



6. Case studies

Several countries have started to apply the core concepts presented in this Handbook to derive measures of digital trade. The detailed case studies put forward in this chapter, contributed by China, Jamaica, Spain, and Türkiye, provide compilers with a range of examples and practical applications to start measuring digital trade.

Case study 1:

Measuring digitally ordered merchandise trade in China¹

1.1 Introduction

The General Administration of China Customs (“China Customs”) is responsible for the compilation and dissemination of international merchandise trade statistics in China. Given that there is significant policy-related interest attached to cross-border e-commerce and its rapid growth, measuring and analysing digital trade in goods has become a priority for China Customs.

First measurement efforts started in 2014 with the implementation of specific customs procedure codes and the release of preliminary results under the label “CBEC [cross-border e-commerce] statistics from customs control perspective”. However, although providing useful insights on recent trends, customs records alone could not capture the overall amount of CBEC, since not all digitally ordered goods are declared to customs and released from customs under these specific CBEC procedures.

In order to improve coverage and extend measurement to postal parcels, China Customs, in collaboration with the Ministry of Commerce and the National Bureau of Statistics, conducted a pilot study which resulted in the development of a specific survey targeting enterprises heavily involved in digital trade.

Currently, China Customs compiles statistics on digital trade in goods by combining customs records and survey information, as well as other data sources. These statistics have been published under the label “CBEC statistics from business perspective” since 2021.

This case study illustrates China’s experiences with measuring digitally ordered trade in goods, or cross-border e-commerce. Section 1.2 presents the different data sources exploited. Section 1.3 describes the compilation methodology and Section 1.4 showcases preliminary results. Finally, Section 1.5 reflects on the overall experience and outlines future steps.

1.2 Data sources

1.2.1 CUSTOMS RECORDS

In 2014, after a series of interviews and feasibility studies with CBEC stakeholders (including platforms, online vendors, logistics facilitators and relevant government agencies), China Customs introduced a new customs procedure to identify CBEC transactions. A new code for “cross-border direct purchases” (code 9610), streamlining the customs treatment of these purchases, was introduced with the aim of facilitating the customs clearance of digitally ordered B2C goods, improving the efficiency and effectiveness of customs controls, and enhancing customs statistics.

As a result, goods subject to the procedure benefit from simplified clearance and aggregated declarations. CBEC enterprises or their agents, including platforms and payment or logistics facilitators, are required to submit e-orders, e-payment vouchers and e-waybills concerning digitally ordered goods together with a declaration to China Customs. CBEC goods are released instantly from the customs once the documents are verified and matched. By the 15th of every month, CBEC enterprises or their agents summarize all simplified export declarations for the previous month and transform them into a single formal declaration after applying the specific customs procedure of cross-border direct purchase (i.e., code 9610). For code 9610 to be applied, CBEC enterprises or their agents must consolidate their declarations in terms of value and quantity by exporter, mode of transport, country of consignment, country of last-known destination, commodity code and port of export. The aggregated declaration facilitates tax refund formalities. In addition, customs declarations labelled with code 9610 can be easily identified in the database when statistics on CBEC goods are produced.

In late 2014 and 2016, Customs China introduced two additional customs procedure codes, namely the “bonded cross-border purchase” (code 1210) and the “bonded cross-border purchase A” (code 1239). The bonded cross-border purchase code (1210) is utilized in the China cross-border comprehensive pilot zone, while bonded cross-border purchase A (code 1239) is applied in other areas. China Customs designed these two codes specifically for CBEC goods, which are imported in batches and stored in bonded logistics customs centres or bonded zones before being delivered in small parcels to domestic customers. Based on the three new codes (9610, 1210 and 1239), China Customs estimated that the total transaction value of CBEC amounted to US\$ 13.3 billion in 2017 and US\$ 27.5 billion in 2019.

In June 2020, China Customs introduced two additional customs procedures for CBEC B2B exports goods clearance, namely “cross-border e-commerce between enterprises” (code 9710) and “overseas warehouse

of cross-border e-commerce exports” (code 9810), which extended customs control on CBEC from B2C to B2B. Currently, the five customs procedure codes (9610, 1210, 1239, 9710 and 9810) are the primary sources for CBEC statistics.

1.2.2 ENTERPRISE SURVEY

In order to measure digitally ordered goods which are not explicitly declared as CBEC goods to customs, a survey targeting CBEC enterprises was conducted. China Customs classifies the respondents to the survey into four categories according to their business roles:

- a) third-party platforms;
- b) self-built/self-operated platforms;
- c) e-commerce enterprises providing CBEC-related services such as logistics and customs clearance; and
- d) e-commerce vendors selling their goods on third-party platforms.

In cases where one respondent holds all roles, all four respective questionnaires are required. When estimating total trade, only the two questionnaires completed by the platforms (i.e., those in categories a) and b)) are considered, with the remaining data from the other questionnaires being used for cross-validation and analysis purposes. CBEC enterprises of a significant business scale are required to complete detailed questionnaires to report further information on the origin and destination of CBEC products. The survey is conducted twice a year and the questionnaire is available in Annex E.

1.2.3 FINANCIAL REPORTS OF OVERSEAS PLATFORMS

Gross sales (i.e., merchandise value), revenues and other publicly available information are drawn biannually from the financial reports regularly released by large-scale overseas e-commerce platforms such as Amazon, eBay, Shopee and Wish to calculate their CBEC settlements. The settlement value is the amount of money paid by the buyers to vendors for the Chinese goods sold on these platforms, and it normally exceeds the export value (see Section 1.3 for details on the estimation of free-on-board (FOB) values from settlement values). China Customs updates the platform list regularly.

1.2.4 QUALITATIVE INTERVIEWS

By means of interviews with relevant enterprises (mainly service providers), further information on the cost of logistics, payment and platform management can be obtained and deducted from settlements of the platform when FOB-based exports are estimated.

1.2.5 OTHER SOURCES

To obtain the share of CBEC goods in mail parcels and express deliveries declared for personal use, China Customs conducted a telephone survey in 2019, in collaboration with the Ministry of Commerce and the State Postal Administration, of the consignors of about 5,000 randomly selected outbound postal parcels. The survey was carried out in six cities, namely Harbin, Qingdao, Chengdu, Wuhan, Hangzhou and Guangzhou, covering both coastal and inland areas in China. The share of CBEC goods in outbound parcels was determined in the telephone survey, while for inbound parcels it was obtained through industry interviews with postal parcel operators.

Since 2019, CBEC parcels have been included in external merchandise trade statistics. The statistical value is derived by multiplying the average price indicated on the parcels by the number of parcels, thus minimizing the impact of price outliers caused by declaration error. Regarding statutory statistical items derived from sources such as the trade mode and domestic locations (Annex E), China Customs developed a set of proxy codes to ensure coherence and consistency in their statistical database. For instance, if a commodity is essential for data production, but no corresponding HS code is available, an additional code is introduced into the database.

1.3 Compilation methodology

1.3.1 OBJECTIVES AND PRINCIPLES

CBEC statistics are compiled following the International Merchandise Trade Statistics: Concepts and Definitions (IMTS) 2010 (United Nations, 2011). The methodology of CBEC statistics follows four key principles:

- **Integration:** The measurement requires an integrated approach, including statistics for scope, sources, processing methods and release mechanism, to reflect CBEC in a comprehensive manner.
- **Reliability:** Data quality is ensured by a robust survey process and sound processing methods.
- **Innovation:** Beyond conventional practices of identifying customs administrative records related to digital trade, web-scraping techniques (i.e., an automated process of gathering data from the web) are used to extract the share of Chinese goods sold by overseas platforms for estimating the corresponding exports.
- **Independence:** CBEC statistics are a new statistical product, and are already included in external merchandise trade statistics. Produced in a different way compared to CBEC statistics from a customs control perspective and other customs statistics, CBEC statistics display lower granularity and frequency.

1.3.2 COVERAGE

The first step of the measurement is to determine the scope of CBEC. The World Customs Organization (WCO) has been paying great attention to the impact of the development of CBEC on customs clearance modes. A Working Group on E-Commerce was set up by the WCO in 2016 to ensure the facilitation and compliance of CBEC customs clearance. China Customs actively participated in the development of the WCO Framework of Standards on Cross-Border E-Commerce (WCO, 2018). Statistical experts from China Customs led the task force of the “Measurement and Analysis” sub-working group of the Working Group on E-Commerce. This Framework of Standards applies primarily to B2C and C2C transactions and encourages members to apply the same standards to B2B transactions. It points out that customs and relevant government agencies should work closely with e-commerce stakeholders to measure, analyse and publish CBEC statistics in accordance with international statistical standards and national policies in order to facilitate decision-making.

The scope of the CBEC statistics measured by China Customs is consistent with this *Framework of Standards*. Transactions are recorded as CBEC goods when the following criteria are met:

- The transactions are a result of trade conducted between enterprises or individuals within and outside the customs territory of China;
- The transactions are a result of orders placed through an internet platform; and
- The transactions are a result of goods being delivered through various cross-border logistics channels.

As well as coinciding with the basic requirements for coverage of international merchandise trade statistics (i.e., the cross-border movement of goods), the criteria above also align with the definition of digitally ordered trade (or cross-border e-commerce) in this Handbook. As such, CBEC statistics are compiled and presented as a subset of total merchandise trade statistics.

1.3.3 MEASURING CBEC IMPORTS

CBEC imports are estimated based on the following process:

- Step 1: Retrieve customs administrative records with specific customs procedure codes 9610, 1210 and 1239.
- Step 2: Extract survey results of import values on goods not explicitly declared to the customs as CBEC goods.
- Aggregate respectively the customs administrative records retrieved in step 1 as “Vi1” (i.e., “value import 1”) and the survey results in step 2 as “Vi2” (“value import 2”).

- Divide Vi2 by the coverage rate of the sampled enterprises (Rsi), obtained from an enterprise survey to reduce omissions.
- Rsi is calculated as the estimated share of the transactions by the sampled enterprises in total CBEC goods.
- The total import value Vi is derived using the formula $V_i = V_{i1} + V_{i2} / R_{si}$

The results can be verified by comparing the shares of the main platforms in major markets with those of the previous measurements in total trade of consumer goods.

