



Trade and Development Board

Intergovernmental Group of Experts on E-Commerce and the Digital Economy

Working Group on Measuring E-commerce and the Digital Economy

Third meeting

Geneva, 28-29 November 2022

Items 3, 4, 5 and 6 of the provisional agenda

Issues note on measuring e-commerce and the digital economy

Background document for the discussions of the third meeting of the UNCTAD Working Group on Measuring E-Commerce and the Digital Economy

Executive summary

This non-paper provides background information on the substantive agenda items that will be discussed by the third meeting of the Working Group on Measuring E-commerce and the Digital Economy. This background document informs of current issues in measuring e-commerce and the digital economy (ECDE), including progress made by international organizations, and recommends possible actions that could be taken by the Working Group to advance work in these issues. Delegates to the Working Group are encouraged to share their experiences under any of the agenda items through written contributions (to be made available as received) and brief oral interventions. Delegates may also wish to make proposals for topics to be included in the agenda of the next meeting of the Working Group in 2023.

I. Introduction

1. The Intergovernmental Group of Experts (IGE) on E-commerce and the Digital Economy, during its fifth session on 29 April 2022, acknowledged the summary of the Chair of the second meeting of the Working Group on Measuring E-commerce and the Digital Economy, and agreed on the following topics for the third meeting of the Working Group:
 - (a) Progress in measuring work on e-commerce and the digital economy and knowledge resources by relevant international organizations (Item 3 of the Provisional Agenda).
 - (b) Defining the digital economy for statistical purposes (Item 4 of the Provisional Agenda).
 - (c) Mechanisms to implement web scraping techniques and facilitate data transfers to produce official statistics on e-commerce and the digital economy (Item 5 of the Provisional Agenda).
 - (d) Measuring the gender dimension in e-commerce and the digital economy (Item 6 of the Provisional Agenda).¹
2. This background document provides an overview of main issues and developments related to these agenda items, as a starting point for discussions. A summary of the discussions and any eventual recommendations will be reported by the WG Chair to the sixth session of the IGE on 10-12 May 2023.

II. Progress in measuring e-commerce and the digital economy

3. Agenda item 3 of this Working Group meeting refers to progress in measuring electronic commerce (e-commerce) and the digital economy by relevant international organizations (see Provisional Agenda).
4. At its 51st session, the United Nations Statistical Commission requested the Intersecretariat Working Group on National Accounts (ISWGNA) to develop a roadmap for the revision of the 2008 System of National Accounts (SNA) for adoption by the Commission in 2025. The Advisory Expert Group (AEG) on National Accounts identified three priority areas for the SNA research agenda: globalization, digitalization, and well-being and sustainability, among other important topics to be addressed. A Task Team on Digitalization was set up to progress work on a framework for a satellite account on the digital economy, valuation of free assets and free services, recording of data in the national accounts, cryptocurrencies, and the price and volume measurement of goods and services affected by digitalization. It was also agreed that there is a need to clarify terminology such as digitalization versus digital economy, and that there is a need to communicate clearly on the purpose and analytical uses of the digital economy satellite account framework. Guidance notes on these topics and on topics such as digital supply-use tables, artificial intelligence in national accounts, cloud computing, incorporating digital platforms into the SNA etc., have been published for consultation.²
5. At its 53rd meeting in early 2022, the UN Statistical Commission (UNSC) took decisions related to the measurement of e-commerce and the digital economy in the context of discussing progress reports on business and trade statistics, and on information and communications technology (ICT) statistics.³ The UNSC endorsed the horizontal and vertical integration of business and trade statistics and identified digitalization as a priority area. The UNSC also requested that more information be collected on domestic and cross-border e-commerce, on business use of ICT, and on the ICT sector. Finally, it also recommended the use of guidelines and training resources produced by the Partnership

¹ The Report of the IGE containing this action (TD/B/EDE/5/4) is available at <https://unctad.org/meeting/intergovernmental-group-experts-e-commerce-and-digital-economy-fifth-session>

² <https://unstats.un.org/unsd/nationalaccount/SNAUpdate/GuidanceNotes.asp>

³ <https://unstats.un.org/unsd/statcom/53rd-session/documents/2022-41-FinalReport-E.pdf>

- on Measuring ICT for Development, which is co-led by UNCTAD, to strengthen the capacity of national statistical systems with the aim of improving the availability and quality of ICT statistics, including for assessing national digital readiness in times of crisis (such as the Covid-19 pandemic).
6. The progress report of the UN Committee of Experts on Business and Trade Statistics (UNCEBTS)⁴ to the UNSC mentioned above noted the many data gaps in measuring the impact of digitalization on economic growth and productivity and identified some avenues for further work in developing digitalization statistics.⁵ For example, it noted that statistical business registers should be extended to include unincorporated digital entrepreneurs. The UNCEBTS also resolved to produce a future manual on a global core set of business and trade indicators (as a reference list for countries to develop business and trade statistics), including digitalization indicators. The draft manual will be circulated for global consultation among countries and relevant international and regional organizations (a first volume would focus on business statistics and a second on international trade indicators). In this context, the UNCEBTS established a Task Team on Globalization and Digitalization (TTGD) statistics, which met virtually throughout 2021. The digitalization indicators contributed by the TTGD considered those of the Partnership on Measuring ICT for Development and several of its members (Eurostat, ITU, OECD, UNCTAD). Going forward, the Committee will focus on identifying potential areas of integration between digitalization, innovation and productivity data and indicators. Another UNCEBTS Task Team on International Trade Statistics will also include digital trade as a cross-cutting topic in its revision of the 2010 international trade statistics manuals.
 7. As reported to the UN Statistical Commission, the Partnership on Measuring ICT for Development revised its core list of indicators in early 2022. This includes changes in the definitions related to business indicators. Implementing the revised guidelines is crucial to improve the availability and quality of indicators on ICT and enable better assessment of digital readiness in countries, especially developing countries.⁶ In this context, the Partnership noted how the Covid-19 pandemic negatively affected the ability of countries to conduct survey-based data collection and delayed statistical production overall, highlighting the limitations of traditional sources of data for ICT statistics and the need to build the capacity of national statistical offices (NSOs) to produce ICT statistics also by tapping into innovative data sources (administrative data, big data and data-sharing schemes with the private sector) and with the support of development partners and international organizations.
 8. In support of future capacity-building efforts, UNCTAD published the revised 2020 edition of its *Manual for the Production of Statistics on the Digital Economy* in English and is making it available in several further languages. French, Spanish, and Portuguese will soon be available on unctad.org (the latter with kind support from Brazil).⁷ The Manual is a stand-alone reference for producers of official statistics on the digital economy, in particular those in developing countries. It contains the core list of business ICT indicators along with updated definitions, proposals for the development of future indicators, country cases, model questions and model questionnaires. An online training course based on the Manual was piloted in June-July 2022 with NSOs in the Pacific. The resulting statistics should provide an evidence base and a monitoring tool for a regional policy programme for the digital economy. While the Manual covers the Partnership core list of ICT business indicators, the UNCTAD Member States are increasingly requesting assistance in measuring e-commerce beyond the indicators in the core list (i.e. the share of businesses making sales or purchases via e-commerce). In response, UNCTAD has conducted research on measuring the value of e-commerce and requests feedback from the Working Group on its working paper on this issue (see section III below).
 9. During 2022 there has been significant collaborative work between the IMF, OECD, WTO, and UNCTAD to update the *Handbook on Measuring Digital Trade*. The Handbook is a living online

