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Forthcoming OECD-WTO-IMF-UNCTAD Handbook on Measuring Digital Trade
Draft of Chapter 2. Conceptual framework for measuring digital trade

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

Chapter 2. Conceptual framework for measuring digital trade

Drawing on existing measurement initiatives and focussing on policy needs, this chapter defines digital trade as trade that is digitally ordered and/or digitally delivered. It delineates a conceptual framework which 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 help inform policy discussions.

2.1. What is digital trade?

Digitalisation 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, digitalisation also has a significant disruptive and transformative impact on many existing industries: by shrinking the space between consumers and producers, and amongst producers, it provides previously unimaginable access to new markets, particularly for SMEs.

Quantifying the overall impact of digitalisation on international trade is however out of the scope of this Handbook. The objective of this Chapter, and indeed of this Handbook, is to establish a common understanding of what "digital trade" refers to. In fact, one of the key concerns driving the demand for better evidence has been the perception that large parts of the economy, and by extension of international trade, are not being recorded because of digitalisation (Ahmad and Schreyer, 2016[1]) (Corrado et al., 2021[2]). Even if it is generally accepted that existing trade statistics are still well suited to measure international trade,[1] the fact that digital trade is not visible in existing statistics hinders the ability to assess the impact of trade policy and may lead to the misperception that digitalisation in trade is not measured accurately.

Over the last twenty years, a number of initiatives emerged to measure different aspects of what can be broadly referred to as 'digitalisation', understood as the use of digital technologies and data as well as interconnections that results in new or changes to existing activities. As mentioned in Chapter 1, the most important initiatives on which this Handbook draws are: OECD, WTO and UNCTAD's work on defining e-commerce; UNCTAD's work on ICT-enabled trade; OECD's broader efforts on measurement in the context of the Going Digital project; and a number of related efforts on complementary 'readiness' measures, such as those developed by UNCTAD, the International Telecommunication Union (ITU), or The World Economic Forum. On the policy front, the seminal work of (López-González and Jouanjean, 2017[3]) attempted to reconcile existing efforts and to produce a framework for digital trade useful for trade policy analysis, where all digitally 'enabled' transactions should be in scope for digital trade.

Building on all of the above, the first edition of this Handbook (OECD, WTO, IMF, 2020[4]) formalised for the first time a *statistical* definition of digital trade, based on the *nature* of the transaction and combining the two key criteria of digital ordering and digital delivery:

- The definition of digitally ordered trade closely follows the 2009 OECD definition of e-commerce (OECD, 2011[5]), with the focus being on international e-commerce transactions. According to this definition, it is the method by which the order is placed or received, not the payment or channel of delivery, which determines whether a transaction is an e-commerce transaction.
- The definition of digitally delivered trade stems from the UNCTAD-led Task Group on Measuring Trade in ICT Services and ICT-enabled Services (TGServ), which defined ICT-enabled services as "services products that are delivered remotely over ICT networks (i.e. over voice or data networks, including the Internet)" and applied this definition to services trade. It is also broadly in line with the GATS Mode 1 supply of services (Box 2.2), provided that the service can be digitally delivered.

Following extensive international consultations, this definition is now widely accepted within the statistical community as the foundation of the measurement framework for digital trade. The OECD Working Party on International Trade in Goods and Services Statistics (WPTGS) widely discussed and endorsed the Handbook in their annual meetings (OECD - WPTGS, 2019[6]), (OECD - WPTGS, 2020[7]) and (OECD - WPTGS, 2021[8])). As a result, several countries started to implement the measurement approaches introduced by the Handbook (see chapter 6). Furthermore, the concepts of digital ordering and digital delivery have been fully integrated in, and are consistent with, the framework of digital supply-and-use tables (OECD, forthcoming).

It is also worth emphasising that the statistical definition for digital trade is well in line with the overarching policy framework set out by the WTO work programme on electronic commerce, or e-commerce, defined as the "production, distribution, marketing, sale or delivery of goods and services by electronic means".

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 (such as existing e-commerce surveys) to produce estimates of digital trade.