1.3.4 MEASURING CBEC EXPORTS

Measuring exports ordered via domestic platforms (Ve1)

The export value reported in the questionnaire by domestic platforms is aggregates as Ve1. Domestic platforms include both third-party platforms and self-run/self-built platforms not operated through a third-party like Alibaba, Jindong, DHgate, Youzan and Shein.

Measuring exports ordered via overseas platforms (Ve2)

The data sources listed in Section 1.2 are used to estimate the value of exports ordered via overseas platforms like Amazon, eBay, Shopee and Wish.

Taking Amazon as an example, the calculation process of CBEC exports is as follows:

- Extract revenue turnover of Amazon online stores and third-party seller services from financial reports regularly released by Amazon.
- Apply Amazon commission, storage fee, distribution fee and other expenses on the products sold via Amazon (obtained by interviewing Chinese sellers) and convert revenue turnover into a settlement value for Amazon third-party and self-operated goods (Ea, the ratio of Chinese goods sold via Amazon).
- Analyse the address information of Amazon sellers to derive an estimate on the sales of Chinese goods via Amazon (Ra, the value of the goods themselves, excluding any services), which is provided by a third party, and then derive the settlement value of Chinese goods on Amazon (S1'). The settlement value is the amount of money paid by buyers to vendors for the Chinese goods sold on platforms, which exceeds the export value.

$$S1' = E_a * R_a$$

- Convert S1' into FOB-based exports (S1) by applying the charges expressed as a percentage (C). The charges include platform fees, logistics costs and customs clearance fees, taxes and other fees paid in the CBEC process.

$$S1 = S1' * (1 - C)$$

- Summarize the Chinese exports ordered by different platforms (as S1, S2... Sn) to get the CBEC total export sold on major overseas platforms (Ve2).

Data integration of CBEC exports both from domestic and overseas platforms

- Add exports ordered from domestic platforms (Ve1) to those from overseas platforms (Ve2).
- Adjust the sum by the sample enterprises coverage rate (Rse), which is obtained by enterprise surveys to reduce omissions, to get the total CBEC export (Ve).

$$Ve = (Ve1+Ve2)/Rse$$

1.3.5 DATA VERIFICATION

Over the years, the process has seen the development of relatively robust CBEC statistics. From time to time, business interviews are conducted to adjust the market proportions of the major platforms, which are compared with the ratio of domestic and overseas platforms. If the results from the interviews and estimations differ greatly, China Customs further investigates if there are omissions or errors. Since the majority of the CBEC goods are consumer products, the ratio of the CBEC imports and exports with total consumer products imports and exports and the percentage changes are checked.

1.4 Results

1.4.1 PRELIMINARY AGGREGATE RESULTS

In 2022, China's total international CBEC trade was about US\$ 309 billion, up by 3.8 per cent year-on-year. CBEC exports increased by 6.7 per cent to US\$ 230 billion. CBEC imports shrank by 3.8 per cent to US\$ 79 billion (Table 6.1).

The main markets for China's CBEC exports are the United States, the United Kingdom, Malaysia, France,

Germany, Japan, Spain and Russia in order of size of export markets, while CBEC imports mainly come from the United States, Japan and the Republic of Korea. Consumer goods account for 93 per cent of the CBEC exports, with clothing, shoes and bags, textiles and other household items, and electronic products also counting as major products. The share of consumer goods in imports is 98 per cent, mainly consisting of perfumes, make-up and other personal care and toiletry items, health products, and maternal and children's products.

1.4.2 DISSEMINATION OF STATISTICS

CBEC statistics are compiled and released annually, with preliminary estimations made available every quarter. The quarterly preliminary data are not revised. CBEC imports and exports data are produced with a four-month lag due to the availability of sources, while China Customs statistics on total merchandise trade are usually released within one month. In order to improve the timeliness of the CBEC statistics, a mechanism of quarterly estimation was established in 2021.

The preliminary statistics of CBEC imports and exports are derived on the basis of the previous measurements of CBEC and the merchandise trade statistics of the reference period, produced with customs administrative records, including trade totals, volume of consumer goods and CBEC statistics from a customs control perspective, as well as CBEC parcels imported and exported as personal effects. Due to the lack of data availability, there are no breakdowns in the preliminary CBEC estimation. The annual estimation will be updated by the statistics produced with survey data and the other sources.

1.4.3 BREAKDOWN OF CBEC STATISTICS

CBEC imports and exports are broken down by trading partner (country/region), end use, import and export

Year	Value in billion US\$			Year-on-year (%)		
	Total	Export	Import	Total	Export	Import
2019	187	116	71	17.0	24.9	6.1
2020	234	157	77	25.2	35.5	8.7
2021	297	215	82	27.0	37.4	6.1
2022	309	230	79	3.8	6.7	-3.8

Source: China Customs.

modes, and domestic locations for comprehensive analysis. The information obtained from the survey helps to establish the proportion of the breakdown. Big data methods are introduced to improve the quality of data coming from domestic locations (at a provincial level). To facilitate the reporting, CBEC goods are classified into consumer goods and inputs of production in the questionnaire, where the former is further divided into 10 sub-groups.

Consumer goods of CBEC imports are classified as following:

- Food and drinks;
- Milk powder;
- Nappies;
- Perfumes, make-up and other personal care and toiletry items;
- Medicines and health products like food supplements;
- Mobile phones, computers and other digital products, household appliances and peripheral products;
- Textiles and other household items;
- Clothing, shoes and bags;
- Toys, infant and children's products other than milk powders;
- Other consumer goods.

Consumer goods of CBEC exports are classified as following:

- Clothing, shoes and bags;
- Mobile phones, computers and other digital products, household appliances and peripheral products;
- Textiles and other household items;
- Jewellery, clocks and watches, glasses;
- Toys, infant and child products other than milk powders;
- Articles for entertainment and sports;
- Perfumes, make-up and other personal care and toiletry items;
- Utensils for gardening and home use;
- Peripheral products of automobiles;
- Other consumer goods.

1.5 Conclusions: lessons learned, challenges and future steps

1.5.1 LESSONS LEARNED

Sound cooperation between different stakeholders is crucial for measuring digital trade. China Customs received support in compiling CBEC statistics, as these cannot be produced solely by customs administrative records, in the way that conventional merchandise trade statistics are. Government agencies responsible for commerce, postal services and statistics helped in the determination of the sample for respondents and provided sources for data cross-validation. The Chamber of Commerce supported the relationship-building between China Customs and CBEC industry stakeholders. The respondents were identified based on their sales volume. The National Statistics Bureau helped to design the methodology and data quality control mechanisms. Valuable insights on CBEC were shared in the interviews with CBEC stakeholders to help establish estimation parameters.

Incorporating the survey responses by major domestic CBEC platforms into the measurement proved to be cost-effective and efficient in preventing the omission and duplication of data. Among all the stakeholders interviewed, CBEC platforms are the most appropriate in providing data on digitally ordered imports and exports. This is one of the core contributions of CBEC statistics and cannot be captured by customs administrative records. Major e-vendors and CBEC service providers also provide useful information for data verification.

CBEC statistics follow the standards of international merchandise trade statistics. According to IMTS 2010 (United Nations, 2011) and the *Regulations on Customs Statistics of the People's Republic of China*, as a part of international merchandise trade statistics, the CBEC goods are included in the data after having physically moved across borders. The valuation for exports is on a FOB basis, while imports are valued on a cost-insurance and freight (CIF) basis. Statistics sourced from CBEC platforms are collected at retailers' prices, which contain platform fees, logistics fees like home delivery, taxes and other fees occurring after the export or import declared in customs declarations. The values obtained from the survey completed by domestic platforms and the gross merchandise values from the financial reports of the overseas platforms are harmonized and adjusted. The CBEC statistics can thereby be analysed in the context of the external merchandise trade from various dimensions.

1.5.2 CHALLENGES

The key challenges are establishing effective collaboration with data producers, disaggregating the data and improving data quality:

- Collaboration with data producers abroad: It is more difficult to establish a cooperative mechanism to obtain detailed data with overseas platforms than with domestic platforms, even though surveys responded to by domestic platforms can never be as detailed and as timely as administrative records.
- Granularity of data: As they are limited by the compilation methodologies, CBEC statistics are of low frequency and low granularity and sometimes fail to meet the demands of data users who are accustomed to the high frequency and multiple dimensions of conventional merchandise trade statistics derived from customs administrative records.
- Measures to improve data quality: There is no sufficient way to check the reliability of the parameters applied in the estimation. More efforts should be put into the maintenance of reliable parameters to assure quality estimation. A sustainable and cost-effective method for parameter updating needs to be established.

1.5.3 FUTURE STEPS

China Customs will continue to compile CBEC statistics on a regular basis. Measures will be taken to improve the data quality, including but not limited to:

- Applying big data technology to improve data quality and compilation methodology for better measuring totals and data breakdowns;
- Holding more interviews with independent “station construction service providers” (a type of self-operated platform which knows its clients) and enterprises specialized in providing services with respect to logistics and payment to find more platforms to enhance the coverage of the survey respondents;
- Differentiating the survey questionnaires by different types of respondents to reduce the response burden and obtain consistent information; and
- Strengthening partnerships with data-holders.

Case study 2:

Towards a better measurement of digitally delivered trade: China's experience and prospects²

2.1 Introduction

China's Ministry of Commerce (MOFCOM) is responsible for promoting foreign trade and international economic cooperation, participating in the WTO e-commerce negotiations, and advancing the development of digital trade in China.

In 2006, MOFCOM launched the "Thousand-Hundred-Ten project",³ with the aim of promoting exports – here referred to as "service outsourcing" – of three categories of ICT services deemed as digitally deliverable, i.e., information technology outsourcing (ITO), business process outsourcing (BPO) and knowledge process outsourcing (KPO).⁴ As a result of this package of policies, over 67,000 enterprises have been engaging in these activities, with over 10 million jobs created, and exports reaching 200 economies worldwide.

In order to better monitor developments in this area, MOFCOM introduced the Investigation System on Service Outsourcing (hereafter, the Investigation System) in 2007 to collect data. In 2009 MOFCOM introduced the Online Monitoring System on Service Outsourcing, an online data collection system. Since then, MOFCOM has been regularly carrying out data compilation and conducting countrywide personnel training, and it reviews the Investigation system every three years.

This case study is structured as follows. Section 2.2 outlines the compilation process and the data sources. Sections 2.3 presents some preliminary results and validation process. Finally, Section 2.4 reflects on the overall experience and future steps.

