…			…		

4 Export and Import by Domestic Locations of China

Major Domestic Sources of Export			Major Domestic Destination of Import		
Serial No.	Name	Share (%)	Serial No.	Name	Share (%)
1			1		
2			2		
…			…		

5 Export and Import by End Use

	Export		Import	
5.1 Total (Value)				
5.2 As Consumer Goods (Value)	Catergories	Share (%)	Catergories	Share (%)
	Clothing shoes bags and jewelry accessories		Fresh food	
	Mobile phones, computers and other digital products		Milk powder	
	Household and office appliances		Beauty makeup, perfume and daily care	
	Home and kitchen		Medicines, health products and medical instruments	
	Medicines, health products and medical instruments		Mobile phones, computers and other digital products	
	Toys, maternal and infant products other than milk powder		Household and office appliances	
	Sports and outdoors		Clothing shoes bags and jewelry accessories	
	Gardening and home improvement tools		Toys, maternal and infant products other than milk powder	
	Automotive		Others	
	Others		–	
5.3 As Input for Production (Value)	Categories	Share (%)	Categories	Share (%)
	Intermediate goods: primary		Intermediate goods: primary	
	Intermediate goods: processed		Intermediate goods: processed	
	Capital goods		Capital goods	

6 Expectations and Comments

6.1 Expectations of Business Trend	☐ Same as the Current Period	☐ Going Up	☐ Going Down
	–	☐ by less than 5%	☐ by less than 5%
		☐ by 5%-20%	☐ by 5%-20%
		☐ by 20% and more	☐ by 20% and more
6.2 Comments			

Annex F: Questionnaire – China's Ministry of Commerce (MOFCOM)

ITEM 1: BASIC INFORMATION FORM ON SERVICE-OUTSOURCING ENTERPRISES

Basic Information	Registration Code ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
	Enterprise Name _____
	Location of Registration Province City County
	Major activities 1. _____ 2. _____ 3. _____
	Enterprise Type ☐ Domestic (Mainland China) ☐ Hong Kong, China; Macao, China or Chinese Taipei - invested ☐ Foreign - invested
	Commercial Presence (Foreign affiliate) China _____ Overseas (Country and Region) 1._____ 2._____ 3._____
	Registered Capital (RMB) _____

ITEM 2: SERVICE OUTSOURCING CONTRACT

Contract	Enterprise Name _____	
	Contract No. _____	Description _____
	Date of Signing _____YY _____MM	Validation _____ Months
	Contracting Value: US$_____	
	Location of Service Delivery: 1. China (City:_____) 2. Overseas (Country _____ City _____)	
	Contract Type: ☐ 1. Onshore ☐ 2. Offshore	

Type of Service Outsourcing	ITO	☐ IT research and development services ☐ IT operation and maintenance services ☐ IT application development services
	BPO	☐ Internal management services ☐ Business operation services ☐ Repair and maintenance services
	KPO	☐ Business services ☐ Design services ☐ Research and development services
Client company	Name of Client Company _____	
	Registration 1. China (City:_____) 2. Overseas (Country _____ City _____)	
	Industry (GB/T 4754-2011) ☐ A agriculture, forestry, animal husbandry, fisheries ☐ B mining ☐ C manufacturing ☐ D electricity, heat, gas and water production and supply ☐ E construction ☐ F wholesale and retail trade ☐ G transportation, storage and postal services ☐ H accommodation and catering ☐ I information transmission, software and information technology services ☐ J financial services ☐ K real estate ☐ L leasing and business services ☐ M scientific research and technical services ☐ N water, environment and public facilities management ☐ O residential services, repair and other services ☐ P education ☐ Q health and social work ☐ R culture, sports and entertainment ☐ S public administration, social security and social organizations ☐ T international organizations	
Implementation	Date _____YY_____MM_____DD	
	Bank Receipt No. of Exchange Earnings_____	
	Value USD_____	
	Exchange Earnings USD_____	
	Value in Total USD_____	

ITEM 3: DEVELOPMENT OF DIGITAL TRADE IN CHINA

In line with the reporting template recommended in this Handbook, data collected for international ITO corresponds to digitally delivered exports, although, at this stage, it is not yet possible to distinguish between digitally ordered and non-digitally ordered services, nor is it possible to break the data down by institutional sector.