⁴ The UNSC established the UNCEBTS on March 2019.

⁵ <https://unstats.un.org/unsd/statcom/53rd-session/documents/2022-20-BusinessAndTradeStats-E.pdf>

⁶ <https://unstats.un.org/unsd/statcom/53rd-session/documents/2022-21-ICT-E.pdf>

⁷ <https://unctad.org/webflyer/manual-production-statistics-digital-economy-2020>

document designed to be updated on a regular basis as new national and international experiences are gathered. The draft chapters 2 and 3 of the ongoing Handbook revision have been shared with this Working Group for feedback (see section III below).

10. Another aspect of the digital economy that is receiving increased attention is to assess its inclusiveness. In this context, the UNCDF has developed an Inclusive Digital Economy Scorecard (IDES), which is meant as an evolving policy tool to understand and monitor the status of countries' digital transformation and its level of inclusiveness.⁸ UNCTAD participated along with several other organizations in the IDES reference group. Starting in 2021, the IDES has been implemented in 25 countries in Africa, Asia and the Pacific, and will be expanded to additional countries. The IDES seeks to measure the inclusiveness of the digital economy through “building blocks”, which include both quantitative and qualitative indicators, and currently refer to: (i) policy and regulation, (ii) infrastructure, (iii) innovation, and (iv) skills. The quantitative indicators are based on currently available statistics. The most recent development is the inclusion of a “sub-score” on women's inclusiveness that relies on a set of quantitative indicators on relative gender gaps in the four building blocks of IDES (see section V below).
11. The Working Group may wish to:
 - a) Reaffirm the inclusion of a standing agenda item in future meetings that will present ongoing progress by organizations in the measurement of e-commerce and the digital economy.

III. Defining the digital economy for statistical purposes

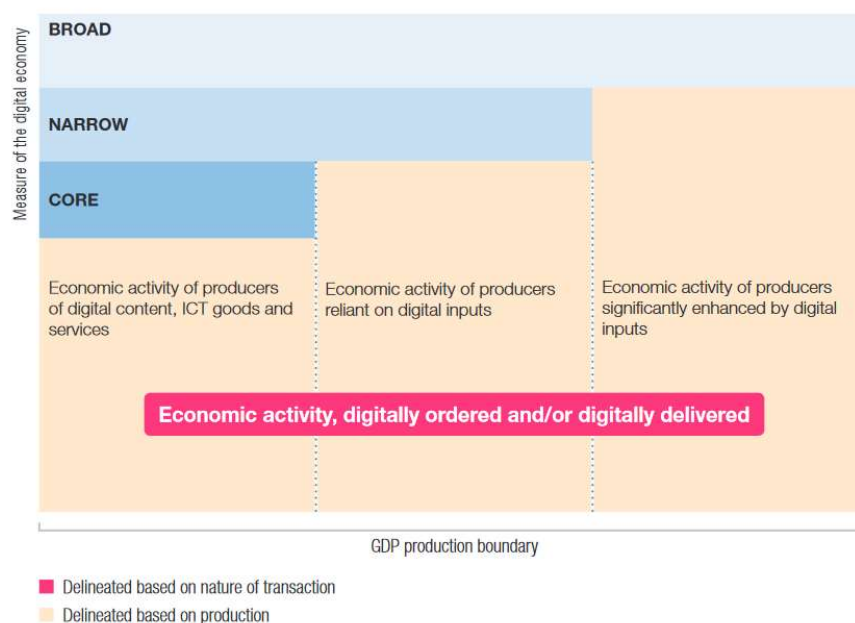
12. Agenda item 4 will discuss approaches to defining the digital economy for statistical purposes, for both clarity in national data production and to improve international comparability. The session will consider select aspects of the digital economy that can currently be quantified. It will also consider draft chapters 2 and 3 of the OECD-WTO-IMF-UNCTAD *Handbook on Measuring Digital Trade* (available on the Working Group meeting webpage) and discuss current approaches to measuring the value of e-commerce, including cross-border e-commerce (see the non-paper “Measuring the value of e-commerce”).
13. There is no widely accepted definition of the digital economy and related concepts such as “digitalization”, although some of its components have been identified and can be quantified in the context of economic and trade statistics. Despite this, reliable statistics on its key components are lacking, especially in developing countries. This is compounded by the rapidly changing nature of the digital economy. In 2019, the UNCTAD *Digital Economy Report* explained the evolution of the digital economy concept until then and presented a working definition of the digital economy and its components.⁹
14. UNCTAD proposed that the different technologies and economic aspects of the digital economy could be broken down into three broad components: (i) its **core technologies and infrastructure**, (ii) the strictly digital **and information technology (IT) sector**, and (iii) a wider set of **digitally-enabled sectors** (where digital products and services are being increasingly used such as for e-commerce). Official statistics are currently able to measure basic indicators or proxies of the core and digital/IT sectors, such as digital infrastructure investments and broadband adoption. But measuring the digital economy beyond digital/IT and digitally enabled sectors is still difficult, for example, when trying to measure the impact of digital technology adoption and use. Proposed definitions of the digital economy for statistical purposes tend to focus on the components above.