This chapter is organised as follows. Section 2.2 outlines the conceptual framework for digital trade, covering the three dimensions of nature, product and actors; Section 2.3 defines how digital trade fits in the existing accounting frameworks of BPM6 (IMF, 2009[9]) and SNA 2008 (UNSTATS, 2008[10]); Section 2.4 presents the recommended reporting template for digital trade transactions; and Section 2.5 provides users with a preview, based on information available at the time of writing, of how digitalisation will be accounted for in the upcoming international update to the statistical standards (SNA 2025 and BPM7).

2.2. The conceptual framework for digital trade

The statistical definition of digital trade is based on the *nature* of the transaction, and not on the characteristics of the product that is traded nor on the characteristics of the actors involved in the transaction. This Handbook defines **(international) digital trade** as

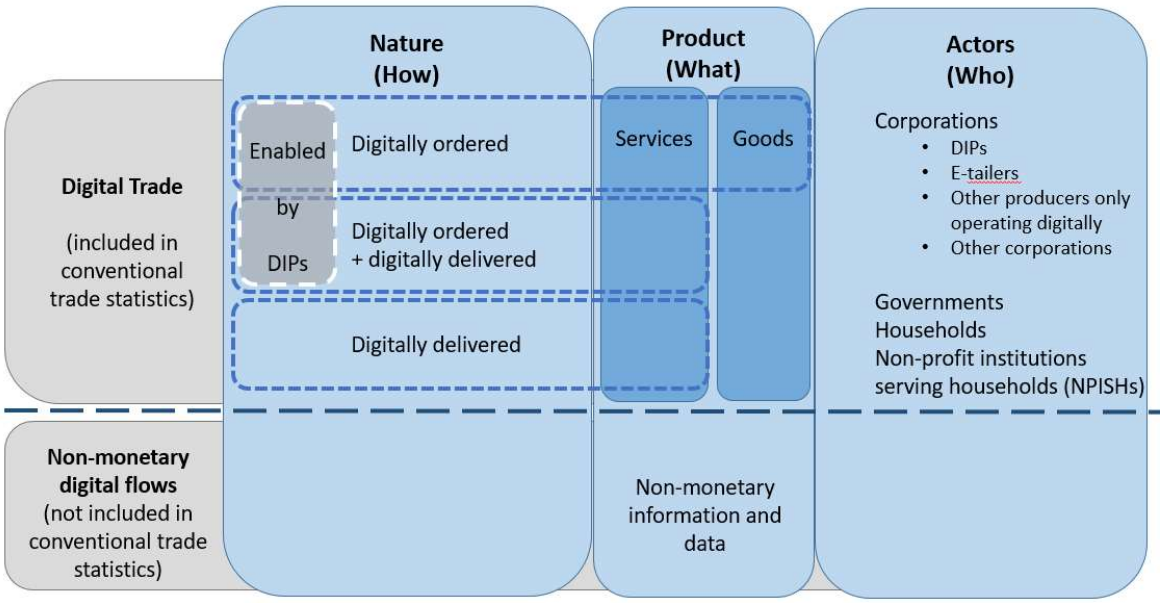
> *All trade that is digitally ordered and/or digitally delivered.*

The digital trade framework presented in Figure 2.1 implies that digital trade transactions should be compiled as a subset of existing trade transactions between residents and non-residents, i.e. international merchandise and trade in services statistics. As such, notwithstanding the impact that digitalisation may have on commercial presence, foreign affiliates statistics (measuring Mode 3 supply of services, see Box 2.2) are not directly relevant for the measurement of digital trade.

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. These fall within the 2008 SNA production boundary and are recorded in the BPM6 goods and services account. As a consequence, monetary transactions for data products (e.g. purchase of datasets), when they take the form of transactions in services,[2] are also in scope for digital trade. In addition, monetary transactions supported by data will of course be included in digital trade if the services supported by the data 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 bottom part 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 one (for instance, services paid for by advertisers). Nevertheless, these non-monetary digital flows are outside the 2008 SNA production boundary, and therefore are not measured in the national accounts nor in international goods and services trade statistics.

Figure 2.1 The conceptual framework for digital trade



Note: Digital Intermediation Platforms (DIPs) are also an important component of the actors. Their current explicit inclusion in the nature of transactions reflects the scope for measuring modes of digital delivery and/or ordering through targeted surveys of DIPs.

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 which 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 section describes these three dimensions in more detail.