TABLE F.1: DIGITAL TRADE PERFORMANCE IN CHINA 2021

	Exports (US$ billion)	**Imports** (US$ billion)
Digitally ordered	...	...
Goods	215.7	82.4
Services, not digitally delivered	...	...
Digitally delivered services	55.0	...
Digitally ordered	...	...
Not digitally ordered	...	...

Note: Data on digitally ordered goods is sourced from the General Administration of Customs of China.

Source: MOFCOM.

Annex G: Questionnaire – Tax Administration Jamaica (TAJ) and Bank of Jamaica

The table presents a preliminary mapping between the items in the Services and Primary Income accounts of the balance-of-payments (exports only) and administrative data from specific tax forms. The key idea behind the mapping is to construct proxies for digitally ordered and delivered trade for the corresponding items of balance of payments services. The approach has not yet been tested, and the resulting proxies have not yet been validated against official statistics on e-commerce or digitally delivered services.

TABLE G.1: MAPPING OF ADMINISTRATIVE DATA (TAX RETURNS) TO BALANCE OF PAYMENTS SERVICES DATA

Services account by category	Corresponding administrative data from tax forms[8]
Services exports	
1. Transportation (Passenger, Freight & Other)	Form 4A GCT Returns, Section D, Line 20 2. Form IT14 Miscellaneous Payments to Non-Residents
Sea	Form 4A GCT Returns, Section D, Line 20 2. Form IT14 Miscellaneous Payments to Non-Residents
Air	Form 4A GCT Returns, Section D, Line 20 2. Form IT14 Miscellaneous Payments to Non-Residents
Other	Form 4A GCT Returns, Section D, Line 20 2. Form IT14 Miscellaneous Payments to Non-Residents
2. Travel *(Estimated expenditure by Visitors received from JTB)*	
Business	Form 4D GCT Returns, Section D, Line 37 (GCT Returns on imported Tourism Services) 2. Form IT14 Miscellaneous Payments to Non-Residents
Personal	Form 4D GCT Returns, Section D, Line 37 (GCT Returns on imported Tourism Services) 2. Form I.T14 Miscellaneous Payments to Non-Residents
3. Communication Services	
Postal	Form 4A GCT Returns, Section D, Line 22 2. Form IT14 Miscellaneous Payments to Non-Residents
Telecommunication	Form 4A GCT Returns, Section D, Line 22 2. Form IT14 Miscellaneous Payments to Non-Residents
Construction	Form 4A GCT Returns, Section D, Line 22 2. Form IT14 Miscellaneous Payments to Non-Residents
4. Construction Services (currently estimated as 15% of FDI flows)	GCT Returns on Construction Activities 2. Form IT14 Miscellaneous Payments to Non-Residents
Construction abroad	
Construction in the compiling economy	Form 4A GCT Returns, Section D, Line 22
5. Insurance Services	Form 4E GCT Returns, Section D, Line 33 (GCT Returns on imported insurance services) 2. Form IT14 Miscellaneous Payments to Non-Residents
Life	2. Form IT14 Miscellaneous Payments to Non-Residents
Freight	Form 4E GCT Returns, Section D, Line 33

Other	Form 4E GCT Returns, Section D, Line 33
Reinsurance	Form 4E GCT Returns, Section D, Line 33
Auxiliary	Form 4E GCT Returns, Section D, Line 33
6. Financial Services	Form 4A GCT Returns, Section D, Line 22
7. Computer and Information Services	Form 4A GCT Returns, Section D, Line 22
8. Royalties and License Fees	Form IT14 Miscellaneous Payments to Non-Residents
9. Other Business Services	1. Form 4A GCT Returns, Section D, Line 22 2. Form S04 Line 36, Income earned from sources outside the island
10. Personal, Cultural and Recreational	Form S04 Line 36, Income earned from sources outside the island
11. Government Services	Form 4H Goods and Services acquired

Source: Bank of Jamaica.