2.2 Compilation process and data sources

2.2.1 INTERNATIONAL SERVICES OUTSOURCING: CONCEPTS AND DEFINITIONS

MOFCOM categorizes services outsourcing into international services outsourcing and domestic services outsourcing. International services outsourcing refers to the services provided by Chinese enterprises to their overseas clients, whereas domestic services outsourcing denotes the services provided to domestic customers.

According to the nature of business activities, MOFCOM classifies services outsourcing into three categories, namely ITO, BPO, KPO, as described in Table 6.2.

TABLE 6.2: CLASSIFICATION OF SERVICES OUTSOURCING IN CHINA

Main category	Sub-category	Delivery method
Information technology outsourcing (ITO)	IT research and development services	All/almost all digitally delivered
	IT operation and maintenance services	
	IT application development services	
Business process outsourcing (BPO)	Internal management services	Partially digitally delivered
	Business operation services	
	Repair and maintenance services	
Knowledge process outsourcing (KPO)	Business services	Partially digitally delivered
	Design services	
	Research and development (R&D) services	

Source: MOFCOM.

As defined in this Handbook, digitally delivered trade refers to international transactions delivered remotely through computer networks. According to this definition, international service outsourcing undertaken by Chinese enterprises is regarded as digitally deliverable and is mostly supplied via Mode 1. However, while ITO is considered to be almost fully digitally delivered in practice, BPO and KPO still require some on-site deliveries. MOFCOM has not yet launched a survey to collect the shares of digital delivery for the two latter categories.

2.2.2 STATISTICAL PRINCIPLES

When compiling service outsourcing statistics, the following principles are applied:

- **Completeness:** MOFCOM sets up statistical scope, indicator list, measurement approach and data dissemination via its Investigation System to achieve better coverage.
- **Timeliness:** Taking into account evolving information technology, the Investigation System, including the registration forms, is upgraded every three years. Emerging digital business modes will be included in the system as and when they are developed. New contracts and completed services deliveries are required to be updated and disseminated on a monthly basis.
- **Accuracy:** MOFCOM has established a three-layer review mechanism to validate submissions, detect anomalies and ensure compliance.

2.2.3 DATA SOURCES

The Online Monitoring System on Service Outsourcing, launched in 2009, is the main data source used in this context. Enterprises are required to register their basic information in the online system and to provide details of their service outsourcing contracts on a monthly basis.

Regular reviews are conducted by the governmental commercial departments to ensure that declarations made by enterprises meet the requirements of the system. Validated data are summarized subsequent to governmental reviews and made available for inquiries of enterprises and governmental commercial departments.

By 2021, over 67,000 enterprises had been registered in the system and required to submit the breakdown of data by business type and trading partner. On the basis of these data, reports are generated on a granular level for analytical purposes. About 10,000 enterprises participate in the survey each year, some of them regularly.

Surveys are conducted by MOFCOM at the central government level and by commercial departments at the local level. Local governments take charge of data validation and submission and MOFCOM reviews this at a later stage. The questionnaire is composed of several forms, which collect information on each enterprise, on the details of the services provided, on the clauses agreed in contracts, such as contracting parties and values, implementation status of the contracts and information on personnel and international certifications. This questionnaire is available in Annex F.

2.3 Preliminary results

As illustrated in Table 6.3, in 2022 the value of international service outsourcing in China reached US\$ 136.8 billion, a leap from US\$ 96.9 billion in 2019 (an average annual growth of 12 per cent). International information technology outsourcing (international ITO), which accounts for over 40 per cent of the total, rose from US\$ 42.7 billion to US\$ 56 billion, growing at an average annual rate of 9.5 per cent.

TABLE 6.3: INTERNATIONAL SERVICE OUTSOURCING IN CHINA, 2019-22

Year	International service outsourcing		International ITO		International BPO		International KPO	
	Value (US\$ billion)	YoY change	Value (US\$ billion)	YoY change	Value (US\$ billion)	YoY change	Value (US\$ billion)	YoY change
2019	96.9	9	42.7	6	17.5	28	36.7	5
2020	105.8	9	46.3	9	17.1	-2	42.3	15
2021	130.3	23	55.0	19	19.8	16	55.5	31
2022	136.8	5	56.1	0.2	22.4	13.1	58.3	7.0

Source: MOFCOM.

Table 6.4 presents a further breakdown of ITO exports by sub-category. IT research and development services registered the largest share in international ITO in 2019-22, accounting for over 80 per cent of total international ITO. IT research and development services surged at an average rate of 9.3 per cent from US\$ 34.4 billion in 2019 to US\$ 44.9 billion in 2022. IT operation and maintenance services rank second and grew from US\$ 7.1 billion in 2019 to US\$ 9.6 billion in 2022, an average rate of 10.5 per cent. IT application development services is a new category since 2019, with the compilation process subject to further enhancement. It was valued at US\$ 1.2 billion, US\$ 0.8 billion, US\$ 0.9 billion and US\$ 1.6 billion, respectively, for the period from 2019 to 2022.

Since international ITO refers to the remote delivery of IT services, the data can be compared to and cross-validated with the export value of telecommunications, computer and information services (EBOPS 2010 Item SI) as defined in MSITS (2010) and recorded in the Chinese balance of payments. International ITO accounts for 65 to 80 per cent of total exports of this item, which is deemed plausible since telecommunications services are not included in ITO exports (Table 6.5).

TABLE 6.4: INTERNATIONAL ITO BY CATEGORY IN CHINA, 2019-22

Category	2019		2020		2021		2022	
	Value (US\$ billion)	YoY change	Value (US\$ billion)	YoY change	Value (US\$ billion)	YoY change	Value (US\$ billion)	YoY change
International ITO	42.7	6	46.3	9	55.0	19	56.1	0.2
IT research and development services	34.4	-0.1	37.8	10	45.4	20	44.9	-1.0
IT operation and maintenance services	7.1	36	7.7	7	8.7	14	9.6	9.4
IT application development services	1.2	155	0.8	-29	0.9	9	1.6	8.2

Source: MOFCOM.

TABLE 6.5: EXPORTS OF ITO COMPARED TO EXPORTS OF TELECOMMUNICATIONS, COMPUTER AND INFORMATION SERVICES IN CHINA, 2019-22

	International ITO (US\$ billion)	Telecommunications, computer and information services exports (US\$ billion)	Ratio
2019	42.7	53.9	79%
2020	46.3	60.8	76%
2021	55.0	79.5	69%
2022	56.1	86.2	65%

Source: MOFCOM.

2.4 Conclusions: lessons learned, challenges and future steps

2.4.1 LESSONS LEARNED

MOFCOM's experience highlighted three main factors contributing to the success of this approach:

- **Statistical collection mandated by law:** Under the guidance of the National Bureau of Statistics of China, MOFCOM launched the Investigation System on Service Outsourcing in 2007 to carry out statistical investigation on International ITO at country level. Enterprises are mandated to register business information to enable MOFCOM to compile, process, analyse and disseminate data on services outsourcing.
- **Implementation of an online system:** MOFCOM established the Online Monitoring System on Service Outsourcing in 2009 to compile data in a timely and accurate manner. This system is reviewed and upgraded every three years, and a user manual is provided to enterprises and local governments.
- **Training regularly conducted:** Each year, MOFCOM provides nationwide trainings to local officials on the latest developments in service outsourcing and the up-to-date requirements in statistical work. The local governments then provide training for their enterprises. A contact group has been established on social media to facilitate exchange of practices.

2.4.2 CHALLENGES

The challenges encountered relate mostly to the technical implementation of collection and compilation. The state-of-the-art technology deployed in the collection process enables services to be delivered through a cloud platform. However, emerging business models are not always covered in time. In addition, currently international ITO covers only digitally delivered exports.

2.4.3 FURTHER SUGGESTED IMPROVEMENTS

In the future, MOFCOM plans to further enhance and improve the measurement of digitally delivered trade. The following steps are being considered:

1. **Enhancing the Investigation System by:**
 - requesting enterprises to provide information in the forms on the shares of digitally delivered services in the total services to facilitate the measurement of digital delivery of R&D, design, audio and video, as well as of creative services;
 - adding digital intermediation platforms as a category to the forms to obtain the transaction values of digitally delivered trade through digital intermediation platforms from enterprises;
 - compiling imports of services outsourcing.
2. **Diversifying data sources:** MOFCOM aims to facilitate data-sharing with public data-holders such as China Customs, the State Taxation Administration and the Ministry of Industry and Information Technology. MOFCOM will also examine the feasibility of applying big data technology to fill in data gaps.
3. **Reinforcing international cooperation:** MOFCOM aims to strengthen partnerships with international organizations and to exchange experiences and practices with other countries.

Case study 3:

Digital trade in Jamaica: exploring new measurement approaches⁵

3.1 Introduction

In 2021, Tax Administration Jamaica (TAJ) coordinated a stocktaking exercise aimed at identifying a range of possible data sources relevant for estimating digital trade in Jamaica, involving official information as well as experimental data. The exercise highlighted the feasibility of deriving estimates of digital trade by exploiting existing data sources, without developing costly new survey instruments.

Most of the sources identified, including the living conditions survey, border surveys, payment card data and administrative sources, could be used to estimate digitally ordered trade (Table 6.6). In addition, there has been some progress in exploring the measurement of digitally delivered trade and trade via digital intermediation platforms, although these efforts are still at an early stage. It is important to note that the approaches described in this case study have not yet been implemented.

The stocktaking exercise was intended to promote the synchronization of national data collection processes and to leverage the use of existing statistical datasets, especially those used for the compilation of the balance of payments and of the national accounts in Jamaica. The intention is to derive policy-relevant

measures of digital trade without creating excessive burdens either for the statistical compilers or for the survey respondents. Drawing on information provided by the key stakeholders in the statistical system in Jamaica, and following the recommendations of the Handbook of Measuring Digital Trade (OECD, WTO, IMF, 2019), this approach may be relevant to countries with similar statistical capabilities to Jamaica.

The case study is structured as follows. Section 3.2 introduces the key data sources that could be exploited to derive estimates of digitally ordered trade and, to a lesser extent, digitally delivered trade. Section 3.3 gives a brief outlook on future challenges and the way forward.