2.2.1. The nature of the transaction (How)

Digitally ordered transactions

The first criterion to identify digital trade transactions is referred to as *"digitally ordered"*. Significant efforts made over a number of years led to an internationally agreed definition for the measurement of e-commerce (OECD, 2011[5]). This Handbook builds on those efforts and aligns 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. If a transaction is deemed to be digitally ordered, the total value of the transaction should be considered 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" facilitating the relevant transactions.

To assist in the consistent interpretation of this definition, the following additional clarifications[3] are provided to identify digitally ordered transactions in international trade:

1. For digitally ordered transactions, the payment and ultimate delivery of the goods or services do not also have to be conducted online;
2. Digitally ordered transactions can involve participants from all institutional sectors (shown in the “actors” column of Figure 2.1), and cover orders made over the web,[4] extranet or via electronic data interchange (EDI, see Box 2.1);
3. Digitally ordered trade includes 'in-app' online purchases;
4. Digitally ordered trade includes transactions via online bidding platforms;
5. When a trade transaction is concluded via offline ordering processes, but subsequent follow-up orders are made via digital ordering systems, only the follow-up orders should be considered as e-commerce
6. Orders made by phone, fax or manually typed email are excluded from digitally ordered trade;
7. Offline transactions formalised using digital signatures are excluded from digitally ordered trade; and
8. For a trade transaction in the current statistical period that was initiated in a prior period, classification as digitally ordered or not digitally ordered should reflect the mode(s) of ordering used by the seller for new sales initiated in the current period rather than the original ordering method for the specific trade transaction.

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 those) are typically not specifically designed for placing orders (as per the e-commerce definition), but instead receive manually composed messages similar to emails. 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 automatised using Artificial Intelligence). In this case, arguably, the related transactions could be classified as digitally ordered trade.

Box 2.1. A note on computer networks and electronic data interchange (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[5]). The 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 originally set up for 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. It is used in a wide variety of industries including food, retail, logistics, and manufacturing, to efficiently manage international supply chains (e.g. just-in-time inventory management).

Practically, and in particular considering the digitalisation 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[11]).

Digitally delivered transactions

The second criterion to identify digital trade transactions is referred to as *"digitally delivered"*. The concept of digitally delivered transactions builds on previous work of the UNCTAD-led Task Group on Measuring Trade in ICT Services and ICT-enabled Services (with membership from ITU, OECD, UNESCWA, UNSD, World Bank and WTO).

In this Handbook, **digitally delivered trade** is defined as

> *All international transactions that are delivered remotely over computer networks.*

It should be noted that this definition is broader than the one provided in the previous version of this Handbook, which closely mirrored that of digitally ordered trade and only covered delivery methods specifically designed for the purpose of delivering services.

The simplification of the definition of digital delivery was motivated by both conceptual and practical considerations. On the conceptual side, specific ordering methods matter for defining digital ordering (for instance, when assessing possible access barriers to e-commerce) while on the delivery side the specific ways a service is delivered is less relevant from a policy-making perspective. On the practical side, the new definition is easier to implement as it avoids complex interpretation issues around what 'specifically designed' refers to, especially when a single service contract (transaction) can be rendered by different means (e.g. a mix of emails, video calls and automatic file transfers).

Equally important, and related to the conceptual considerations above, 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[12]) and Box 2.2). Since the definition of digitally delivered trade refers to any international transaction where 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 also broadly equivalent to the concept of service delivery via Mode 1. It is worth noting that some services are deemed to be supplied via Mode 1 but are not digitally deliverable (such as transport) and that some services can be digitally delivered and consumed abroad (i.e. via Mode 2 (see Box 2.2)).[5] Figure 2.2 provides further clarity on the relationship between digitally delivered trade, ICT-enabled trade, and modes of supply.

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 art. I:2). 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 para 2.25).

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".