Annex H: Questionnaire – Instituto Nacional de Estadística (National Statistics Institute, Spain)

THE QUESTIONNAIRE MODULE ON E-COMMERCE IN THE ICT-H

The module of the ICT-H questionnaire devoted to e-commerce proposes the 14 questions below. The e-commerce questions are introduced as follows to the respondent:

The questions in this part refer to the purchase of products and services via the internet (website or application) made for private purposes. These do not include work-related or free purchases.

Please note that the contact and the purchase agreement both with companies and natural persons (e.g., Airbnb, Facebook Marketplace, HomeAway, etc.) must take place via an application or digital intermediary platform (DIP). Orders made via e-mail, WhatsApp, phone calls or "in person" should be excluded.

Payment does not necessarily need to take place online (any common mean of payment is acceptable).

1. Have you ever, for private purposes, purchased products or services via the internet?

Possible responses: Yes/No

2. When was the last time you purchased a product or service via the internet?

Possible responses: In the last three months; More than three months and less than one year ago; More than one year ago

3. Have you, for private purchases, purchased or ordered via the internet any of the following products in physical format that are listed hereafter? Please include online purchases both from companies and from individuals and, where applicable, the last purchase made.

Possible responses for each of the physical products listed hereafter: Yes, in the last three months; Yes, more than three months and less than one year ago; No

- Clothes (including sports clothes), shoes or accessories (e.g., bags, jewellery)
- Sports equipment (except sports clothes)
- Toys for children or articles for childcare (e.g., nappies, baby bottles, buggies)
- Furniture, home accessories (e.g., carpets or curtains) or gardening equipment (e.g., tools, plants)
- Music on physical media: CDs, vinyl records, etc.
- Films and TV series on physical media: DVDs, Blu-ray, etc.
- Printed books, magazines or newspapers on physical media
- Computers, tablets, mobile phones or accessories
- Electronic equipment (e.g., televisions, sound systems, cameras) or household appliances (e.g., washing machines)
- Medicines or dietary supplements, such as vitamins (not including the online renewal of prescriptions)
- Deliveries from restaurants, fast food chains and catering services
- Food and beverages from stores or supermarkets
- Cosmetics, beauty or wellness products
- Cleaning or personal hygiene products (e.g., toothbrushes, tissues, detergents, cleaning cloths)
- Bicycles, cars or other vehicles or their spare parts
- Other physical products

4. Have you purchased any of the above-mentioned products from an individual via a website or an application (e.g., via eBay or Facebook Marketplace)?

Possible responses: Yes, in the last three months; Yes, more than three months and less than one year ago; No

5. And, only for the above-mentioned products ordered or purchased during the last three months, from whom did you buy them? Please include online purchases both from companies and from individuals.

Possible responses: Yes/No

a) National sellers (including national websites of multinational companies, e.g., Amazon Spain)
b) Vendors from other EU countries
c) Vendors from the rest of the world
d) The vendor's country of origin is unknown

6. Have you purchased or subscribed to any of the following products via a website or application for private use in the last three months? Free applications are excluded.

Possible responses: Yes/No

a) Streaming or downloaded music
b) Streaming or downloaded films or television series

c) Online games, including games downloaded for smartphones, computers, tablets or consoles
d) Downloads of software, including updates
e) Applications related to health or to physical fitness
f) Other applications (e.g., related to language learning or travel)

7. Have you purchased or subscribed to any of the following products via a website or application for private use in the last three months? Possible responses:

a) Tickets for sports events
b) Tickets for cultural or other events (movies, concerts, fairs, etc.)
c) Internet subscriptions or mobile phone connections
d) Subscriptions for electricity, water or gas supplies

8. For private purposes, have you hired (contact and agreement), via a website or application, any home service (e.g., cleaning, childcare, repair work, gardening)

Possible responses: Yes, in the last three months; Yes, more than three months and less than one year ago; No

a) With a service provider
b) With an individual (e.g., via Facebook Marketplace)