⁸ <https://ides.uncdf.org/>

⁹ https://unctad.org/system/files/official-document/der2019_en.pdf

15. The UNCTAD working definition of the digital economy follows that of Bukht and Heeks (2017): “that part of economic output derived solely or primarily from digital technologies with a business model based on digital goods or services”¹⁰ and has been built upon by the OECD and the G20 (see figure 1 below). The figure visualizes the digital economy by distinguishing between its core, narrow and broad scopes. The core and narrow scopes relate to ICT infrastructure and the ICT-producing sector, as well as to digital and platform-based services. The broad scope refers to the use of digital technologies for performing different economic activities and would include e-commerce.

Figure 1. A proposed definition of the digital economy



Source: UNCTAD 2020 *Manual for the Production of Statistics on the Digital Economy* (https://unctad.org/system/files/official-document/dtlstict2021d2_en.pdf) based on OECD’s *A Roadmap Toward a Common Framework for Measuring the Digital Economy. Report for the G20 Digital Economy Task Force* (2020).

16. In trying to measure trade related to the digital economy, it is possible to produce statistics on exports and imports of ICT goods and services. In its *2020 Manual for the Production of Statistics on the Digital Economy*, UNCTAD also offers a nomenclature of the ICT sector and provides a definition of digitally-delivered services so that countries can measure trade in these goods and services.¹¹ Based on this methodology, a survey of digitally-delivered services exports was piloted by Costa Rica, India, and Thailand. Digitally-delivered services are part of so-called “digital trade” (see below).
17. In 2021, the Asian Development Bank (ADB) proposed a measurement framework to capture the digital economy that also looked at what can be readily measured, i.e. national accounts data. The ADB framework refers to a “core” digital economy (mainly producers of digital products), and a “digitally-dependent” (digitally-enabled) economy.¹² The framework aims to measure the contribution of the core digital economy to GDP as a supplier of value-added to digitally-dependent sectors (forward linkages) and as a user of value-added of digitally-dependent sectors. However, the

¹⁰ [https://www.research.manchester.ac.uk/portal/en/publications/defining-conceptualising-and-measuring-the-digital-economy\(c9ae8345-6f3c-4d5e-9496-d7bd00153df3\).html](https://www.research.manchester.ac.uk/portal/en/publications/defining-conceptualising-and-measuring-the-digital-economy(c9ae8345-6f3c-4d5e-9496-d7bd00153df3).html)

¹¹ https://unctad.org/system/files/official-document/dtlstict2021d2_en.pdf

¹² <https://www.adb.org/publications/capturing-digital-economy-measurement-framework>

framework also acknowledges that basing the analysis of the digital economy on the “narrowest definition of digital products” has limitations and notes the need for supplementary analyses of the digitally-dependent economy.

18. The OECD has approached digital economy measurement through “digital supply-use tables” (digital SUTs),¹³ with the objective of improving the visibility of “digital transformation” in economic statistics, by refining the disaggregation of data in national accounts into those economic activities that would be considered part of the digital economy. The digital SUTs were developed through the OECD Informal Advisory Group on Measuring GDP in a Digitalized Economy and have started to be implemented in multiple countries. A handbook on compiling digital SUTs is being developed by the OECD as a companion to the *Handbook on Measuring Digital Trade* (see below). Going forward, countries could use digital SUTs as the basis for the compilation of digital economy satellite accounts. Only a few countries have made use of this approach to date.¹⁴ The compilation of digital SUTs presents challenges for developing countries, since key source data, usually coming from business surveys and/or administrative records may not be available, statistical business registers are insufficient or non-existent, and the resources to generate those data are lacking. However, it also provides a clear framework to start with and shows what actions would need to be taken in a national statistical system to enable the production of digital SUTs.
19. In summary, currently the definition of the digital economy for statistical purposes does not refer to the measurement of the whole digital economy concept, but rather to the definition of components of the digital economy that can be quantified. International statistical cooperation will be crucial in advancing methodological development in a standardized manner, providing guidance, and building capacity and skills in developing countries.
20. The Working Group may wish to consider recommending that UNCTAD continue efforts to gradually improve the measurement of the digital economy by engaging with other international organizations and national statistical offices in a tiered approach by:
 - a) Sharing national and international methodological guidance, knowledge resources, practical experiences, as well as actual statistical results from measuring those components of the digital economy that already enjoy accepted definitions and can be quantified.
 - b) Continuing to explore ways to improve the measurement of those components of the digital economy that are currently less well covered but already the subject of policy interest and methodological testing, such as digital trade and e-commerce, in collaboration with other international organizations and national statistical offices (see below).
 - c) Engaging in disseminating UNCTAD’s work in the context of other relevant international statistical meetings, including through the UN Statistical Commission.¹⁵

Measuring digital trade

21. The OECD-WTO-IMF *Handbook on Measuring Digital Trade*, published in 2019, defines digital trade as trade that is digitally ordered and/or digitally delivered.¹⁶ Within this are two component concepts: *digitally ordered trade* and *digitally delivered trade*. A revision is underway and includes UNCTAD as a co-author. The working group is invited to consider drafts of chapters 2 and 3, which

¹³ <https://www.oecd-ilibrary.org/docserver/91cbdd10-en.pdf?expires=1667997352&id=id&accname=guest&checksum=6B1AED79CECEAA4E689CFF3175AB4477>

¹⁴ Germany and the United States have recent examples of conducting digital economy satellite account exercises. See <https://www.iwkoeln.de/en/studies/manuel-fritsch-karl-lichtblau-data-availability-and-initial-estimates.html> and <https://www.bea.gov/data/special-topics/digital-economy>