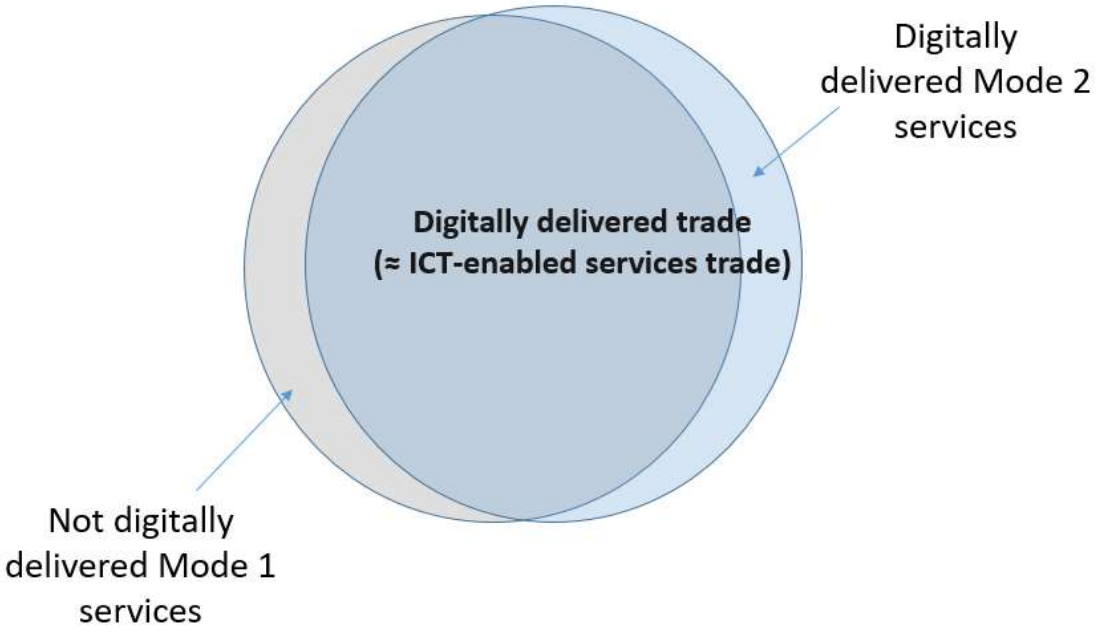
Mode 3: Commercial presence – takes place through supply of a service "by a service supplier of one Member, through commercial presence in the territory of any other Member".

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".

To assist in the consistent interpretation of this definition, the following additional 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 goods or services do not also have to be conducted online;
4. Orders delivered by phone, fax, video call, or email are included in digitally delivered trade;
5. Digitally delivered trade includes services provided through apps;
6. When a trade transaction is delivered via offline processes, but subsequent follow-up transactions are delivered digitally, only the follow-up transactions should be considered as digitally delivered.

Figure 2.2. Digitally delivered trade and related statistical concepts



Transactions enabled by online platforms

Online platforms play an increasingly important role in the digital economy. They facilitate economic transactions (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, 2019[13]).

This section provides a (non-exhaustive) typology of the different online platforms and clarifies their role in the measurement of digital trade transactions.[6]

Digital intermediation platforms (DIPs)

A particularly crucial subset of online platforms are digital intermediation platforms (DIPs), sometimes referred to as 'online marketplaces'. These platforms facilitate trade in goods and services and charge a fee for facilitating the transaction.[7] The World Customs Organisation (WCO, 2018, 2022[14]) as well as the OECD Centre for Tax Policy and Administration (OECD, 2018[15]) (OECD, 2019[16]) identified the key defining features of digital intermediation platforms:[8]

1. There are multiple buyers and multiple sellers that interact through the platform;
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*** 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 goods and services advertised can only be paid for electronically (although it should be noted that means of payment do not matter when considering whether the underlying 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 are included in this category. A DIP is deemed to not take economic ownership if the license 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 transactions are included under the digitally ordered category (and where relevant also the digitally delivered category), they are separately highlighted in the framework for three reasons:

1. A specific interest in the role of DIPs – including their role in trade – and in particular, their potentially disruptive impact on the economy;
2. The possibility that a targeted focus on DIPs, including through dedicated survey vehicles, may provide an effective approach to 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 they are 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 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 of "matching" buyers with sellers and facilitating ordering, payment, communication, etc. between them. These services provided by DIPs are termed ***digital intermediation services*** and are defined in this Handbook as:

> *Online intermediation services that enable transactions between multiple buyers and multiple sellers, without the digital intermediation platform taking economic ownership of the goods or rendering services that are being sold (intermediated).*

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 (e.g. in the case of a monthly subscription for the platform's services the payment would be separate). The important thing is that these amounts accrue to the DIP rather than 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, these fees (i.e. the digital intermediation service) should be separately measured/estimated. Where the DIP is non-resident, the digital intermediation services fees are recorded with the digitally ordered and delivered services (international) trade.