9. Have you used a website or application to hire a transport service (a car, for example) for private purposes?

Possible responses: Yes, in the last three months; Yes, more than three months and less than one year ago; No

a) With a transport company, bus company, flight company, taxi service or driver (e.g., Cabify, Uber, Free Now)
b) With an individual (e.g., Blablacar, Amovens)

10. Have you used a website or application to book accommodation (room, apartment, house, etc.) for private purposes?

Possible responses: Yes, in the last three months; Yes, more than three months and less than one year ago; No

a) With a company, such as a hotel or travel agency
b) With an individual (e.g., Airbnb, HomeAway)

11. And have you hired any other service not already mentioned, for private purposes (excluding financial and insurance services) via a website or application?

Possible responses: Yes, in the last three months; Yes, more than three months and less than one year ago; No

TABLE H.1: RESULTS OF THE ICT-H SURVEY: INTERNET PURCHASES BY DEMOGRAPHIC CHARACTERISTICS AND RANGE OF VALUE (2020)

	Total persons (16-74 years) (number of people and percentage)	**People who made purchases via the internet in the last three months** (number of people and percentage)
Total persons	35,238,288	18,965,977
Less than EUR 50	9.6%	17.9%
EUR 50 to less than EUR 100	11.4%	21.2%
EUR 100 to less than EUR 300	15.0%	27.9%
EUR 300 to less than EUR 500	7.2%	13.4%
EUR 700 to less than EUR 1000	2.9%	5.3%
More than 1000 EUR	1.5%	2.8%
Unknown/Non-response	2.5%	4.7%
No purchases made via the internet in the last three months	3.7%	6.9%

Source: INE.

12. How often have you purchased or ordered goods or services via the internet for private purposes in the last three months?

Possible responses:

a) Once or twice
b) Three to five times
c) Six to ten times
d) More than ten times

13. Excluding the purchase of shares and other financial assets, what was the total value of the goods and services you have purchased or ordered via the internet for private purposes in the last three months?

Possible responses:

a) Less than €50
b) From €50 to less than €100
c) From €100 to less than €300
d) From €300 to less than €500
e) From €500 to less than €700
f) From €700 to less than €1,000
g) More than €1,000
h) Unknown/No response

14. Have you performed any of the following financial activities via the internet for private purposes in the last three months (excluding transactions via e-mail)?

Possible responses: Yes/No

a) Purchase or sale of shares, bonds, funds or other financial investment products
b) Underwriting of insurance policies or renewal of existing ones, including those offered as a package together with another service (e.g., travel insurance offered together with a flight ticket)
c) Drawing up a loan or mortgage contract or obtaining credit from a bank or other financial supplier

Endnotes

1 This annex is based on the OECD Handbook on Compiling Digital Supply and Use Tables (OECD, 2023).

2 ICT goods and digital services correspond to the CPC Rev.2.1 list of ICT products (United Nations, 2015).

3 The Ministerial Declaration can be accessed at http://www.g20.utoronto.ca/2020/G20SS_Declaration_G20_Digital_Economy_Ministers_Meeting_EN.pdf.

