OECD Handbook on Digital Supply and Use Tables

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Measuring the Digital Economy

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- Introduction
- The Digital SUT framework
- Country examples
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Introduction

Do existing frameworks capture digitalization?

- Digitalisation: transformation of economic activity and daily life through the application of digital technology
- It has fundamentally altered the production and consumption of goods and services worldwide over the past two decades
- Digital transformation is largely hidden in core economic accounts
- Challenges our conceptual frameworks and measurement approaches:
  - Production chains between producer and consumer are changing
  - Statistical recording of the production and use of data, including the 'participative' production of consumers
  - The "free / zero cost" services provided by private companies, how and what to measure?

Process of developing handbook

- Developed by the OECD Informal Advisory Group (IAG) on Measuring GDP in a Digitalised Economy
    - The IAG was created in 2017 to advance the research agenda on digitalisation
- The work has evolved from a rough abstract at IARIW conference and includes a guidance note as part of the SNA update process
- The OECD Handbook on Compiling Digital SUTs is now published
- It is consistent with the Handbook on Measuring Digital Trade produced by IMF, OECD, UNCTAD and WTO
- The work remains a high priority for users
- Several countries have produced estimates consistent with framework

Approach towards measuring digital economy

- In the modern economy, almost every transaction contains an element of digitalisation in its production
- No single definition of the Digital Economy within the Digital SUT framework
- The Digital Economy is considered as a multidimensional phenomenon
- The framework allow to generate a range of outputs providing information on multiple perspectives, supporting various policy needs
- Flexibility: NSO's can compile the components for which they have data for.

The Digital SUTs Framework

Structure of the handbook

Executive summary

Section 1 – Overview

Section 2 – The Framework for Digital SUTs

Section 3 – The nature of the transaction (the “how”)

Section 4 – Digital products (the “what”)

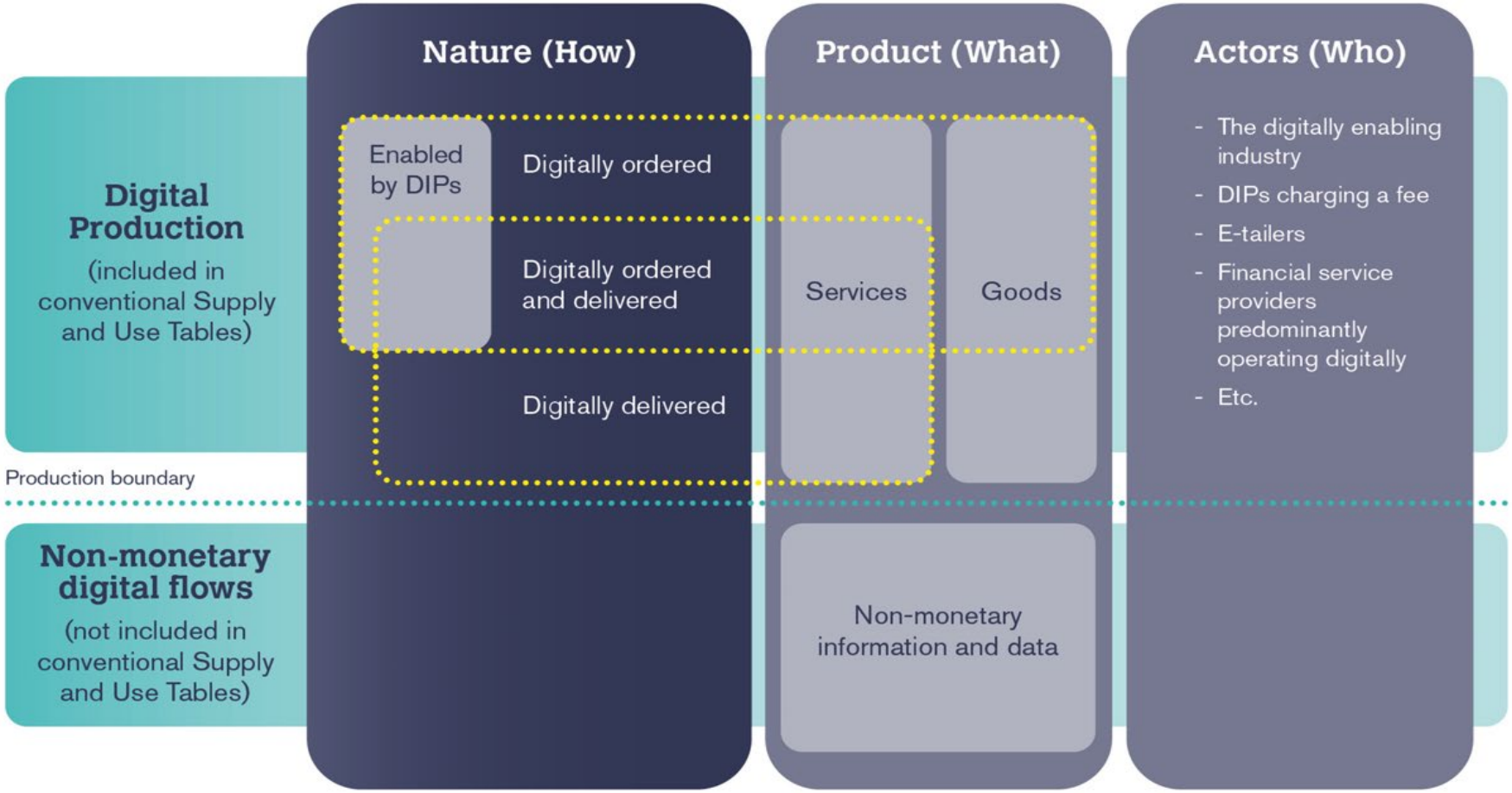
Section 5 – Digital industries (the “who”)