Other online platforms

Online platforms other than DIPs can be grouped in three broad categories:

1. **E-tailers** A different category of online platform is that of electronic retailers or "e-tailers", defined as retail and wholesale businesses engaged in purchasing and reselling goods[9], which receive a majority of their orders digitally. 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 also noted that two 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, in the context of digital trade measurement efforts should focus on the nature of individual transactions.

Transactions undertaken via e-tailers are in scope for digital ordering 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, subscription-based service providers, providers of online financial services, etc., which deliver services digitally.

   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 specific content is streamed.

   Similar to the case of e-tailers, transactions undertaken via other producers only operating digitally are in scope for digital ordering and digital delivery 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 via selling data or advertising space. Examples are social media platforms, dating apps, search engines, knowledge sharing platforms, and providers of free phone applications that generate revenues in this way and provide in turn, services to end-users free-of-charge.[10] Also included in this category are websites and platforms that receive revenue for directing visitors to third-party websites (e.g. search engines). In this latter case, although the platform receives a fee, the process in itself does not explicitly facilitate a transaction between two independent sets of users (it just makes one more likely).

   Interactions between these suppliers and end-users facilitated by this category of online platforms are not in scope for measures of digital trade.

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 felt such a group was required in order to respond to questions being raised regarding the suitability and appropriateness of the System of National Accounts (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 digitalisation 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 digitalisation measurement agenda includes improving (or making more visible) the measurement of such items as: Data; Artificial Intelligence (AI); Digital Intermediation Platforms (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 how to improve the visibility of digitalisation within the national accounts. To do this, the group developed the Digital Supply and Use Tables (Digital SUTs) (Mitchell, 2021[17]), which is now beginning to be implemented in several countries. The advisory group is currently overseeing the creation of a handbook on compiling Digital SUTs, a companion to the Handbook on Measuring Digital Trade.

2.2.2. The product (What)

Products are split into the two conventional categories of goods and services in the framework as shown in Figure 2.1.

Goods

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

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 which are also digitally delivered.

Digitally ordered services

Transactions in (any) services that are digitally ordered, following the definition described, should be included as digitally ordered services. This includes two components, *digitally ordered services not digitally delivered* and *services that are both digitally ordered and delivered*.

Digitally delivered services

As described, digitally delivered trade builds on the definition of ICT-enabled services developed by the UNCTAD TGServ Task Force. In the operationalisation of that definition, the Task Force identified those Central Product Classification (CPC ver.2.1) products which can *potentially* be ICT-enabled (see Chapter 4 and (UNCTAD, 2015[11])). This forms the basis for the list of services considered in this Handbook as potentially digitally delivered, or "*digitally deliverable"* (see Chapter 4).

Digital intermediation services provided by DIPs, when involving resident to non-resident transactions, are in scope for digitally ordered and delivered services trade. While at the moment of writing there is no definitive guidance on the product class to which these transactions should be classified, this Handbook recommends their recording (in EBOPS 2010) under *trade-related services*, a subcomponent of *other business services* (see also Section 2.3).[12]

2.2.3. 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 require breakdowns by actors (see Section 2.4), compilers are encouraged to explore the breakdowns which are most relevant for their economies.

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 export 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.

Linking international trade and business registers provide a reliable way to identify exporting and importing firms (including by industry, size class and ownership patterns – e.g. foreign vs domestic ownership), and these efforts should be accelerated and built on in developing statistics on digital trade.

Within the corporate sector, it may also be useful to explore additional breakdowns of industries and aggregations of firms, such as those developed by the OECD Advisory Group on Measuring GDP in a Digitalised Economy. Particularly relevant in this context, as highlighted in Figure 2.1, are: *Digital intermediation platforms; E-tailers; and Other producers only operating digitally.*[13]

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 digital transformation complicate the way that trade is measured in practice. For example, business surveys may not be able to capture transactions between domestic households via foreign DIPs, while capturing this via household surveys may be even more challenging (see further guidance in Chapters 3 and 5).

Governments and NPISHs

Although their economic purposes and motives are somewhat different from corporations and households, governments and NPISHs make use of e-commerce as both buyers and sellers, as well as consuming (and even producing) digitally delivered services. Exhaustive measures of digital trade should, therefore, cover such digitally ordered and digitally delivered exports and imports involving government units and NPISHs.