4 Documentation on the SNA revision process is available at https://unstats.un.org/unsd/nationalaccount/Towards2025.asp.

5 For a detailed definition of each industry, see OECD Handbook on Digital Supply and Use Tables (2023).

6 For instance, Canada, the Netherlands and Ireland.

7 See https://unstats.un.org/unsd/nationalaccount/snaupdate/dztt.asp, Guidance Note DZ.5.

8 Forms - TAJ Portal (jamaicatax.gov.jm): https://www.jamaicatax.gov.jm/web/guest/forms.

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Acronyms and abbreviations

AEG	UN Advisory Expert Group on National Accounts
AI	artificial intelligence
ASYCUDA	UNCTAD Automated System for Customs Data
B2B	Business-to Business
B2C	Business-to-Consumer
B2G	Business-to-Government
BEA	US Bureau of Economic Analysis
BOPCOM	IMF Committee on Balance of Payments Statistics
BPM6	*Balance of Payments and International Investment Position Manual. Sixth Edition*
BPO	Business Process Outsourcing
BOJ	Bank of Jamaica
C2C	Consumer-to-Consumer
CBEC	Cross-Border e-Commerce
CIF	Cost, Insurance and Freight
CPA	EU classification of products by activity
CPC	Central Product Classification
DEA	Digital Economy Agreement
DIP	Digital Intermediation Platform
DSTRI	OECD Digital Services Trade Restrictiveness Index
EBOPS	Extended Balance of Payments Services Classification
ETCD	Electronic Trade Customs Declaration
EDI	Electronic Data Interchange
EGATUR	Tourism Expenditure Survey
EU	European Union
FATS	Foreign Affiliates Statistics
FOB	Free on Board
FRONTUR	Tourist Movements at Borders
GATS	General Agreement on Trade in Services
HBS	Household Budget Survey
HS	Harmonized Commodity Description and Coding System
ICT	Information and Communications Technology
ICT-E	Annual Information and Communications Technology usage and e-commerce in Enterprises survey
ICT-H	Survey on Equipment and Use of Information and Communication Technologies in Households
IMTS	*International Merchandise Trade Statistics: Concepts and Definitions*
INE	Instituto Nacional de Estadística
ISIC	International Standard Industrial Classification of All Economic Activities
IT	Information Technology
ITO	Information Technology Outsourcing
ITRS	International Transaction Reporting System
ITS	International Trade in Services
ITSS	International Trade in Services Statistics
KPO	Knowledge Process Outsourcing
LCU	Large Case Unit
LDC	Least-Developed Country
MNE	Multinational Enterprise
MNO	Mobile Network Operator
MOSS	VAT Mini One Stop Shop (data collection scheme)
MSITS	*Manual on Statistics of International Trade in Services*
MSME	Micro, Small and Medium-sized Enterprise
n.d.	no date
NACE	Nomenclature of Economic Activities
NFT	Non-Fungible Token
n.i.e.	not included elsewhere
NPISH	Non-Profit Institutions Serving Households
ONS	UK Office for National Statistics
OSS	One Stop Shop (data collection scheme)
R&D	Research and Development
RTA	Regional Trade Agreement
RTS	Residents Travel Survey
SNA	System of National Accounts
SPTS	Statistics on Products in the Trade Sector
STATIN	Jamaican Statistical Institute
SUTs	Supply and Use Tables
TAJ	Tax Authority Jamaica
TiSMoS	WTO Trade in Services by Mode of Supply
TT-ISIC	Task Team on International Standard Industrial Classification of All Economic Activities
UN	United Nations
UNCEISC	United Nations Committee of Experts on International Statistical Classifications
VAT	Value-Added Tax
VoIP	Voice over Internet Protocol
WCO	World Customs Organization
YoY	Year-on-Year

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What is "digital trade" and how can it be measured and monitored to support policymakers in navigating the digital transformation of international commerce?

Digital technologies have made it increasingly feasible for buyers and sellers to place and receive orders on a global scale. They also enable the instantaneous remote delivery of services directly into businesses and homes, including internationally.

By focusing on these two criteria – digital ordering and digital delivery across borders – the Handbook on Measuring Digital Trade sets out a conceptual and measurement framework for digital trade that aligns with the broader standards for macroeconomic statistics.

This second edition of the Handbook is the outcome of a partnership between the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), the United Nations Conference on Trade and Development (UNCTAD) and the World Trade Organization (WTO), resulting in a comprehensive agreed approach.

This Handbook aims to help statistical compilers to address policymakers' needs for statistical evidence on digital trade. It includes extensive compilation guidance, drawing upon substantive inputs and case studies from both developed and developing economies and covering a variety of survey and non-survey sources. A reporting template is also proposed to support compilers in the production and dissemination of digital trade statistics.

This Handbook thereby establishes a valuable shared foundation for understanding and measuring digital trade in a way that is internationally comparable. Furthermore, it provides a crucial resource for an active programme of technical assistance and statistical capacity-building, through which the four co-authoring partner organizations can support statistical compilers as they seek to measure, monitor and respond to the challenges of digital trade.

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