Section 6 – Compiling outputs using templates

References

Various country examples included throughout

Set-up of the framework



1. DIPs = Digital Intermediation Platforms.
2. There are currently seven new digital industries; the last column shows examples. The full list are: The digitally enabling industry, DIPs charging a fee, Data- and advertising-driven digital platforms, Producers dependent on DIPs, E-tailers, Financial service providers predominantly operating digitally, and Other producers only operating digitally .

Source: IMF, OECD, UNCTAD, WTO (2023) adapted.

Dimension 1:
Nature of transaction

Dimension 1: Nature of transactions ('how')

Transactions are split into the following categories:

- Digitally ordered: "*The sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders*" (excludes orders placed by phone, fax, or email)
  - Digitally ordered directly from the counterparty
  - Digitally ordered via a digital intermediary platform
    - Digitally ordered via a resident digital intermediary platform
    - Digitally ordered via a non-resident digital intermediary platform
  - Not digitally ordered
- Digitally delivered: "*Transactions that are delivered remotely over computer networks*"
  - Of which, digitally delivered (please note that several countries focus on 'digitally deliverable' because of the practical complexities in measuring 'digitally delivered')

Nature of transaction - Template

	Column	A	B	C	D	E	F
Row	Transaction perspective **Supply Table**	Nominal values					
		Total Output	Of which, digitally delivered	Imports	Of which, digitally delivered	Total Supply	Of which, digitally delivered
1	Total Products						
2	Total Products - Digitally ordered						
3	Direct from a counterparty						
4	Via a digital intermediation platform						
5	Via a resident digital intermediation platform						
6	Via a non-resident digital intermediation platform						
7	Not Digitally ordered						

Source: Annex Figure 6.A.1. OECD Handbook on Digital SUTs (OECD, 2023)

Dimension 2: Products

Dimension 2: Products ('what')

In conventional SUTs digital products are hidden in many product rows that include both digital and non-digital products

- In Digital SUTs, digital products are aggregated and shown separately:
  - Information and Communication Technology (ICT) goods
  - Digital services
- In addition, two products of considerable policy interest are shown separately:
  - Cloud computing services (CCS)
  - Digital intermediation services (DIS)

They also include product rows to incorporate products currently outside of the SNA production boundary:

1. Data (beyond 2008 SNA, but included in 2025 SNA)
2. Digital services (beyond 2008 SNA) provided by enterprises/communities