2.2.4. Non-monetary digital flows

The bottom part of Figure 2.1 acknowledges the increasing importance of non-monetary digital flows, in addition to 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 such as Meta or search engines such as Google, offer services to users in exchange for data from their users (often personal data) that can then in turn be used by these firms to generate targeted advertising, and hence revenues (Nakamura, Samuels and Soloveichik, 2016[18]). Also, international banking can only take place through the cross-border flow of data to support the services that are being provided. While international transactions relating to advertising or banking services would 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.[14] Other work streams are investigating the role of data in the national accounts as well as other issues related to the impact of digitalisation on economic statistics.[15]

For the time being however, non-monetary digital flows are not in scope for digital trade. Nevertheless, paid transactions for data are included in measures of international trade, and so, where appropriate, these transactions should also be included in the relevant component of digital trade.

2.3. Accounting principles

The accounting principles for recording digital trade (including in particular valuation and time of recording) generally follow those of BPM6.

Transactions that pass through Digital Intermediation Platforms (DIPs), however, require some clarifications, especially those which facilitate transactions in services. Intermediation services other than financial intermediation, travel or transport agents are not explicitly defined and addressed in BPM6. In paragraph 10.160, BPM6 covers subcontracting (also referred to as outsourcing), an arrangement where services like transport, construction, computer 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 the services and then supplies it to the customer.

Intermediation services provided by intermediation platforms 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 to never take ownership of the goods or render the services that they intermediate. As a consequence, this Handbook recommends a ‘net’ recording of the flows (i.e., the separate recording of digital intermediation

services), which better reflects the economic substance of these types of transaction. This view is consistent with more recent research conducted in the context of the BPM6 and SNA update processes.[16]

2.4. Recommended reporting template

The multi-dimensional nature of digital trade requires guidance on how to aggregate various statistics within a standardised 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.

Table 2.1. Reporting template for digital trade

			Total exports	Total imports
1.	**Total Digital Trade**	2 + 3.2 *or* 2 + 3 minus 2.2.a *or* 2 + 3 minus 3.1		
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: digitally delivered	=3.1		
2.2.b	of which: via DIPs			
3.	**Digitally Delivered Trade**	3.1+3.2		
3.1	Of which: Digitally ordered services	=2.2.a		
3.1.a	of which: via DIPs			
3.1.b	of which: digital intermediation services			
3.2	Of which: not digitally ordered services			
	Addendum items			
A.1	Digital trade in services	2.2+3 *minus* 2.2.a *or* 2.2+3.2		
A.2	Digitally deliverable services	>3		

Note: Transactions should be broken down by relevant product groupings (EBOPS 2010 for services, and for example, CPC for goods).
Note: '1. Total Digital Trade' and 'A.1 Digital trade in services' can also both be calculated subtracting item 3.1 instead of 2.2.a, as conceptually these are the same. However, depending on what surveys countries use for capturing digital trade, and the fact that it may be calculated as a residual, this may not be the case.

The template includes the two main components of digital trade, namely digitally ordered trade (item 2 in the template) 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 only use ICT/e-commerce surveys for digitally ordered trade and services sources for digitally delivered trade. It also provides an item for digitally ordered services trade 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 total digitally ordered trade *or* total digitally delivered trade available 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 is available from either side (i.e. item 2.2.a or 3.1 in the template above), it can be subtracted when aggregating together digitally ordered trade and digitally delivered trade to get overall total digital trade.

The template is meant to provide a feasible approach to make digital trade more visible in existing international trade statistics while preserving comparability across countries. However, based on the resources available to statistical organisations and on specific policy needs, the template can be easily 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 SMEs 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 complementary information about the precise institutional sectors, industries, sizes of firms, etc. covered by digital trade estimates to facilitate user understanding and allow international comparisons.

Addendum items *Digital trade in services* and *Digitally deliverable services* are proposed. Digital trade in services is proposed to provide a total for digitally ordered and digitally delivered services. Digitally deliverable services is proposed as recognising 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 which are in principle digitally deliverable (see Chapter 4).