3.2 Data sources

3.2.1 SURVEY ON LIVING CONDITIONS

The Survey on Living Conditions (SLC) is conducted once per year and includes questions on internet and communication technology (ICT) usage by households. It is conducted via internet, regular mail and face-to-face interviews by the Jamaican Statistical Institute (STATIN).

At the time of writing, one question in Part L Section 6 of the survey asks household members whether the internet was used to purchase/order goods or services online, which gives some information concerning digitally ordered trade. Additional questions related to the consumption of various services, including streaming movies and accessing educational and financial services (see Figure 6.1), allow for some insights into digitally delivered trade. STATIN is currently working on an adaptation of the questionnaire to include information on the value of purchases made via the internet, which would enable a more precise assessment of the value of digitally ordered goods and services.

TABLE 6.6: LIST OF DATA SOURCES PROPOSED TO MEASURE DIGITAL TRADE IN JAMAICA, 2022

Category	National Source	Type of trade
Household surveys	Survey of Living Conditions (SLC)	Digitally ordered
Border surveys	Tourist Expenditure Survey (TES)	Digitally ordered
	Tourist Satisfaction Survey (TSS)	Digitally ordered
Credit card data	Bank of Jamaica	Digitally ordered/Digitally delivered
Administrative data	Tax Administration Jamaica (VAT tax forms)	Digitally ordered/Digitally delivered
	Jamaican Customs Agency (customs data)	Digitally ordered

Source: Tax Administration Jamaica.

**Figure 6.1: Survey of Living Conditions -
Part L Section 6 - Question on ICT usage**

For which of the following personal activities did you use the Internet in the past 3 months (from any location)?

- Sending or receiving email.....A
 Information search/Browsing.....B
 Telephoning over the internet.....C
 Participating in social networks.....D
 Accessing chat sites, blogs, news groups or online discussions.....E
 Purchasing/ordering goods or services.....F
 Internet banking or other financial services.....G
 Education, research and related activities.....H
 Reading/downloading online newspapers, magazines, books.....I
 Streaming or downloading images, movies, videos, music; playing or downloading games.....J
 Seeking jobs, submitting job applications, participating in professional networksK
 Using storage space on the internet to save documents, pictures, music, video or other files.....L
 Using software run over the internet for editing documents, spreadsheets or presentations.....M
 Other(Specify).....N

YES.....1

NO.....2

MULTIPLE RESPONSES

A	B	C	D	E	F	G	H	I	J	K	L	M	N

Source: STATIN.

As is the case for most household surveys, this source does not provide any monetary values and therefore cannot be used to identify digital trade transactions. Additional limitations include the level of disaggregation and the lack of geographical scope. In fact, goods and

services are not separately identified in the digital ordering question, and there is no information to distinguish between the domestic and the international dimension (see Table 6.7).

TABLE 6.7: DIGITAL TRADE DIMENSIONS IN THE SURVEY OF LIVING CONDITIONS IN JAMAICA

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in living conditions statistics but monetary value on digital flows is excluded.
Nature (How?)	Partial	Digitally ordered is partially covered, and digitally delivered can be approximated.
Product (What?)	No	Goods and services are not differentiated.
Actors (Who?)	Partial	Households.
Flow (Sales/Purchases)	Partial	Purchases are covered.
Online channel	No	The questionnaire does not make a distinction between the different channels.
Geography (Domestic/Cross-border)	No	Geographical breakdown for e-commerce into domestic and cross-border transactions is not provided.

Source: Bank of Jamaica.

3.2.2 TOURIST EXPENDITURE SURVEY AND TOURIST SATISFACTION SURVEY

The Jamaica Tourist Board (JTB) conducts both a Tourist Satisfaction Survey (TSS) and a Tourist Expenditure Survey (TES) on an annual and bi-annual basis respectively.

The TSS measures the overall satisfaction of tourists visiting Jamaica and provides important information on the channels through which tourists visiting Jamaica book their accommodation, thus offering insights into exports of digitally ordered services in Jamaica.

The TES assesses the estimated expenditure of visitors on a monthly and seasonal basis to produce an annual estimate. The survey breaks down short- and long-term stays and differentiates by residents, armed forces and non-resident Jamaicans. These estimates play an important role in compiling travel-related export data in the services account of the balance of payments. This data source only covers inbound tourism flows (exports). Information on Jamaican residents involved in tourism abroad could, in the future, be assessed using additional data sources, such as credit card data.

3.2.3 CREDIT CARD DATA

The Bank of Jamaica (BOJ), mandated by the BOJ Act, collects information on credit card transactions of Jamaican residents (Bank of Jamaica, 1960). Currently,

four international credit card companies (namely Visa, Mastercard, Japan Credit Bureau and American Express) are required to submit information on credit card transactions to the BOJ. Credit card companies provide monthly data expenditures by Jamaican residents cleared through foreign websites, which can be seen as a proxy for digitally ordered imports.

However, at this stage of exploration, the BOJ faces key limitations (Table 6.8). First, although the information reported by the credit card companies is broken down by merchant category code categories (i.e., four-digit numbers that classify the type of goods or services a business offers), the available level of detail does not allow a precise identification of products. Moreover, resident and non-resident disaggregation are difficult because the credit card information only indicates the country of residence of the bank issuing the card, rather than the residency of the card-user. At this stage, the share of cross-border expenditures is approximated, as an exact distinction is not possible.

In the future, Jamaica plans to use data from payment gateway companies to better disaggregate the credit card data in terms of goods and services. A payment gateway is a technology used by merchants to accept debit or credit card purchases from customers. The term includes not only the physical card-reading devices found in brick-and-mortar retail stores, but also the payment processing portals found in online stores. Data from payment gateways can be used to access additional information on the average transaction value and the exact location where the

TABLE 6.8: DIGITAL TRADE DIMENSIONS CAPTURED BY CREDIT CARD DATA IN JAMAICA

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Data are not disaggregated by product nor sector. Partial disaggregation could be made available using payment gateway data.
Nature (How?)	Partial	Expenditure items for both goods and services ordered via the internet. Digitally delivered services can be identified based on the list of digitally deliverable services as recommended in this Handbook.
Product (What?)	Partial	Information on credit card transactions for both goods and services is collected. Classification by products/sectors is difficult and is currently being explored.
Actors (Who?)	No	A breakdown by residency is not available from credit card data. In the future, additional information from the payment gateway data could be used to identify the share of cross-border transactions.
Flow (Sales/Purchases)	Partial	Only purchases.
Online channel	No	No distinction of the type of online channel.
Industries	No	No industry breakdown.
Geography (Domestic/Cross-border)	No	Geographical breakdown for into domestic and cross-border transactions is not provided.

Source: Bank of Jamaica.

payment was made. Combining credit card data with the more detailed data from payment gateways is currently being investigated and has not yet been tested in the Jamaican system. Jamaica then plans to use the credit card data to complement the balance of payment statistics with enhanced information on digitally ordered and delivered trade.

3.2.4 CUSTOMS DATA

The Jamaica Customs Agency (JCA), mandated by the Customs Act 1941, collects information on goods imported and exported across Jamaica's borders. As part of this mandate, the JCA also collects information from the couriers who physically deliver digitally ordered goods. The data collected by the JCA help estimate the percentage of goods ordered. Based on current data, JCA estimates that over 90 per cent of the courier services are used for goods ordered from abroad.

Information is compiled using the UNCTAD Automated System for Customs Data (ASYCUDA), as well as data from business registers. The data enable the identification of enterprises which register the provision of courier services as their core business function. The imports of companies registered as courier services are added up and then divided by the total imports as recorded in the balance of payment statistics. The shares of imports by courier services are currently included in the balance of payment statistics and serve as a proxy for digitally ordered trade in goods (see Table 6.9).

3.2.5 ADMINISTRATIVE DATA ON TAX DECLARATIONS

The Tax Authority Jamaica (TAJ) operates under a comprehensive legislative framework governing the effective and efficient administration of taxes. The TAJ can obtain information from tax declarations

TABLE 6.9: EXTRACT OF JAMAICA BALANCE OF PAYMENTS DATA ENRICHED BY CUSTOMS DATA (MONTHLY 2020-21 DATA)

US\$ millions	Mar-20	Jun-20	Sep-20	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21
Goods and services (balance)	-339.9	-691.6	-711.3	-825.5	-708.9	-579.9	-763.0	-976.7
Credits	1465.2	482.2	630.6	764.9	850.5	1147.0	1180.8	1206.9
Debits	1805.1	1173.8	1341.9	1590.4	1559.4	1727.0	1943.8	2183.6
Goods (balance)	-853.3	-614.2	-660.0	-821.0	-647.2	-556.6	-577.9	-1043.9
Exports	358.2	264.7	306.4	321.2	360.3	422.9	371.5	286.0
Imports	1211.6	878.9	966.4	1142.2	1007.5	979.5	9494.4	1329.9
Services (balance)	513.4	-77.4	-51.3	-4.5	-61.8	-23.3	-185.1	67.2
Credits	1107.0	217.5	324.2	443.8	490.1	724.2	809.3	920.9
Debits	593.6	294.9	375.4	448.3	551.9	747.5	994.4	853.7
Total exports of goods	358.2	264.7	306.4	321.2	360.3	422.9	371.5	286.0
Total imports of goods	1211.6	878.9	966.4	1142.2	1007.5	979.5	949.4	1329.9
Total imports of couriers	122.0	115.7	106.6	184.0	156.6	118.5	118.5	45.7
Courier imports as a % of total imports	10%	13%	11%	16%	16%	12%	12%	3%

Source: Bank of Jamaica (2022).

(general consumption tax, commonly referred to as value-added tax) on services. More specifically, the revenue collected through tax payments on goods and services exported/imported by non-resident suppliers and resident importers are captured on these returns for the respective reporting period (Tax Administration Jamaica, 2022).

This approach could be implemented in the future to estimate a proxy for digitally ordered and delivered trade, and would require the implementation of a reporting mechanism between the TAJ, the BOJ and STATIN to reconcile statistical information. A proxy for digitally ordered trade could be derived by matching the value of products indicated in the declaration to the list of ICT-enabled goods as defined by UNCTAD. However, this would require additional information about the good or service. For digitally delivered trade, STATIN would first need to derive a list of enterprises that typically sell digitally deliverable services (e.g., financial intermediaries). STATIN could impose a threshold on exports under the assumption that amounts below this threshold represent delivered services. This could make it possible to avoid covering services that are not actually digital.