¹⁵ The UN Statistical Commission established the Committee of Experts on Business and Trade Statistics (CEBTS), which includes its Task Team on Globalization and Digitalization. See <https://unstats.un.org/unsd/business-stat/UNCEBTS.cshtml>

¹⁶ <https://www.oecd.org/sdd/its/Handbook-on-Measuring-Digital-Trade.htm>

- focus respectively on the conceptual framework for measuring digital trade and on digitally ordered trade (i.e. cross-border e-commerce).
22. The draft of chapter 2 presents a definition of digitally delivered trade that has been simplified in comparison to the previous version (“all international transactions that are delivered remotely over computer networks”). This results in substantive alignment with the UNCTAD concept of ICT-enabled services and, for services products that are digitally deliverable (i.e., *can be* delivered over computer networks), with GATS Mode 1 (cross-border) supply. It thereby helps to make the digitally delivered trade concept easier to interpret and to collect data on in practice.
 23. Additionally the draft of chapter 2 features 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.” It builds upon this to provide clarifications on the role of digital intermediation platforms (DIPs) in digital trade; these platforms are the subject of a dedicated chapter, which is also in the process of being revised.
 24. The draft also addresses the growing importance of data exchanges outside of the goods and services account, while acknowledging that current systems cannot estimate the values of data flows, nor can the Handbook provide guidance on whether or how they should be included within the production boundary for GDP and trade. Ongoing work aims at achieving such guidance in the future. The draft chapter 2 makes clear that non-monetary digital flows are, for the time being, not in scope for digital trade. The reporting template for digital trade has also been simplified.
 25. A further key development in the revised chapter 2 is a simplified reporting template which provides equal prominence to both digitally ordered trade and digitally delivered trade. The template provides greater flexibility to countries to fill in whatever information they have – even if all breakdown details are not available. Of relevance to the Working Group, the digitally ordered trade section of the new template can be populated using information gathered through surveys of ICT usage in business.
 26. Compared to the first version of the Handbook, draft chapter 3 makes a clearer distinction between survey and non-survey sources of data for measuring digitally ordered trade (cross-border e-commerce) and gathers recommendations under a single heading. The Handbook acknowledges that no single approach provides a full picture of all digitally ordered trade and offers useful guidance for starting to develop measures. Accompanied by a recommendation that transactions with businesses as sellers (exporters) and purchasers (importers) should be a priority for measurement, a new section sets out the role for business ICT usage surveys as a key source for information. This arises because of alignment between the definition of digitally ordered trade and the definition of e-commerce, such that digitally ordered trade is the international subset of total e-commerce transactions (i.e., in which the buyer and seller are residents of different economic territories).
 27. The draft also sets out the possibility of using other business survey sources, such as business activity surveys, to gather information on the value of digitally ordered exports and imports by businesses. Furthermore, the chapter notes that such measures can be complemented with data from household surveys, card payments, payment processing firms, and postal and customs agencies gain more holistic and exhaustive measures of digitally ordered trade. The draft chapter also notes that the Handbook represents only one step towards measuring digitally ordered trade, and that additional guidance will be added as national and international efforts develop. The non-paper prepared by UNCTAD on measuring the value of e-commerce is another step in that direction (see below).

Measuring the value of e-commerce

28. As alluded to above, e-commerce is generally seen as a key element of the digital economy. Furthermore, UNCTAD has received several requests from countries for support with going beyond the core indicators on e-commerce to measure the monetary value of e-commerce transactions.

Measuring e-commerce is a prerequisite for understanding its economic role and contribution to GDP, employment, and development, as well as for evidence-based policymaking. The distinction between domestic and cross-border e-commerce is important to understand how e-commerce contributes to exports and imports.

29. The non-paper “Measuring the value of e-commerce”, describes the current situation regarding measures of the value of business e-commerce, including cross-border e-commerce, based on various economies for which statistics are available. However, it should be noted that time, resource, and language limitations meant that it was not possible to undertake an exhaustive search of all NSO websites for relevant statistics. Any additional countries with estimates of the value of e-commerce sales by businesses are warmly invited to share them with the UNCTAD Secretariat for inclusion in the analysis.
30. A considerable variety of statistics are available from various economies, but they differ in terms of definitions, approaches to e-commerce value, survey questions, data sources, methods, and scopes underpinning them. The non-paper underlines that, in most economies, there are simply no national statistics on the value of e-commerce. Moreover, so far, available statistics on cross-border e-commerce statistics mainly refer to exports and rarely to imports.
31. This Working Group may wish to discuss the advantages and disadvantages of the different approaches described in the non-paper analysis and consider the potential for standard measures. This could then lead to developing appropriate statistical guidelines to measure the value of e-commerce. Such an effort would necessarily rely on the experience and expertise of the economies covered in the non-paper, and others interested in contributing to guidelines that are relevant and useful for all.
32. The Working Group’s mandate “to advance cooperation on measuring e-commerce and the digital economy and enhance the availability, quality, comparability, usability, and relevance of statistics concerning e-commerce and the digital economy” provides a basis for it to take up this challenge. In this way, the Working Group can take a concrete action to support the development of robust, exhaustive, and internationally comparable statistics on the value of e-commerce, which will be of relevance to both developed and developing countries as well a key contribution supporting efforts to measure digital trade.
33. To that end, the Working Group could consider:
 - a) Asking UNCTAD to further progress in analyzing and assessing the advantages and disadvantages of existing measures of e-commerce in different countries as well as the potential for standardization, with a view to develop statistical guidelines on measuring the value of e-commerce (including cross-border e-commerce).
 - b) Recommending that a task group of interested Working Group participants be established to guide, oversee, and actively contribute to the development of the necessary measurement standards and guidelines.

IV. Mechanisms to implement web scraping techniques and facilitate data transfers to produce official statistics on e-commerce and the digital economy

34. Agenda item 5 will discuss using non-survey sources of data to measure e-commerce and the digital economy. Participants are encouraged to share experiences in establishing mechanisms to enable data transfers from private providers for the use of official statistics, as well as examples of web scraping as a supplementary method for data collection.