Products - ICT goods

- Based on the ICT product classification found in the Central Product Classification (CPC) Version 2.1, Part 5: Alternative structures (UNSD, 2015)
- Goods and services included in this alternative ICT product classification (and thus in rows of the Digital SUTs) consist of products that "*must primarily be intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display*"
- The classification includes both goods and services, split into ICT goods and digital services
- Information and Communication Technology (ICT) goods consist of:
  - Computers and peripheral equipment
  - Communication equipment
  - Consumer electronic equipment
  - Miscellaneous ICT components and goods
- Classical production of equipment facilitating the digital transformation

Products - Digital services

- Digital services include the following broad categories:
  - Manufacturing services for ICT equipment
  - Business and productivity software and licensing services
  - Information technology consultancy and services
  - Telecommunications services
  - Leasing or rental services for ICT equipment
  - Other ICT services
- Separately distinguished:
  - Cloud computing services
  - Digital intermediation services

Snapshot of ICT as defined in the CPC

CPC Ver.2.1 subclass	Product description (CPC subclass title)
	Computers and peripheral equipment
45142	Point-of-sale terminals, ATMs and similar machines
A45220	Portable automatic data processing machines weighing not more than 10 kg, such as laptops, notebooks and sub-notebooks
45230	Automatic data processing machines, comprising in the same housing at least a central processing unit and an input and output unit, whether or not combined
45240	Automatic data processing machines presented in the form of systems
45250	Other automatic data processing machines whether or not containing in the same housing one or two of the following types of units: storage units, input units, output units
45261	Input peripherals (keyboard, joystick, mouse etc.)
45262	Scanners (except combination of printer, scanner, copier and/or fax)
45263	Inkjet printers used with data processing machines
45264	Laser printers used with data processing machines
45265	Other printers used with data processing machines
45266	Units performing two or more of the following functions: printing, scanning, copying, faxing
45269	Other input or output peripheral devices

Source: Annex 4.A.1 OECD Handbook on Digital SUTs (OECD, 2023)

Products - Cloud computing

- Definition: Cloud computing services (CCS) consist of computing, data storage, software, and related IT services accessed remotely over a network, supplied on demand and with measured resource usage that allows charging on a pay-per-use basis
- ISIC Rev 5: new group 631 “Computing infrastructure, data processing, hosting and related activities”
- CPC 3.0: No new classes in CPC, part of 8315 Hosting and information technology (IT) infrastructure provisioning services -> explanatory notes will be updated
- CCS signals a fundamental shift from the traditional model of ICT provision
- When ICT investment continues to be seen as indicator for digital intensity, some industries appear to be de-digitalizing
- Creates measurement challenges as CCS suppliers may be located outside the country

Products - Template

Row	Column	A	B	C
	Product perspective **Supply Table**	Nominal values		
		Total Output	Imports	Total Supply
1	Total Products			
2	Total Digital Products			
3	ICT goods			
4	Digital Services (except CCS and DIS)			
5	Cloud Computing Services (CCS)			
6	Digital Intermediation Services (DIS)			
7	Total Non - Digital Prodcuts			

Source: Annex Figure 6.A.7. OECD Handbook on Digital SUTs (OECD, 2023)

Dimension 3: Industries

Dimension 3: Industries ('who')

Additional columns to represent the new digital industries:

1. The digitally enabling industry (e.g., Samsung)
2. DIPs charging a fee (e.g., Amazon; Uber, Lyft)
3. Data- and advertising-driven digital platforms (e.g., Google, Instagram)
4. Producers dependent on DIPs
5. E-tailers
6. Financial service providers predominantly operating digitally
7. Other producers only operating digitally (e.g., Netflix, YouTube)