The proposed approaches are limited due to a lack of product detail on the tax declaration. To derive first estimates, the tax declaration form should be adapted to retrieve additional information on whether the product was digitally ordered or digitally delivered and a clearer description of what type of product is declared. In addition, administrative data from the tax returns need to be mapped to the categories of services based on the type of enterprises filling the

declarations and as defined in the BPM6 to derive proxies for the share of services digitally delivered for exports. An initial mapping is available in Annex G.

3.2.6 BALANCE-OF-PAYMENTS ENTERPRISE SURVEY

The quarterly Enterprise Survey is the main data source to compile exports and imports of services by service item in the Jamaican balance of payments. The sample size includes resident enterprises, namely 400 of the largest enterprises in Jamaica, based on asset size and gross profits. The questionnaire is administered directly to companies via email or an online survey portal and provides information on income and expenditure of enterprises.

The questionnaire does not explicitly distinguish between digitally ordered or digitally delivered services. It is, however, possible to derive a proxy for digitally delivered services by considering the type of EBOPS 2010 services items that are digitally deliverable (Table 6.10). Within this group, particularly relevant in the Jamaican context are business process outsourcing (BPO) services, recorded under other business services. Since these services can be delivered both digitally and physically (Mode 4), combining balance of payment survey data with information from Jamaica's national statistical business register (which includes enterprises' nature of business) can provide first estimates on digitally delivered services (Mode 1) for this specific category.

TABLE 6.10: DIGITAL TRADE DIMENSIONS CAPTURED IN THE ENTERPRISE SURVEY IN JAMAICA

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digitally delivered services.
Nature (How?)	Partial	Digitally delivered services can be estimated by considering the type of EBOPS 2010 services items supplied by Mode 1 that are digitally deliverable.
Product (What?)	Partial	Services according to EBOPS 2010.
Actors (Who?)	Partial	No breakdown by type of client is available. However, exports cover all B2B, B2C and B2G transactions, while imports cover B2B and B2G.
Flow (Sales/Purchases)	Total	Both flows (exports/imports) are included.
Online channel	No	The questionnaire does not collect any information on the channel of digital trade (website, mobile application or digital intermediation platform).
Geography (Domestic/Cross-border)	Total	Only cross-border services are considered as the Enterprise Survey covers services transactions between residents and non-residents.
Industries	Total	All industries.

Source: Tax Administration Jamaica.

3.3 Challenges and way forward

Building on the exploration of different data sources outlined above, Jamaica intends to advance the measurement of digital trade. Yet, the institutions involved face challenges in methodological development and implementation of compilation practices. In the future, Jamaica sees three key areas of future statistical improvements:

- 1. To reform the statistical law:** There is a need to amend existing legislation on administrative data to improve the measurement of digitally ordered trade (especially *de minimis* trade).
- 2. To improve measures of digitally delivered trade:** Jamaica intends to start building measures of digitally delivered trade. Currently, different statistical sources, such as tax administrative data, are being explored. The BOJ also aims to measure the use of cloud technologies and to better identify the source of imported services as components of digital trade.

- 3. To improve the measurement of trade via digital intermediation platforms:** Currently, the BOJ has access to innovative data sources that can enable the measurement of digital trade via digital intermediation platforms. Most notably, data coming from two payment gateways that provide online payment solutions and international credit card processing are explored. Further research will focus on how to extract relevant information and enrich existing balance of payment statistics to derive a proxy measure of digital trade via digital intermediation platforms.

Case study 4:

Measuring digital trade in Spain: a stock-taking exercise⁶

4.1 Introduction

The Spanish Instituto Nacional de Estadística (INE) performed a stock-taking exercise in 2022 to identify existing official statistics that could be leveraged to measure digital trade in Spain. The approach builds on existing household and enterprise surveys, as well as border surveys, to reduce the burden on statistical offices to design new instruments on digital trade and avoid the potential duplication of estimates (see Table 6.11). Furthermore, this approach builds on existing data collection efforts in Spain to reach additional analytical insights related to digital trade.

At the time of writing, this approach remains exploratory and has not yet been applied to statistical production processes at INE. Nevertheless, the approach could be applied to other members of the European Union (EU), exploiting the methodologically homogeneous and comparable statistical sources across the EU.

Sections 4.2 and 4.3 of this case study demonstrate how existing sources can be used to gather insights related to digitally ordered and digitally delivered trade. Section 4.4 concludes with a summary of the strengths and weaknesses of this approach.

4.2 Data sources related to digitally ordered trade

4.2.1 SURVEY ON ICT USAGE AND E-COMMERCE IN ENTERPRISES

The annual Information and Communications Technology (ICT) usage and E-commerce in Enterprises (ICT-E) survey measures the use of ICT and electronic commerce in companies in all EU member states. In line with Eurostat recommendations, the survey captures variables with a double temporal scope: variables on ICT use refer to the first quarter of the year in which the survey is carried out, while the general information on the company, electronic commerce and ICT training refer to the previous year. The sample size depends on the companies targeted: for companies with 10 or more employees, around 15,000 companies are included, and for those with less than 10 employees, around 11,000 companies are included. The survey is collected via the internet and regular mail (Instituto Nacional de Estadística, 2022b).

The ICT-E provides information on digitally ordered trade in its e-commerce section, covering both goods and services. The definition of digitally ordered trade (e-commerce) adopted in the survey aligns with the definition in Chapter 1 of this Handbook (i.e., the international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders). The availability of a geographical breakdown (i.e., domestic, intra-EU and rest of the world) allows the survey to collect information on e-commerce imports and exports, with more detailed classifications for exports. The sales channel can also be identified, with imports broken down by online store, web application or electronic data interchange (EDI), and with exports disaggregated into web exports

TABLE 6.11: OVERVIEW OF DATA SOURCES ASSESSED IN SPAIN, 2022

Category	National source	Type of trade
Enterprise surveys	Survey on Information and Communications Technology (ICT) Usage and E-commerce in Enterprises (ICT-E)	Digitally ordered
	Statistics on Products in the Trade Sector (SPTS): Retail module	Digitally ordered
	International Trade in Services Survey (ITSS)	Digitally delivered
Household surveys	Survey on Equipment and Use of Information and Communication Technologies in Households (ICT-H)	Digitally ordered and (potentially) digitally delivered
	Household Budget Survey (HBS)	Digitally ordered
	Residents Travel Survey (RTS)	Digitally ordered
Border surveys	Tourist Expenditure Survey (EGATUR)	Digitally ordered
	Tourist Movement on Borders Survey (FRONTUR)	Digitally ordered

Source: INE (2022).

(website, application or marketplace) and EDI. Table 6.12 showcases the data retrieved from the survey for several industry sectors. All of the e-commerce data are expressed as a percentage of total exports and imports respectively (Instituto Nacional de Estadística, n.d.(a)).

A key limitation of the survey is that it does not distinguish between goods and services. Furthermore, the structure of the survey inhibits cross-panel analysis over certain variables. For instance, it is not possible to combine information on e-commerce

TABLE 6.12: DIGITALLY ORDERED TRADE ESTIMATES RETRIEVED FROM THE ICT-E SURVEY IN SPAIN

Survey on ICT usage and e-commerce in enterprises (2019-20)

	E-commerce sales (1000 of EUR)	% e-commerce sales on total sales	% e-commerce sales within Spain on total e-commerce sales	% e-commerce sales to the rest of the EU on total e-commerce sales	% e-commerce sales to the rest of the world on total e-commerce sales
Total enterprises	307,424,523	18.34	81.27	13.94	4.78
1. Total industry (NACE 10-39)	158,067,721	24.52	80.62	15.02	4.36
1.1 NACE 10-18	32,785,664	21.17	90.62	8.61	0.77
1.2 NACE 19-23	56,160,480	33.92	89.06	7.43	3.51
1.3. NACE 24-25	5,451,762	7.98	62.85	29.59	7.56
1.4 NACE 26-33	43,342,464	29.27	54.95	35.01	10.04
1.5 NACE 35-39	21,327,351	19.2	98.51	1.49	0.01
2. Total construction (NACE 41-43)	1,308,940	1.42	76.36	7.77	15.87
3. Total services (NACE 45-82, excluding NACE 56, 66, 75 and 64-66)	148,047,863	17.37	82.02	12.85	5.14
3.1 NACE 45-47	86,164,894	17.27	91.58	6.59	1.83
3.2 NACE 49-53	21,521,676	22.55	68.69	19.92	11.39
3.3. NACE 55	10,913,935	48.35	41.43	44.2	14.37
3.4. NACE 58-63	9,930,396	12.88	89.12	5.7	5.18
3.5. NACE 68	971,699	11.55	72.05	21.8	6.16
3.6. NACE 69-74	4,140,697	5.52	74.33	18.9	6.76
3.7. NACE 77-82	14,404,568	19.17	73.45	18.53	8.02
4. ICT sector (261-264, 268, 465, 582, 61, 6201, 6202, 6203, 6209, 631, 951)	14,705,099	17.41	86.21	9.55	4.24

Note: The data displayed are freely available from <https://ine.es/jaxi/Datos.htm?tpx=37743#ltabs-tabla>.

The ICT-E questionnaire is available at https://ine.es/metodologia/t09/eticce1_19.pdf. NACE is Nomenclature of Economic Activities.

Source: INE.

TABLE 6.13: DIGITAL TRADE DIMENSIONS IN THE ICT-E SURVEY IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional trade/business statistics. Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered is covered.
Product (What?)	No	Goods and services are not differentiated in the ICT-E questionnaire.
Actors (Who?)	Partial	Businesses. For sales, a breakdown by type of client (business-to-business (B2B), business to consumer (B2C) and business to government (B2G)) is provided.
Flow (Sales/Purchases)	Partial	Both e-commerce flows are included but more dimensions of digital trade are provided for sales than for purchases.
Online channel	Total	Web/app, digital intermediation platform and EDI flows are distinguished from one another.
Geography (Domestic/Cross-border)	Total	Geographic breakdown for e-commerce into domestic (Spain) and cross-border (rest of the European Union and rest of the world) transactions is provided, allowing domestic e-commerce to be differentiated from e-commerce imports, though not by country.
Industries	Partial	ICT-E covers the following sections of NACE Rev. 2: C, D, E, F, G, H, I, J, L, M(69-74), N, S(95.1). Financial corporations are excluded.