35. At its second meeting in 2021, the Working Group discussed initiatives leveraging big data to produce or complement official statistics, including to provide timely information on the impacts of the Covid-19 pandemic and complement the monitoring of the sustainable development goals. The Working Group noted that to embrace data innovation, statistical systems and institutions need to build capacity in harnessing big data, including by piloting big data collection and analysis exercises, and by instituting cooperation agreements with private data providers. Most importantly, it noted that developing countries will need support in building this capacity and in translating data into robust indicators that are of public value. In particular, the Working Group requested further information on experiences and practices of leveraging web scraping as a supplementary method for data collection, and on mechanisms to facilitate data transfers from private sector providers to national statistical producers.
36. The UNCTAD *Digital Economy Report 2021*¹⁷ discussed the importance of data in the evolving digital economy, while noting that access to data can be limited by technical or legal means. For example, data collected by major global platforms, which hold commercial value for those companies, are not readily available for others to use. This prevents the use of these data for creating public goods (such as official statistics on e-commerce and the digital economy, to guide policies in these areas). Big data associated with commercial transactions and behaviors can provide valuable insights when filtered, aggregated, and combined. At the same time, the processing of raw data into digital intelligence – in the form of statistics, databases, insights, information, etc. – results in “data products”, which may be considered as services in trade statistics when sold across borders.
37. In June 2022, the Conference of European Statisticians issued a position statement¹⁸ recognizing the importance of access to data held by the private sector for purposes of official statistics but did not take a decision on how to approach the issue, leaving it for discussion in 2023. The position statement was reached after an in-depth review of collaboration with private data providers that examined the benefits and challenges of facilitating cooperation with private sector data providers.¹⁹ The 2018 UNECE Guidance on Statistical Legislation²⁰ endorsed by the Conference of European Statisticians, calls for statistical legislation to entitle all producers of official statistics to access and collect data from all public and private data sources free of charge, including identifiers, at the level of detail necessary for statistical purposes. This way producers of official statistics shall be committed to limiting response burden and reusing data by considering data sources that already exist. Furthermore, private data provide a valuable source for information the public and decision makers similarly to publicly held datasets. Statistical purposes are defined to mean that individual data collected or obtained by producers of official statistics that refer to natural or legal persons are to be strictly confidential used exclusively for statistical purposes and accessed solely by those authorized to do so under the law. This also means that individual data obtained exclusively for statistical purposes shall not be used for any investigation, surveillance, legal proceedings, administrative decision making or other similar handling of matters concerning a natural or a legal person by any authorities or international organizations. Therefore, access for statistical purposes could be wider than for administrative purposes that may use data for decisions about individuals.
38. The in-depth review mentioned above noted that cooperation models for data sharing between private data holders and national statistical offices vary widely, although most organizations acquire aggregated data and sometimes pseudonymized data. The cooperation models depend on existing legislation and data needs and are shown in Box 1, below, for reference.

¹⁷ <https://unctad.org/webflyer/digital-economy-report-2021>

¹⁸ <https://unece.org/statistics/documents/2022/06/working-documents/position-statement-access-data-held-private-sector>

¹⁹ https://unece.org/sites/default/files/2022-10/ECE_CES_2022_11_2230719E.pdf

²⁰ <https://unece.org/statistics/publications/guidance-modernizing-statistical-legislation>

Box 1. Cooperation models between national statistical organizations and private data providers

(a) Public-private partnership (PPP) model. The NSO, based on the institutional arrangements with the Association of the Automotive Industry, National Association of Bus, Truck and Tractor Producers and each one of the involved enterprises, launched the Administrative Records of the Automotive Industry of Light and Heavy Vehicles. The goal of the public-private partnership is to collect raw data, process, and disseminate more granular data on the automotive industry.

(b) Secondment model. The NSO works with the private company through secondment. The NSO's employee is sent to the private company to help with the methodology and data analysis. The employee could share the acquired knowledge regularly with the NSO's colleagues but could not share the data as such. The secondment facilitated the process of establishing data sharing relations between the NSO and the company.

(c) Outsourced data collection. The NSO cooperates with a specialized enterprise that routinely scrapes the websites and derives standardized characteristics to the NSO as a useful addition to the data available through the company surveys, administrative registers (e.g., from the tax office) and other available sources. The data are obtained free of charge. Another NSO obtains data collected and processed by a private company as part of their own research on consumer sentiment. According to the contract, the data belongs to the data provider and is not transferred to the property of the NSO. The information on the research methodology and the set of provided variables are described in the agreement.

(d) Agreed dataset specification. The NSO receives strictly defined datasets from the data provider (a third party), which processes mobile network data. The cooperation is based on the agreement regulating methodological and technical issues of data exchange, as well as financial compensation.

Source: In-depth review on collaboration with private sector data providers, Bureau of the Conference of European Statisticians, https://unece.org/sites/default/files/2022-10/ECE_CES_2022_11_2230719E.pdf

39. The in-depth review also identified several factors that encouraged collaboration from private data holders, including the trustworthiness reputation of the NSO, the social responsibility schemes of the companies, open communication at the senior level, and providing sufficient incentives for cooperation. On the other hand, obstacles to cooperation included concerns about privacy, public perception, and disclosing trade secrets, as well as restrictive legislation regarding personal data protection. Furthermore, some companies indicated they were expecting remuneration for sharing data. The European case can be a very useful reference for all countries in terms of good practices for collaboration to approach the use of big data for trusted statistics. Eurostat has a general interest group on big data within its Collaboration in Research and Methodology for Official Statistics (CROS) and its web portal²¹ is rich in knowledge resources.
40. Also in the European context, in February 2022, the European Commission published a proposal for a regulation on harmonized rules on fair access to and use of data (the Data Act), which includes a framework for access by public sector bodies to data held by private data holders. Under this framework, NSOs would be able to request access to data in cases of exceptional need (for example, the need to respond to, prevent or assist with recovery from a public emergency), or when they are unable to “fulfill a specific mission of public interest provided for by law due to the unavailability of data” which could possibly include the need for timely compilation of official statistics under specific conditions. The Data Act could be formally adopted by early 2024 and could offer another valuable example for other countries that want to institutionalize collaboration between private data holders

²¹ <https://ec.europa.eu/eurostat/cros/content/big-data>

and national statistical offices, much like the European Global Data Protection Regulation (GDPR) provided an example for data protection regulatory frameworks worldwide.