2.5. Towards SNA 2025 and BPM7

The conceptual framework presented in this chapter is consistent with the 2008 SNA and with BPM6. At the time of preparing this draft, however, work on updating the national accounts and the balance of payments standards was ongoing. As part of this process, several work-streams related to digitalisation and financial innovation were being discussed by the IMF Committee on Balance of Payments Statistics (Committee) and the Advisory Expert Group on National Accounts (AEG). While important strides have been made, conclusions had not yet been reached in all areas under discussion at the time of writing. These work-streams focus on the statistical recording of crypto assets and fintech (AEG and the Committee); as well as the supply and use tables for the digital economy, recording of data in national accounts, valuation of free products, DIPs, artificial intelligence and cloud computing (AEG).

The progress to date is summarised as:

- **Digital intermediation services**: The approach adopted in the related research focusses on non-financial DIPs charging a fee for their intermediation services and the distinction between the gross and net recording approaches to assess the impact on key macroeconomic variables. The recommendation favours the recording of these transactions on a net basis, in particular relevant for cross-border trade involving non-resident DIPs, to avoid artificially inflated trade estimates and also to improve the interpretability of the data to analyse global value chains. Consultation with the classifications (ISIC, CPC) and BOP communities will be pursued to ensure consistency with the proposed recording on a net basis. BOP community would also be encouraged to participate in the global consultation, given the high relevance of DIPs to cross-border trade because many DIPs are not resident in the country where the activity is taking place.
- **Fintech products**: the March 2022 joint meeting of the Committee/AEG approved the proposal to allocate fintech companies within the existing sectoral breakdown and to introduce an “of which” category for fintech companies within the subsector classification, where countries find it useful. An “of which” category may also be considered for separating fintech-related instruments and services (e.g., for central bank digital currencies or crypto assets, or financial services provided by fintech platforms) as needed. In addition, the Committee supports the adoption of a separate accounting framework (outside the balance of payments) to identify digital trade, while the discussion on the supplementary items for intermediation services would be covered as part of the EBOPS and ISIC revisions.

- **Crypto assets**: The IMF's current guidance for dealing with crypto assets with no corresponding liability (like Bitcoin) supports recording this category as produced non-financial assets (under valuables), i.e., digital goods. Discussions at the March 2022 joint meeting of the IMF Balance of Payments Committee/AEG reached unanimous agreement on almost all the proposals in the guidance note—crypto assets meet the definition of the asset boundary, classification of crypto assets, treatment of crypto assets with corresponding liability, digital assets decision tree, and pros and cons of the proposed options. However, the members could not reach a consensus on the classification of the category of crypto assets with no corresponding liability. Further consultation with the Government Finance Statistics Advisory Committee (GFSAC) and monitoring the evolution of the market and the regulatory decisions will be pursued, and the results will inform a joint AEG/Committee session in October 2022 towards a final decision. Countries were also encouraged to start collecting and sharing the necessary data to measure the transactions and stocks of these assets and to compile related statistics.

Topics endorsed by the AEG and proposed for submission to the BOPCOM for information

- **Digital SUTs**: The SUT Tables provide a comprehensive framework for the analysis of the digital economy and the proposed recording is consistent with the current digital trade framework. The recommendations on the digital SUT Tables will form a new chapter on Digitalization issues in the updated SNA, for which practical guidance will have to be developed. While the framework is not altered, the classifications and definitions used are more likely to trigger changes in the respective statistical classifications (e.g., CPC, with regard to new products such as the treatment of digital intermediation services, or cloud computing services). Furthermore, any subsequent changes to the SNA production boundary in relation to digitalization, such as the inclusion of data in the asset boundary or free digital services as productive outputs, would affect the SNA/BPM and implicitly digital trade.
- **Data, zero priced digital services**: These are interrelated topics and considered together in the SNA review. The focus of the discussions on the recording and valuation of data is primarily on the issue of capitalisation of the expenditures made in the production of data and the feasibility of presenting data (including expenditures currently classified to "databases") separately from computer software, alongside other intellectual property products, such as research and development and computer software. This would be an important change for the SNA. Therefore, the recommendation to capitalise the expenditure made in the production of data will require substantial research and testing to try to determine the appropriate service lives and retirement distribution, as well as the impact on key indicators (GDP, GFCF and capital stocks) before deciding.