Source: INE (2022).

exports, actors per transactions, digital intermediation platforms (DIPs) and geography, as the information is not collected for all of these dimensions in the questionnaire (see Table 6.13).

4.2.2 STATISTICS ON PRODUCTS IN THE TRADE SECTOR: RETAIL MODULE

The Statistics on Products in the Trade Sector (SPTS) is a yearly structural survey carried out in Spain and targeted at companies engaged in wholesale and retail trade, including in the maintenance and repair of motor vehicles and motorcycles (section G of the Nomenclature of Economic Activities (NACE) Rev.2, referred to as the “trade” sector). The survey is integrated in the structural business statistics. The variables contained in the survey include a breakdown of turnover by product, by sales system (which includes e-commerce), by sector of activity of the customer and by other specific variables for each sub-sector. The sample size includes approximately 60,500 companies and is collected with an online questionnaire (Instituto Nacional de Estadística, 2021).

The retail trade module of the SPTS survey includes a breakdown of exports in goods, providing information on total e-commerce for enterprises classified in NACE G47 (Table 6.14). Although the cross-border dimension is not covered by the survey, total turnover

from e-commerce is broken down by broad product category and by type of customer or actor, thus distinguishing B2B from B2C. Table 6.15 provides an example of the data on e-commerce exports according to the NACE G47 divisions in retail trade. It is important to note that it is not possible to extract cross-collected information on e-commerce sales by actor, sale channel, geographic breakdown or product. In addition, the e-commerce sales estimated from the retail trade module of STPS for the G47 division of NACE should be checked against e-commerce sales obtained by ICT-E for G47 to avoid double counting.

4.2.3 SURVEY ON EQUIPMENT AND USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN HOUSEHOLDS

The Survey on Equipment and Use of Information and Communication Technologies in Households (ICT-H) is an annual household survey that measures the development and evolution of the information society. Dimensions include measurements of ICT equipment in households and of internet usage in the Spanish population. The survey has been carried out on an annual basis since 2002. The ICT-H is financed by Eurostat and, since 2006, has followed its methodological recommendations, which allow for comparisons between Spain and other EU countries. The sample size includes 2,500 census sections,

TABLE 6.14: DIGITAL TRADE DIMENSIONS IN THE RETAIL MODE OF SPTS IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional trade/business statistics. Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered goods are covered.
Product (What?)	Partial	Only goods are captured as SPTS is about retailers (G47).
Actors (Who?)	Partial	Sales carried out by corporations is included as SPTS is part of the structural business survey. For sales, a breakdown by type of client (B2B and B2C) could be estimated from the type of customer information collected in the questionnaire.
Channel	Partial	Distinction between e-commerce and other off-line channels is included. No distinction is made between web/app, EDI or digital intermediation platform (DIP).
Flow (Sales/Purchases)	Partial	Only e-commerce sales are available.
Geographical (Domestic/Cross-border)	No	Geographical breakdown is not directly observable in SPTS, but it could be estimated by taking the geographical distribution of the structural business survey for the trade sector (i.e., for Spain, rest of the European Union and the rest of the world)
Industries	Partial	SPTS retail module only covers G471-G479 of NACE Rev.2.

Source: INE (2022).

corresponding to around 25,000 dwellings (Instituto Nacional De Estadística, 2010).

The ICT-H provides information on the behaviour of households with regard to digitally ordered trade (e-commerce), as defined in this Handbook (see Table 6.16). Module VII of the survey, concerning e-commerce, provides information on e-commerce purchases (imports) only, and covers transactions by households and by natural persons who are resident in Spain. It includes a distinction between goods and services, with a product breakdown compatible with the EU classification of products by activity (CPA) (see Annex H). Although this survey is mainly used to produce estimates of digitally ordered trade, in the case of services, it is possible to identify those that could potentially be digitally delivered. Furthermore, a geographical breakdown allows cross-border e-commerce (imports) to be distinguished from domestic e-commerce (domestic purchases), as well as allowing for a breakdown by e-commerce actors (i.e., business-to-consumer (B2C) and consumer-to-consumer (C2C)).

A key limitation of this survey is that almost all the e-commerce data are qualitative. Certain qualitative variables, such as the time horizon of purchases by e-commerce, the number of purchases within the time frame, and the value range for the goods and services purchased or ordered via the internet within the time

frame, can be quantified using information from a question on the total value of e-commerce in the last three months (see Annex H). Furthermore, the data do not contain a breakdown according to the channel of e-commerce (website, mobile application, or digital intermediation platform (DIP)).

4.2.4 HOUSEHOLD BUDGET SURVEY

The Household Budget Survey (HBS) provides information on the nature and destination of consumption expenses, as well as on a range of features related to household living conditions. The main aim of the survey is to produce the measures used in the Consumer Price Index. The variables include total expenditure and average expenditure per household, per person and per consumption unit, according to different levels of disaggregation and different socio-demographic variables. The survey is conducted every five years, according to Eurostat methodological recommendations. The sample size is approximately 24,000 households per year (Instituto Nacional de Estadística, n.d.(b)).

The HBS provides information on e-commerce purchases for many consumption products according to the ECOICOP (European Classification of Individual Consumption by Purpose) (see Table 6.17). Goods and services can be distinguished, which means

TABLE 6.15: E-COMMERCE INFORMATION IN RETAIL TRADE – STPS SURVEY IN SPAIN**Retail trade except motor vehicles and motorcycles (47th division of NACE) (in percentages)**

	Total	Retail trade in non-specialized stores (471 NACE)	Retail trade of food, beverages and tobacco in specialized stores (472 NACE)	Retail trade of automotive fuel in specialized stores (473 NACE)	Retail trade of ICT equipment in specialized stores (475 NACE)	Retail trade of other household goods in specialized stores (475 NACE)	Retail trade of cultural and recreational goods in specialized stores (476 NACE)	Retail trade of other goods in specialized stores (477 NACE)	Retail trade in sale stands and in street markets (478 NACE)	Other retail trade (479 NACE)
Total	100	100	100	100	100	100	100	100	100	100
Traditional	63.5	39.1	90	66.2	90.4	82	90.3	89.8	23.9	7.2
Self service	29.5	59.7	5.1	27.1	0.2	13.7	3.4	5.6	4.3	1.4
E-commerce	3.5	0.8	0.4	0	6.4	2.2	4.8	3.1	1.2	56
Mail, catalogue, or telesales	0.3	0.1	0.2	0	0.3	0.2	0.5	0.2	0.2	5.8
Home delivery	1.5	0.2	1.4	4.5	1.3	1.6	0.7	0.5	4.4	15.7
Vending machines	0.8	0	2.6	1.9	0	0	0.1	0	0.3	9.7
Hawkers	0.5	0	0.2	0	0	0.1	0	0.1	65	1.3
Other types of retail	0.4	0	0.3	0.2	1.4	0.2	0.8	0.8	0.6	2.8

Note: The data displayed in gross figures are freely available from <https://ine.es/jaxi/Datos.htm?tpx=48756>. The questionnaire is available at https://ine.es/metodologia/t09/cues_epsc_cmenor.pdf.

Source: INE.

TABLE 6.16: DIGITAL TRADE DIMENSIONS IN THE ICT-H SURVEY IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional household statistics (in ICT-H, most variables are qualitative but there is only one that is quantitative in terms of value ranges for e-commerce purchases (question 13)). Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered goods and services are covered. Digitally delivered services are indirectly covered by the type of services purchased, as some of them can be identified as digitally deliverable services.
Product (What?)	Total	Goods and services. Most of them can be very easily classified according to a standard product classification (Extended Balance of Payments Services Classification (EBOPS) for services)
Actors (Who?)	Partial	E-commerce carried out by households/natural persons is included in ICT-H. A breakdown by type of supplier (B2C and C2C, or “sharing economy”) is provided for some services.
Flow (Sales/Purchases)	Partial	Only purchases.
Online channel	Partial	No explicit distinction among web/app or DIP, but C2C transactions are clearly traded via DIP.
Geographical (Domestic/Cross-border)	Total	Geographical breakdown for e-commerce into domestic (Spain) and cross-border (rest of the European Union and rest of the world) transactions is provided, allowing domestic e-commerce to be differentiated from e-commerce imports, though not by country.
Industries	No	Not applicable, as ICT-H is a household survey.

Source: INE (2022). The questionnaire is available at https://ine.es/metodologia/t25/t25p450_tich_cues_20.pdf.

TABLE 6.17: DIGITAL TRADE DIMENSIONS IN THE HBS IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional household statistics. Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered goods and services are covered because HBS asks for the ECOICOP items which are purchased by e-commerce. Digitally delivered services are covered by the type of services purchased, as some of them are digitally deliverable services.
Product (What?)	Total	Goods and services. ECOICOP codes can be easily classified according to other standard product classifications (CPA or EBOPS 2010 for services).
Actors (Who?)	Partial	E-commerce carried out by households/natural persons is included, as HBS is a household survey. A breakdown by type of supplier (B2C and C2C or "sharing economy") is not provided.
Flow (Sales/Purchases)	Partial	Only purchases are available.
Online channel	Partial	No explicit distinction between web/app and DIP.
Geography (Domestic/Cross-border)	No	The geographic origin of e-commerce purchases is not provided.
Industries	No	Not applicable, as HBS is a household survey.

Source: INE (2022). The questionnaire is available at https://ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736176806&menu=metodologia&idp=1254735976608.

that ECOICOP items can be converted into other standard product classifications (e.g., Cooperative Patent Classification (CPC), CPA, Extended Balance of Payments Services Classification (EBOPS) 2010). As for the ICT-H survey, it is possible to identify digitally deliverable services. However, the lack of geographical breakdown precludes the possibility of distinguishing cross-border e-commerce from domestic e-commerce. Furthermore, the information does not allow for a breakdown by the channel of e-commerce nor by the actors involved.

4.2.5 RESIDENTS TRAVEL SURVEY

The Residents Travel Survey (RTS) is a survey with the main objective of providing monthly, quarterly and annual estimates of the number of trips made by Spanish residents and the main characteristics of those trips (destination, duration, purpose, accommodation, means of transport, expenditure, socio-demographic characteristics of the travellers, etc.). The RTS, together with credit card information from residents travelling abroad, plays an important role in estimating the value of travel debits (imports) in the Spanish balance of payments.