41. While the Data Act would be legally binding, there are other approaches that count on agreed principles, such as the OECD Recommendation on Enhancing Access to and Sharing of Data (EASD) issued in October 2021, providing policy guidance on how governments can maximize the cross-sectoral benefits of all types of data – personal, non-personal, open, proprietary, public and private – while protecting the rights of individuals and organizations.²² The need for increased and improved cooperation with private sources of big data, such as financial entities on payments, has also been noted by the OECD in its Going Digital Measurement Roadmap²³. Furthermore, the *Handbook on Measuring Digital Trade* suggests that data from sources such as credit card companies and electronic payment firms can complement the measurement of digital trade.
42. In 2021, the UN Economic and Social Commission for Asia Pacific (ESCAP) held an Expert Group Meeting on Big Data for Official Statistics that discussed data governance and partnership models.²⁴ The meeting concluded that NSOs need international guidance on accessing big data sources, but also on articulating the need for such access to policy makers, so that legislation and regulatory frameworks around data and statistics may evolve together to facilitate such access. The meeting discussed how NSOs could evolve into data stewards, ensuring that the statistical system can transform available data into official statistics and hence a public good. To measure the digital economy, this Working Group could consider which questions on e-commerce and the digital economy that NSOs must answer would require access to big data, and then consider what model for data access would be more conducive to promoting timely transfers, transparency and trust between data providers and data producers.
43. A 2021 paper on big data and the UN Sustainable Development Goals noted that big data are a contributing element to monitoring progress towards sustainable development, but the key issue going forward is data integration (integrating big data with traditional sources).²⁵ Furthermore, to enhance trust in data sharing, the use of big data must go hand in hand with privacy, ethics, and human rights considerations. In the context of e-commerce and the digital economy, big data can be useful in providing additional insights regarding equality in the use of enabling technology, in particular ICT, to promote the empowerment of women (SDG 5.b). A brief by Data2x notes: “For example, in Kenya, a country where digital services are the major vehicle for women’s financial inclusion, the Digital Lenders Association of Kenya can serve as a focal point for sex-disaggregating digital data.”²⁶
44. The Working Group may wish to:
 - a) Resolve to continue featuring experiences and projects based on non-survey-based sources of data for official statistics in the discussions of the Working Group, with the aim to disseminate innovative approaches, good practices, and relevant knowledge resources to statisticians in developing countries, and focusing on how these experiences can help improve the measurement of e-commerce and the digital economy.

²² <https://www.oecd.org/digital/ieconomy/enhanced-data-access.htm>

²³ https://www.oecd-ilibrary.org/science-and-technology/the-oecd-going-digital-measurement-roadmap_bd10100f-en

²⁴ <https://www.unescap.org/kp/2021/report-expert-group-meeting-uses-big-data-official-statistics-data-governance-and>

²⁵ <https://www.mdpi.com/2504-2289/5/3/28>

²⁶ <https://data2x.org/resource-center/wfid-synthesis-brief/>

V. Measuring the gender dimension in e-commerce and the digital economy

45. Agenda item 6 will discuss the gender dimension in e-commerce and the digital economy, which suffers from a lack of official statistics. In this discussion we are focusing on the distinction between women and men in statistics (binary, sex-disaggregated data), which is the prevalent approach, although the definitions of gender in statistics are gradually expanding to be more inclusive of gender identities.
46. Participants of the Working Group may wish to consider what data sources are currently available that could provide information disaggregated by gender, as well as which indicators are feasible and relevant to supporting policies for gender equality, inclusion, and their empowerment in e-commerce and the digital economy. It may also be worth considering indicators that would provide more nuanced information for measuring progress towards SDG 5.b to “enhance the use of enabling technology, in particular ICT, to promote the empowerment of women” that goes beyond the number of women owning a mobile phone (the sole indicator in the SDG monitoring framework for this target) or access to broadband.²⁷ There are some insights on how women use mobile phones for business, but they are not official statistics.²⁸ There is also a recognition that the SDG monitoring framework and industry research is insufficient to bridge the gender data gap when it comes to illustrating the economic opportunities afforded to women by ICT, or even more to assess the participation of women in e-commerce and the digital economy. For example, a report on Kenya’s 2020 Women’s Empowerment Index (WEI) that is used to monitor progress toward SDG5, recommended expanding the range of indicators to measure women’s empowerment more comprehensively by collecting data on women’s access to ICT at the individual level, including ownership, usage, and purpose of usage of mobile phones, computers, and Internet. The report recognized that access to ICT in turn improves access to information, financial services and products, and affords a higher degree of independence and autonomy including for professional purposes.
47. In 2018, UNCTAD proposed a conceptual framework for measuring gender in trade²⁹ that offers elements that are directly applicable to measuring gender in digital trade. The conceptual framework is comprehensive, aiming to measure at least these four elements: preconditions (for the participation of women in trade), outcomes (reflecting that participation), impacts (on employment, income, empowerment, etc.), and trade policy (and other government interventions). UNCTAD notes that statistics on gender and trade ideally would be calculated directly from microdata to yield enough detail to reflect the situation of “women and men directly involved in international trade, e.g., as employees, owners and managers of trading businesses” and provides ideas on potential statistical data sources. Indicators can also be calculated from published labour force, trade and economic statistics and input-output tables to provide indications of approximate gender equality conditions in international trade, including on the participation and roles of women and men in trade.
48. Based on the conceptual framework mentioned above, an assessment of the gender-in-trade sources of data and pilot compilation of new indicators was conducted in Georgia in 2021,³⁰ yielding valuable insights. The national statistical office was able to analyse gender aspects in trade both at the microdata level by linking trading businesses to their employees and at the sectoral level for key export commodities by mapping four-digit HS export product codes to the corresponding four-digit European Nomenclature of Economic Activities (NACE) subdivisions. Similar analysis could potentially be

²⁷ The UN Broadband Commission has set a target for gender equality by 2025 on access to broadband Internet, digital skills, and digital financial services. See <https://www.broadbandcommission.org/advocacy-targets/>