Industries – 1. Digitally enabling industry

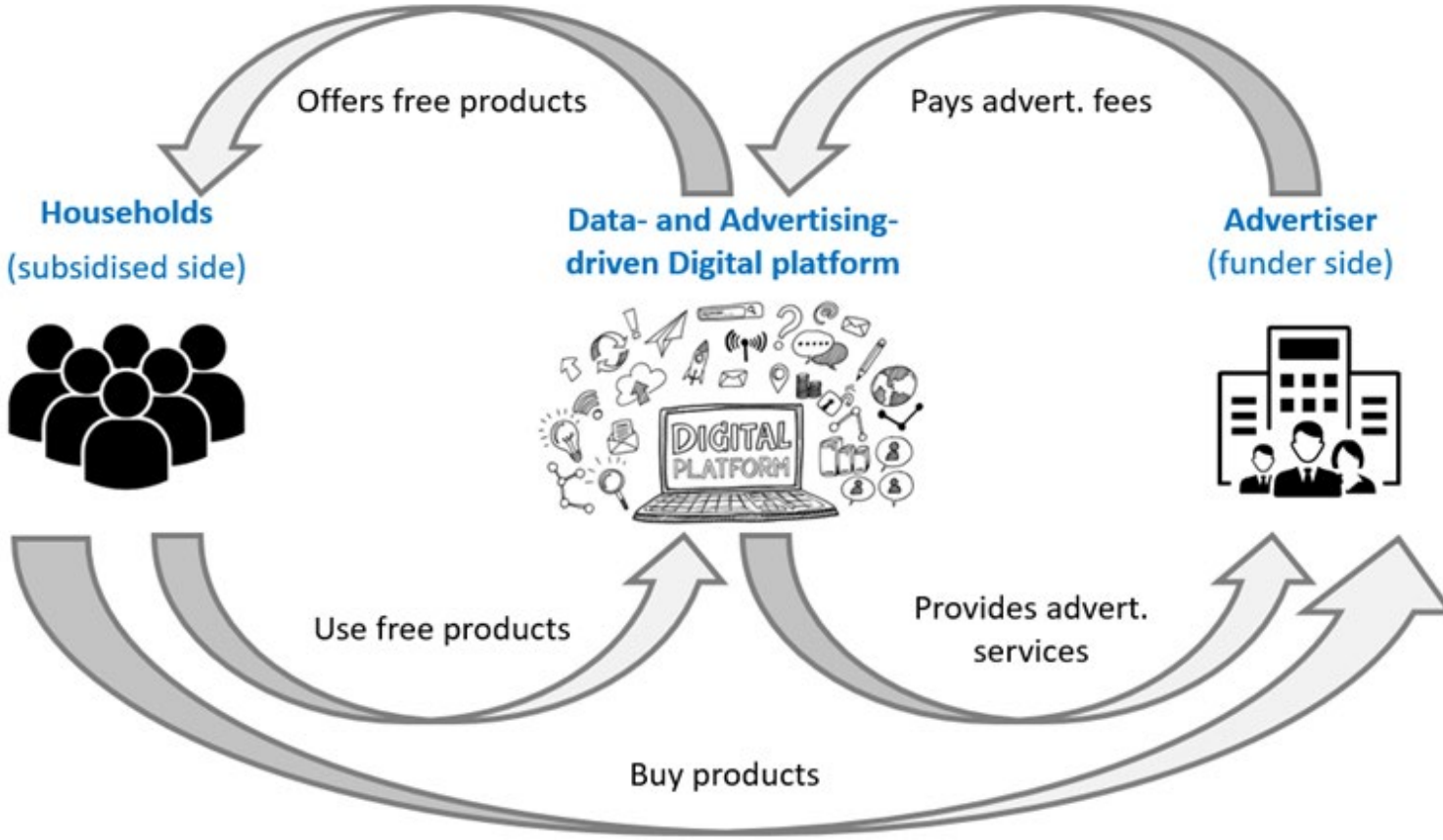
- Made up of units that produce goods and services that enable the digital transformation, such as IT equipment and software
- Consists of producers for which their primary production is facilitating digitalization
- For simplicity, it was decided to align the digitally enabling industry with the ICT sector in ISIC Rev. 4, as many statistical offices already have surveys and outputs in place consistent with this
- ICT sector in ISIC Rev. 4: The production ([of] goods and services) of a candidate industry must primarily be intended to fulfill or enable the function of information processing and communication by electronic means, including transmission and display

Industries - 2. Digital Intermediation Platforms

- In 2019, the OECD proposed a broad definition of online platforms: a digital service that facilitates interactions between two or more distinct but interdependent sets of users […] who interact through the service via the Internet
- Within the broad category of online platforms, DIPs are businesses that operate online interfaces that facilitate, for a fee, the direct interaction between multiple buyers and multiple sellers, without the platform taking economic ownership of the goods or rendering the services that are being sold/intermediated
- Distinguishing factors:
  - The charging of a fee for facilitating a transaction (in SNA sense)
  - Absence of economic ownership of the product by business facilitating the transaction
- Online platforms that do not facilitate an interaction that creates value added generate revenue via other means, e.g., via selling advertising space or analysis based on the data they produce from the interactions on the platform and are included in category 3.