The RTS collects dimensions of digital trade linked to the reservation channel used by the traveller to book transport, main accommodation, tour packages (if any) and other digitally ordered travel-related goods

and services. As a household survey, the RTS can distinguish between domestic and cross-border tourism services for residents, but as it only covers imports, it provides only partial coverage of digitally ordered trade (see Table 6.18).

4.2.6 TOURIST EXPENDITURE SURVEY AND THE TOURIST MOVEMENT ON BORDERS SURVEY

The statistics of Tourist Movements at Borders (FRONTUR) and the Tourism Expenditure Survey (EGATUR) were integrated to provide statistics on tourist movements at the borders of Spain and tourist expenditure. The objective of this joint survey is to measure the number of non resident visitors arriving in Spain each month, distinguishing the various access routes and the various trips undertaken, as well as expenditure. The survey records non-residents in Spain who enter or leave the country, having made an overnight stay or not, as well as non-residents in Spain who pass through the country in transit. EGATUR plays an important role in the estimation of the travel credits in the Spanish balance of payments. FRONTUR and EGATUR share the same questionnaire (Instituto Nacional de Estadística, 2022).

The two surveys offer insights into digitally ordered trade related to the channel through which accommodation and travel are booked, only covering non-resident

TABLE 6.18: DIGITAL TRADE DIMENSIONS OF THE RTS

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional household statistics (in the RTS, the most important quantitative variable is tourism expenditure broken down by certain components such as average expenditure per trip, average expenditure person etc.). Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered goods and services related to specific expenditure items (accommodation, transport and package tours) which are reserved via the internet (websites or apps).
Product (What?)	Partial	Goods and services related to tourism are included. They can be classified according to the presentation of travel by product in EBOPS 2010.
Actors (Who?)	Partial	Resident households/natural persons are included, as the RTS is a household survey. A breakdown by type of supplier (B2C and C2C or “sharing economy”) might be estimated only for accommodation services.
Flow (Sales/Purchases)	Partial	Residents’ purchases are included, under the assumption that reservations via the internet become real purchases.
Online channel	Partial	There is an explicit distinction between web/app or DIP only in the case of accommodation services.
Geographic (Domestic/Cross-border)	Total	Covers domestic and cross-border tourism services for residents. Geographic origin of the web/app or DIP used for reservation is not explicitly collected in RTS. Only the final country of destination (Spain/foreign country) of the resident traveller is known.
Industries	No	Not applicable, as the RTS is a household survey.

Source: INE (2022). The questionnaire is available at https://ine.es/en/daco/daco42/etr/etr_cuestionario_en.pdf.

expenditure in Spain. While the delivery of services is undertaken by people at the destination (mostly supplied via Mode 2), the expenditure flows can be considered to be digitally ordered trade. It is important to note that as FRONTUR/EGATUR is only focused on inbound tourism, a limited number of tourism products (mostly services) are considered (see Table 6.19).

4.3 Data sources related to digitally delivered trade

The International Trade in Services Survey is a quarterly business survey that captures exports and imports of services by service item, partner country, modes of supply, main economic activity and number of employees. The sample includes 9,500 resident enterprises. The questionnaire is directly addressed to companies via mail, fax or e-mail or by means of the IRIA software application (Instituto Nacional de Estadística, 2015).

The questionnaire collects information on digitally deliverable services (see Chapter 4) that are supplied via Mode 1 (see Table 6.20). For all services which are digitally deliverable, Mode 1 supply constitutes a reasonable proxy for digital delivery. Furthermore, using the economic activity variable and specific industry

classifications (NACE Rev.2 and the International Standard Industrial Classification (ISIC) Rev.4), a refined analysis can identify the active traders in ICT sectors and in high- and medium-high-technology industries that produce knowledge-intensive services according to the NACE Rev.2. Table 6.21 gives an example of the shares of services exports and imports available supplied by Mode 1 in the survey. However, the questionnaire does not capture digital ordering.

4.4 Conclusions

Overall, this stock-taking exercise demonstrated that the Spanish statistical system provides a range of data sources that can be used to generate meaningful estimates of digital trade. Several different data sources can be used to identify digitally ordered trade, while estimates of digitally delivered trade can be largely derived from the existing international trade in services survey.

In terms of digitally ordered trade, most of the sources can help to measure total e-commerce (domestic and cross-border). In some cases, the cross-border dimension is readily available, while in others it needs to be estimated. Many sources can provide information broken down by product (goods/services) and flow (exports/imports). However, the ICT-E only provides

TABLE 6.19: DIGITAL TRADE DIMENSIONS IN EGATUR/Frontur IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional household/border surveys (in FRONTUR/EGATUR, the most important quantitative variable is tourism expenditure broken down by some components). Non-monetary digital flows are excluded.
Nature (How?)	Partial	Digitally ordered goods and services are covered because FRONTUR/EGATUR asks for those expenditure items (accommodation, transport and activities) that were reserved via internet.
Product (What?)	Partial	Although goods and services related to tourism are collected, the question on those reserved via the internet refers only to services. They can be classified according to the presentation of travel by product in EBOPS 2010.
Actors (Who?)	Partial	Non-resident natural persons, as FRONTUR/EGATUR is a border survey on tourism addressed to those visitors leaving Spain. A breakdown by type of service supplier (B2C, C2C) is not available.
Flow (Sales/Purchases)	Partial	Non-residents' purchase of tourist goods at destination and tourist services at origin and destination (Spain), corresponding to balance of payments travel credits. It is about the expenditure items which are searched, reserved (ordered) and paid via internet.
Online channel	Partial	Only internet (no distinction between web/app and DIP).
Geography (Domestic/Cross-border)	Partial	FRONTUR/EGATUR aims for an estimation of inbound tourism, so only cross-border tourism is considered.
Industries	No	Not applicable, as FRONTUR/EGATUR is a border survey.

Source: INE (2022). The questionnaire is available at https://ine.es/en/daco/daco42/frontur/frontur_egatur_cuestionario_en.pdf.

TABLE 6.20: DIGITAL TRADE DIMENSION IN THE INTERNATIONAL TRADE IN SERVICES SURVEY IN SPAIN

Digital trade dimensions	Coverage	Notes
Scope (Where?)	Partial	Digital trade included in conventional trade/business statistics. Non-monetary digital flows are excluded.
Nature (How?)	Partial	An upper bound for digitally delivered services can be estimated by considering the type of EBOPS 2010 services items supplied by Mode 1 that are digitally deliverable. No information on digitally delivered services which are also digitally ordered.
Product (What?)	Partial	Services according to EBOPS 2010.
Actors (Who?)	Partial	Mainly enterprises are included in this business survey, even though other juridical persons, such as NPISH (i.e., non-profit institutions serving households) or public bodies, are included whether or not they trade cross-border services. No breakdown by type of client is available. However, exports cover all B2B, B2C and B2G transactions. Imports only cover B2B and B2G transactions. B2C imports (where consumers are the importers) or C2C (the sharing economy) are not covered, as households and natural persons are outside of the scope of the survey.
Flow (Sales/Purchases)	Total	Both flows (exports/imports) are included.
Online channel	No	No specific distinction. However, the EBOPS 2010 item trade-related services can include intermediation services (in the form of commissions/fees) charged by DIPs.
Geography (Domestic/Cross-border)	Partial	Only cross-border services are considered, as the survey covers services transactions between residents and non-residents.
Industries	Total	Covers all industries.

Source: INE (2022). The questionnaire is available at https://ine.es/en/metodologia/t37/t373019801_cues_en.pdf.

TABLE 6.21: SHARE OF EXPORTS/IMPORTS OF SERVICES SUPPLIED BY MODE 1 AND MAIN EBOPS 2010 ITEMS

International Trade in Services Survey 2014-19 (in percentages)		
	Exports	Imports
Total	85.3	94.5
1. Manufacturing services on physical inputs owned by others	5.1	14.4
2. Maintenance and repairs	1.8	6.3
3. Transport	86.0	96.6
4. Construction	35.0	36.8
5. Insurance services	95.7	95.5
6. Financial services	99.5	99.8
7. Charges for the use of intellectual property	99.6	98.5
8. Telecommunications, computer and information services	98.1	96.9
9. Other business services	91.2	97.9
9.1 Research and development	99.4	99.2
9.2. Professional and management consultancy	94.0	98.4
9.3. Technical, trade-related and other business services	88.9	97.5
10. Personal, cultural and recreational services	92.3	74.9
11. Government goods and services n.i.e.	90.8	28.9

Note: respondents of this survey identified Mode 1 supply for a number of service categories which are not considered as relevant for Mode 1 in MSITS 2010 (e.g., construction). "n.i.e." refers to "not included elsewhere".

Source: INE.

aggregate products, and all household surveys as well as the border survey only record the import side.

Some statistical sources allow for insights on DIP-enabled trade, although only for certain flows. For instance, the ICT-E survey only allows for the disaggregation of platform-enabled digital trade for exports.

While the mix of surveys allows for a good coverage of actors across corporations, households and NPISHs, data on digital trade transactions by the government are not yet accessible, with the exception of the transactions covered in the EBOPS 2010 item "Government goods and services n.i.e."

A clear advantage of this approach is that it reduces the burden on national statistical institutes to design new instruments and engage in additional data collection. However, those surveys were originally designed for purposes other than measuring digital trade. For this reason, some limitations naturally occur and are discussed below.

Most of the surveys analysed do vary in their coverage of digital trade. While enterprise surveys mostly capture goods, household and border surveys are better placed to record services. In some cases, as with the survey on ICT usage and e-commerce in enterprises, the difficulty in distinguishing explicitly between goods and services remains. For those sources that cover services, it is still a challenge to capture both the delivery and the ordering dimension.

There is an imbalance in the possibilities of disaggregation across surveys, which may limit the level of granularity that can be achieved across all sources analysed. Some surveys do not include a geographical breakdown into domestic and cross-border trade, which makes it difficult to link it directly to the reporting template. Developing those survey questionnaires further is key to including these breakdowns or deriving methods to estimate the breakdowns after the data have been collected.

Furthermore, the surveys presented here do not provide enough information on transactions facilitated by DIPs.