  Once a decision is taken by the AEG on the treatment, the impact on cross-border statistics would be assessed in a separate note in consultation with the Committee. A similar procedure would be followed in the case of marketing assets, for which a decision by AEG is expected to be taken by the end of 2022. It is most likely that the impact on BPM would be minimal and limited to cross-border monetary transactions that would be recorded. However, further guidance would be provided in the updated MSITS and the future version of the Handbook. Main changes would impact the classification of the sales of data (classification by product), while for the general framework of digital trade, the scope would be expanded to include the data-related monetary transactions.

  As regards the treatment of "free" digital products, clarifications on their measurement should be documented and the framework for indirect measurement of free products in GDP should be explained. However, no fundamental changes are necessary in the core SNA or BPM frameworks. Imputed values of important free products in the digital economy (possibly

accompanied by estimates for similar non-digital free products such as broadcast television) could be documented separately in a satellite account. In BPM, explanatory text could be added to indicate that “free” services of non-resident platforms may be funded indirectly through international transactions in advertising services and other business models.

- **Artificial intelligence and Cloud computing**: To date, these topics have been identified in the research undertaken by the AEG with the intention to make the topics more visible in the macroeconomic accounts and propose definitions to be included in the updated standards, including updates to the definition of intellectual property products (IPP). They are also related to the research on ownership of IPP since determining the ownership of the data in data centres is not straightforward. Significant cross-border flows are involved, including for digital trade in services. Commercially valuable cross-border data flows often take place without payment, sometimes because they are between related parties. Estimates of cross-border trade in digitally delivered services, including computer services, omit these unpaid data flows. Unpaid cross-border data flows also complicate measurement of the location of production of cloud computing services. Research to date is drawing on the experience from the United States and recommends limiting the scope to cross-border flows that receive monetary payments.

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Notes

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

[2] For instance, database services are currently recorded as trade in services (in BPM6 under the category Telecommunication, computer and information services). However, many other service transactions can include a data component.

[3] The first three clarifications directly proceed from the OECD definition of e-commerce (OECD, 2011). The following four result from an OECD-IMF Stocktaking Survey – in 2016 the OECD Working Party on International Trade in Goods and Services Statistics (WPTGS) undertook a 'Stock Taking Survey' on new areas of work. Results highlighted that measuring Digital Trade is an emerging theme among national statistical institutes. In following up, WPTGS, in collaboration with the IMF, undertook two further stock taking surveys in 2017 and 2018 to better understand compilers needs in measuring digital trade. See Annex F.

[4] The text 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 via mobile devices.

[5] Strictly speaking, Mode 1 also includes services delivered by post. This delivery mode is however unlikely to be relevant and will not make a material difference in estimates of digitally delivered trade. At the same time, a service supplied via presence of natural persons (Mode 4) cannot be digitally delivered since in that case the service does not cross the border.

[6] It should be noted that this is not an exhaustive list of all businesses operating digitally. For more information, see Going Digital toolkit note, upcoming ISIC definitions, upcoming digital SUTs Handbook.

[7] "Fees" can take various forms. For example an amount for the platform's service may be separately itemised and charged or the "fee" could be evaluated by the difference between the amount the buyer pays the platform, and that paid by the platform to the seller.

[8] Although the terminology may differ. For example, the OECD (Hagiu and Weight, 2015[22])describes '*multi-sided platforms*' while the WCO uses '*e-platforms/market places, see* WCO, 2018, http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/frameworks-of-standards/ecommerce.aspx.

[9] The definition of e-tailers is based on the ISIC definition of retailers which precludes services.

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

[11] The scope of goods and services in this Handbook reflects that of SNA 2008 and BPM6. However, we are conscious of the on-going discussions concerning the classification of transactions related to 3-D printing and crypto assets.

[12] This approach is in line with the updated classification of services transactions in BPM7, see https://www.imf.org/-/media/Files/Data/Statistics/BPM6/CATT/c6-trade-in-services-classifications.ashx

[13] The complete list digitally enabling industries includes: Digital intermediation platforms; Data and advertising driven digital platforms; Firms dependent on intermediary platforms; E-Tailers; Digital only firms providing financial and insurance services; and Other producers only operating digitally. See Handbook on Digital SUTs, forthcoming.

[14] See https://unstats.un.org/unsd/nationalaccount/RAdocs/DZ3_GN_Free_Digital_Products_Core.pdf

[15] See https://unstats.un.org/unsd/nationalaccount/snaupdate/dztt.asp

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