²⁸ <https://www.gsma.com/r/wp-content/uploads/2022/06/The-Mobile-Gender-Gap-Report-2022.pdf>

²⁹ https://unctad.org/system/files/official-document/presspb2018d7_en.pdf, as adapted to trade in gender from the UNSD approach for analysing female entrepreneurship. See a related desk study: https://unctad.org/system/files/information-document/20201012_WebinarGender_DeskStudy_en.pdf

³⁰ https://unctad.org/system/files/non-official-document/GenderTradeAssessmentInGeorgia_en.pdf

done for the ICT sector, which is defined at the four-digit level in ISIC Rev. 4. The sectoral analysis showed, for example, that women-to-men employment ratios were sector specific and that there were significant gender gaps in the employment and remuneration of managers, although professional women comprise a higher share of employment than men. The analysis based on microdata linking enabled analysing the results by economic activity, type of trader (two-way, importer, exporter, non-trader), type of job (manager, low, medium and high skill) and by owner. The microdata analysis showed that trading companies pay higher salaries than average, but that the gender wage gap is also larger. Men are more likely to be employed as managers and medium-skill workers, while a higher percentage of women were employed as high-skill workers. The largest gender pay gaps were observed among managers and low-skilled workers. Men outnumbered women more than nine times as owners of two-way trader companies, almost five times as owners of exporters and more than three times as owners of importer companies. This gap increased for larger companies. The findings also showed that women-owned companies employ a significantly higher proportion of high-skilled women and demonstrated a smaller gender pay gap. It was also an important acknowledgment that the lack of sex-disaggregated data in the country partly explained the lack of trade policy initiatives related to gender. The gender-in-trade data yielded by this effort would be used to consider potential policy actions.

49. In 2021, the OECD published a framework for assessing how trade and trade policy can help advance women's economic empowerment, based on the roles of women as workers, as consumers, and as entrepreneurs.³¹ The associated indicators may be produced based on existing data, provided that a national statistical system has adequate planning and resources to do the required data collection and processing. In terms of women as workers, sex-disaggregated labour statistics can inform about the share of women employed in the ICT sector (goods and services), or in producing digitally deliverable services, provided that the source data can be collected at the ISIC 4-digit level. With a well-planned data collection exercise (survey-based data) or comprehensive administrative data (non-survey based) it would be possible to measure, for example, how many women work in digitally intensive industries. Women as consumers would be covered by demand-side (household) surveys, and these can provide indicators on whether women engage in e-commerce (and how much they spend) or use digital financial services or other applications.³² Finally, indicators on women's entrepreneurship could include the proportion of women-led businesses in the ICT sector or businesses engaging in digitally-ordered trade, and whether those businesses export, how much and where to. The OECD lists some considerations for trade and gender data requirements that are also valid in the context of digital trade, namely:
- Are there appropriate sex-disaggregated data on employment of women and men engaged in export-supported jobs both directly and indirectly by sector of activity (at the 4-digit level, which enables identification of the ICT sector)?
 - Are there appropriate sex-disaggregated data on business characteristics of firms, including trade, in order to ascertain what types of firms trade?
50. Already in 2014, the Partnership on Measuring ICT for Development assessed gender in ICT statistics and proposed several indicators in different areas, all while noting "the almost complete absence of ICT statistics and indicators from international statistics and indicators on gender equality"³³ Unfortunately, neither the availability of indicators, nor the obstacles to increasing it, have improved much since then. On the other hand, awareness of the gender data gap and its urgency has increased, and new sources of data (such as big data) are being developed to supplement the lack of sex-disaggregated data from traditional sources. In the context of e-commerce and the digital economy,

³¹ <https://www.oecd.org/publications/trade-and-gender-6db59d80-en.htm>

³² These kinds of indicators are, however, outside of the scope of UNCTAD's work. Within the Partnership on Measuring ICT for Development, the International Communications Union (ITU) is responsible for access and infrastructure indicators, as well as household and individual use of ICT indicators.

³³ https://unctad.org/system/files/official-document/webdtlstict2014d1_en.pdf

the Partnership proposed sex-disaggregated indicators on employment and on business (see table below).

Table 1. Core indicators for measuring gender in e-commerce and the digital economy (employment, business, entrepreneurship)

Indicator	Requirement
<i>Employment</i>	
Proportion of total workforce involved in the ICT sector	Disaggregation by sex
Proportion of employees in ICT occupations	Disaggregation by sex; definition and measurement of ICT occupations
<i>Business</i>	
Business access and use (various core indicators proposed by UNCTAD)	Filter question on gender composition of employees
<i>Entrepreneurship</i>	
Proportion of small-business owners using the Internet, by type of activity	Disaggregation by sex; inclusion of an ICT module/questions in existing surveys
Proportion of small-business owners using mobile phones, by type of activity	Disaggregation by sex; inclusion of an ICT module/questions in existing surveys

Source: *Measuring ICT and Gender: An Assessment*, UNCTAD 2014, https://unctad.org/system/files/official-document/webdtlstict2014d1_en.pdf

51. Data on employment disaggregated by sex and by occupational level of ICT professionals is already widely collected through national labour force surveys, official estimates, and censuses.³⁴ While many countries collect employment data, it is not always the case that detail is available down to the level of all ISIC rev.4 industry classes that are part of the ICT sector definition, especially in developing countries. The indicator on the proportion of the total workforce employed in the ICT sector could be disaggregated by gender if the underlying data are obtained from labour force surveys.
52. The absence of data is more notable in terms of sex-disaggregated business indicators. The Partnership proposed to measure the use of ICTs by women working in businesses (business use indicators, collected through business surveys) and by women-led businesses (entrepreneurship). Business use and entrepreneurship indicators are separate data sets normally produced by two different types of data collection vehicles, but they complement each other to provide a more complete view of female participation in the digital economy. For example, business surveys could show whether female-dominated³⁵ enterprises engage in e-commerce more or less than male-dominated ones, while entrepreneurship surveys could show whether female-owned enterprises engage in e-commerce more or less than male-owned ones.
53. The Partnership's assessment also contained several recommendations for NSOs that remain valid:
 - a) NSOs and digital policy makers, should collaborate to integrate a gender perspective into ICT data from the first stage of planning a data collection, and when setting out the objectives of a survey or census.
 - b) The statistics should aim at a level of international comparability and at supporting the development and monitoring of policies and programmes to promote gender equality.
 - c) While an ICT business survey is the most desirable vehicle as it can provide the richest information, when this is not available the inclusion of ICT questions or modules in other surveys, such as in a census or labour force survey, is also valuable.