Although some household and enterprise surveys have started to include DIPs among the ordering channels, this information is not comprehensive and, importantly, it is not possible at this stage to derive estimates of the intermediation services provided by DIPs. Additional, targeted questions would be needed to quantify this important aspect of digital trade.

A final point concerns the need for validation and reconciliation of sources to ensure robustness and avoid duplication of estimates.

For instance, e-commerce exports and imports to natural persons (B2C) derived from household and border surveys should be analysed and compared to estimates based on alternative data sources. Similarly, e-commerce purchases (imports) of enterprises should be checked against sales (exports) to obtain coherence between supply and demand. A decision about which data source is better suited to provide reliable estimates of digital trade should be taken.

Case study 5:

Measuring digitally ordered merchandise trade in Türkiye⁷

5.1 Introduction

In Türkiye, official international trade in goods statistics on a cross-border basis, also referred to as merchandise trade statistics, are produced in cooperation between the Turkish Statistical Institute (TurkStat) and the Ministry of Trade. They cover both the general and the special trade system and are collected by the Ministry of Trade using administrative records. However, at present, official statistics on trade in goods do not specify the share of digitally ordered trade.

Reacting to the demand for timely statistics on digital trade, TurkStat, together with the Ministry of Trade, carried out a pilot study to produce estimates of digitally ordered trade – as defined in this Handbook (see Chapter 1) – focusing on merchandise trade. The collaboration between TurkStat and the Ministry of Trade was set up to facilitate data compilation, analysis and dissemination processes on digitally ordered trade. The methodology applied makes use of administrative records – specifically, customs data, electronic customs declarations and postal data – and applies quality and robustness checks at the country/product levels to derive reliable estimates. At the time of writing, the approach is still being tested, and official estimates at country, sector and product-level are planned for release by the end of 2023.

This case study gives an overview of the key steps taken in measuring digitally ordered trade. Section 5.2 introduces the data sources used in the data collection and compilation process. Section 5.3 presents first preliminary results and Section 5.4 discusses challenges and next steps.

5.2 Data sources

As a first step, TurkStat examined available sources following the recommendations of the UNCTAD *Manual for the Production of Statistics on the Digital Economy* (UNCTAD, 2020) and of the previous version of this Handbook (OECD, WTO, IMF, 2019). Three different administrative sources were identified as suitable data sources to measure digitally ordered trade in goods.

5.2.1 CUSTOMS DECLARATIONS (DETAILED DECLARATIONS)

Customs records are the main data source from which to derive digitally ordered trade estimates for goods, as they record all kinds of cross-border trade in goods. The Ministry of Trade is responsible for collecting these records. Up until now, digitally ordered transactions have been included in customs declarations, but the share of digitally ordered goods could not be separated from the total goods trade declared.

For this reason, the Ministry of Trade has improved the customs data collection system and extended the questions asked in required custom declaration forms. More specifically, the question “Is this import/export electronic trade (e-trade)?” was added to the declaration form in 2019 and revised in December 2021 to identify digitally ordered transactions. Within the scope of the pilot study, the responses to this question were analysed and further feedback from the businesses completing the declarations was requested in the form of interviews. The Ministry of Trade, in cooperation with TurkStat, also prepared a guidance note and a training video in Turkish to help customs counsellors in the companies responsible for completing the customs declarations (the video can be accessed at <https://tagm.ticaret.gov.tr/duyurular/sinir-otesi-elektronik-ticaret-e-ticaret-rehberi-ve-tanitim-videosu-yayinlandi>).

As part of the pilot study, the Ministry of Trade streamlined the collection process of customs data. Since the beginning of 2022, data on digitally ordered trade identified via the customs declarations were directly provided to TurkStat. Subsequently, TurkStat and the Ministry of Trade jointly engaged in data analysis and evaluation processes, using data mining methods to ensure data quality throughout the collection and compilation process.

Quality assurance processes were introduced to ensure that the data derived from the customs data align with the standards of official statistics. Initial clustering analysis and outlier detection approaches helped to verify the data and ensure that declarations were completed accurately. Variables such as customs regimes and products were used to control the accuracy of data declared as having been derived from digital orders. Further manual checks at product and firm level were used to verify submitted declarations. Most importantly, the questionnaire design includes control questions to designate whether the product is digitally ordered or not. If the answers were missing or incorrect, the company that filled in the declaration was contacted to verify the declaration.

Over time, it was noticed that there are product-specific patterns in the inaccurate declarations. For example, aerospace products or live animals were rarely ordered digitally and had to be manually verified to ensure that these products are not wrongly

specified as digital trade. Similarly, the statisticians observed that custom declarations of business-to-consumer (B2C) products which have a high value are usually not traded digitally. These checks help to monitor the share of correctly completed declarations and to optimize the data collection and compilation processes, as well as the verification processes.

5.2.2 ELECTRONIC TRADE CUSTOMS DECLARATIONS

A second source used to measure digitally ordered trade is electronic trade customs declarations (ETCDs). ETCDs have been used since 2012 and are especially useful to identify digital trade transactions at the micro level. They are issued electronically by authorized express airline cargo companies and ensure that all transactions are carried out quickly. Transactions that are eligible to be filed via electronic declarations have an upper limit of 15,000 euros/300 kilogrammes for exports and 150 euros/30 kilogrammes for imports.

Since the beginning of 2021, data obtained via ETCDs are available and include information on the following aspects: country of origin (for imports), destination country (for exports), value, quantity and product (up to Harmonized System (HS) six-digit codes) breakdowns. Using new legal and IT infrastructure, the Ministry of Trade can provide the data collected via ETCDs directly to Turkstat. In order to detect erroneous records, outlier detection methods were added in the data processing system.

5.2.3 DATA FROM POSTAL SERVICES

Finally, the processes of electronic trade custom declarations could be further improved to capture digitally ordered trade from postal services. The General Directorate of Post and Telegraph Organization (PTT) is responsible for completing the respective ETCD for exports. On the import side, declarations do not follow the ETCD standards yet, as they are completed by authorities of partner countries. Currently, the PTT is exploring ways of harmonizing the process of completing declarations coming from different countries. For this reason, data compilation is still pending at the time of writing.

5.3 Preliminary results

As the approach is currently being tested, this case study only shows preliminary aggregate results for a small sample of digitally ordered statistics obtained via ETCDs, the second channel used by the Ministry of Trade to measure digitally ordered trade. At this stage, TurkStat plans to publish complete statistics on digitally ordered trade by the end of 2023.

According to preliminary results obtained from ETCDs:

- The monthly average value of exports is US\$ 110 million.
- The monthly average number of export transactions is 1.4 million.
- The monthly average value of imports is US\$ 16 million.
- The monthly average number of import transactions is 0.3 million.
- The share of total ETCD exports (by value) in total exports is 0.58 per cent.
- The share of total number of ETCD export transactions in total exports transactions is 41 per cent.
- The share of total ETCD imports (by value) in total imports is 0.07 per cent.
- The share of total number of ETCD imports transactions in total imports transactions is 21.3 per cent.
- The average transaction value for exports is US\$ 78.
- The average transaction value for imports is US\$ 55.

5.4 Conclusions, challenges and future work

Although the approach is still under development, TurkStat has been successful so far in leveraging customs and postal data to separately identify digitally ordered transactions in its merchandise trade statistics.

However, some limitations were identified in the analysis of the three data sources described.

First, transactions performed by enterprises via EDI cannot be detected. A new question currently being tested in the customs declaration system may help in the future to identify digitally ordered trade separately via EDI.

Secondly, transactions conducted via DIPs cannot be identified. Moreover, B2B, B2C and C2C transactions cannot be distinguished separately, and in some cases product codes are not declared at a sufficiently detailed level.

At the same time, building the infrastructure and workflow to compile digital trade statistics provided TurkStat with valuable lessons which could be useful to other compilers. It is key to develop a clear understanding of the definition of cross-border digital trade statistics and to determine its scope using different practical scenarios and examples. To ensure data quality, it is necessary to make sure that the people who fill out the custom declarations have sufficient knowledge about digital trade (specifically “digital ordering”). The Ministry of Trade and TurkStat have provided extensive material to raise awareness

and educate custom counsellors, including a training video and a specific guide. Extensive quality assurance processes are indispensable to verify the submitted custom declarations.

Moving forward, TurkStat plans the following future steps:

1. To increase the coverage of all data sources.
2. To implement measures to ensure that customs declarations are completed correctly. The Ministry of Trade plans to conduct study visits to customs officials that file custom declarations registering a high value of digitally ordered goods to harmonize the data collection process. Additional training is also planned for the officials responsible for completing the declarations. Moreover, measures are being considered to penalize companies which consistently complete declarations wrongly.
3. To analyse the data after its compilation across all three sources (i.e., customs records, ETCDs and data from postal services) and obtain initial results. Currently, the objective is to generate a coherent time series and deploy quality assurance checks.
4. To carry out the necessary research to enable further breakdowns of B2B, B2C and C2C transactions.
5. To carry out studies of how to include digital intermediation platforms in the compilation of trade data.

Endnotes

- 1 This case study was prepared by Xiaoyuan Zhai, Qian Li, Zheng Fang and Weiguo Qi from the General Administration of China Customs.
- 2 This case study was prepared by Xuyang Wang, Yanhui Jing and Yizhen Xie from China's Ministry of Commerce (MOFCOM).
- 3 The Thousand-Hundred-Ten project is a government project with the objective of cultivating 1,000 large and medium-sized enterprises with international qualifications, encouraging 100 multinational corporations to transfer service outsourcing business to China, and building 10 cities with international competitiveness in service outsourcing.
- 4 ITO refers to the delivery of information technology services. BPO refers to auxiliary design, management and execution services outsourcing, such as call centres or supply chain management services. KPO refers to auxiliary research and design, scientific and technological innovation outsourcing, such as pharmaceutical research and development (R&D) outsourcing or industrial design.
- 5 This case study was prepared by Esmond McLean (Bank of Jamaica), Hank Williams and Diedre Campbell (Tax Administration Jamaica [TAJ]).
- 6 This case study was prepared by José Antonio Isanta Foncuberta from the National Statistics Institute of Spain (INE).
- 7 This case study was prepared by Çağlayan Aslan (Türkiye Ministry of Trade); Aylin Kolbası, Eyüp Mehmet Dinç and Esengül Tanrikulu (Turkish Statistical Institute (TurkStat)).