³⁴ These are available on the International Labour Organization (ILO) database at <https://ilostat.ilo.org/>

³⁵ Enterprises where the majority (more than half) of persons employed are female.

- d) The survey(s) should aim to prevent gender bias by ensuring that the situation of girls and women is properly reflected in individual-level ICT data through guidelines, manuals, and training of supervisory and field personnel.
54. In 2022, UNCDF included a gender dimension in its IDES to capture how women participate as builders of the digital economy and how technology facilitates economic opportunities for women, with the aim to increase their access to services (digital and financial inclusion) and remove the barriers to economic empowerment. The Women's Inclusiveness Score (WIS) aims to measure the level of inclusion of women in a country's digital economy (skills, innovation, infrastructure, and policy and regulation) and barriers through quantitative indicators from international and national data sources, but due to the lack of publicly available data disaggregated by gender, it also considers qualitative data from its country teams' assessments. The WIS indicators include the gender gap in SME ownership and finance, and the extent to which digital and financial products are marketed or designed specifically for women. It can be argued that the lack of quantitative data on women's inclusion is itself a valuable insight, as it indicates that governments do not have the information needed to ensure the inclusion of women in digital economy policies.
55. The paucity of sex-disaggregated data has motivated a couple of projects to leverage big data for insights into digital gender inequalities. The Digital Gender Gaps project, for example, tracks Internet and mobile phone use and access in real time.³⁶ Using Facebook and Google advertising data, researchers analysed the type of access and the levels and types of online activity of men and women at a more granular level.³⁷ In combination with "offline" gender and economic indicators (such as the UN Human Development Index and gender gaps in education), the Facebook data predicted the latest available survey-based estimates of gender gaps in internet access and digital skills. Another insight was that when women in a country were missing from Facebook and Google, they were probably not online at all and there was a lack of digital skills. These methods are meant to be complementary to traditional statistics. As briefly mentioned in section IV, above, big data is also providing valuable information on the financial inclusion of women through access to digital financial services, which can be used as an indicator of an enabling environment for the digital entrepreneurship of women.³⁸
56. The Working Group could consider encouraging NSOs to:
- Include sex-disaggregated questions on the use of ICT in businesses in the planning of labour force surveys, business surveys, and entrepreneurship surveys.
 - Produce the core indicators on gender in ICT related to employment, business and entrepreneurship proposed by the Partnership on Measuring ICT for Development.
 - Apply the conceptual frameworks for measuring gender in trade statistics to digital trade or to the ICT sector.
 - Consider whether there are gender insights to be gained from accessing non-survey-based data or privately held data (see section IV).

³⁶ <https://digitalgendergaps.org/>

³⁷ See <https://data2x.org/wp-content/uploads/2019/11/FBGoogleAdvertisingData-GenderDigitalDivide.pdf> and <https://www.sciencedirect.com/science/article/pii/S0305750X18300883?via%3Dihub>

³⁸ <https://data2x.org/resource-center/wfid-synthesis-brief/>

VI. Conclusions and way forward

57. As per the substantive agenda items, the Working Group may consider conveying the conclusions and recommendations below to the IGE.

On progress in measuring e-commerce and the digital economy

58. The Working Group may wish to:
- a) Reaffirm the inclusion of a standing agenda item in future meetings that will present ongoing progress by organizations in the measurement of e-commerce and the digital economy.

On defining the digital economy for statistical purposes

59. The Working Group may wish to consider recommending that UNCTAD continue efforts to gradually improve the measurement of the digital economy by engaging with other international organizations and national statistical offices in a tiered approach by:
- a) Sharing national and international methodological guidance, knowledge resources, practical experiences, as well as the actual statistical results, from measuring those components of the digital economy that already enjoy accepted definitions and can be quantified.
 - b) Continuing to explore ways to improve the measurement of those components of the digital economy that are currently less well covered but are already the subject of policy interest and methodological testing, such as digital trade and e-commerce, in collaboration with other international organizations and national statistical offices.
 - c) Engaging in disseminating UNCTAD's work in the context of other relevant international statistical meetings, including through the UN Statistical Commission mechanisms such as the UNCEBTS.

On measuring e-commerce

60. The Working Group could consider:
- a) Asking UNCTAD to further progress in analysing and assessing the advantages and disadvantages of existing measures of e-commerce in different countries as well as the potential for standardization, with a view to develop statistical guidelines on measuring the value of e-commerce (including cross-border e-commerce).
 - b) Recommending that a task group of interested Working Group participants be established to guide, oversee, and actively undertake the development of the necessary measurement standards and guidelines.

On web scraping techniques and data transfers to produce official statistics on e-commerce and the digital economy

61. The Working Group may wish to:
- a) Resolve to continue featuring experiences and projects based on non-survey-based sources of data for official statistics in the discussions of the Working Group, with the aim to disseminate innovative approaches, good practices, and relevant knowledge resources to statisticians in developing countries, and adding value by examining how these experiences can help improve the measurement of e-commerce and the digital economy.

On measuring the gender dimension in e-commerce and the digital economy

62. The Working Group could consider encouraging NSOs to:
- a) Include sex-disaggregated questions on the use of ICT in businesses in the planning of labour force surveys, business surveys and of entrepreneurship surveys.
 - b) Produce the core indicators on gender in ICT related to employment, business and entrepreneurship proposed by the Partnership on Measuring ICT for Development.
 - c) Apply the conceptual frameworks for measuring gender in trade statistics to digital trade or to the ICT sector.
 - d) Consider whether there are gender insights to be gained from accessing non-survey-based data or privately held data.