Industries - 3. Data- and advertising-driven digital platforms (1)

- Main source of revenue is sale of data produced using information collected on the platform and/or sale of advertising services using the platform for advertising
- Platforms produce digital services to attract people
- Digital services provided for free, so different from standard business model
- Business model revolves around revenue from sales in advertising or data analytics to third parties, cross-subsidising the cost of providing the free service



Industries - 3. Data- and advertising-driven digital platforms (2)

- Examples of data- and advertising-driven digital platforms include search engines, web mapping platforms, public transport applications, mobile wallets, information sharing (e.g. sport results) applications, social media and social networking sites
- Earlier examples of cross-subsidisation models in National Accounts (e.g., TV, newspapers), but the scale was much smaller
- Free services are not recorded in National Accounts even though they may have quite an impact on welfare/well-being
- Possible as part of a thematic account (see 2025 SNA Chapter 22)

Industries - 4. Producers dependent on DIPs

- Producers dependent on DIPs are units that sell most of their goods or services via intermediation platforms
- Units are placed in this industry regardless of the good or service they are producing.
  - They will be re-allocated from the activity-based classification in the ISIC if most of the demand for their products comes via a DIP
  - This industry may include both commercial enterprises (firms) and individuals (independent contractors or workers)

Industries - 5. E-tailers

- This industry has same characteristics as "retailers and wholesalers", except for the digital ordering element
- Almost all retailers in high income countries offer some form of e-tailing option
  - It is not meaningful to move all units that offer this service to new digital industry
  - Also not useful to limit the definition of e-tailers to units operating exclusively online
- In the DSUTs e-tailers are defined as units for which the majority of orders, in terms of value, are being received digitally
- To be approached with common sense and pragmatism
  - Avoid moving units back and forth depending on a 50% value threshold
  - Additionally, materiality and resource availability will also dictate when such a move is made
  - It may not be practical for compilers to check all units within the retail industry every year
  - Rather, it is envisioned that compilers move units into the e-tailer classification once this method of transaction becomes the predominant source of demand

Industries - 6. Financial service providers predominantly operating digitally

- Contains financial service providers (including (re)insurance and pension schemes/funds) predominantly operating online, with limited or no avenues to interact physically
- Also includes financial platforms that facilitate digital peer-to-peer (P2P) lending and crowd funding
- Although consumers may be able to order a specific service directly from the producer, often services are provided without direct contact between the producer and the consumer.
  - Interactions can take varied forms such as,
    - Banking: using a credit card, an ATM (cash machine), etc.
    - Insurance: purchase of an insurance policy on an insurer's website
    - Asset management: selecting and buying funds on a platform provided by the asset manager.
- Fintech is of considerable interest to policy makers, although still no internationally agreed definition
- The "predominance" principle implies some subjectivity

Industries - 7. Other producers only operating digitally

- Units operating exclusively online not included in one of the previous six digital industries.
- Defined as exclusively digital in order to maintain analytical usefulness and interpretability
- Includes businesses that produce goods and services and only interact with consumers digitally (e.g., digital natives whose business model is based on digitalization)
- E.g., producers providing digital content on a subscription basis (such as digital newspaper subscriptions and audio or visual content subscriptions), online gaming and gambling services, as well as more traditional services (such as legal or accounting services) that only have a presence online.
- This may be thought of as a residual class, ensuring that all businesses operating exclusively in a digital manner are captured in one of the digital industries.
    - For example, most producers only operating digitally are likely to be collecting data. If this is a by-product of their main activity, they should be in the “other producers only operating digitally” industry, rather than in the data- and advertising-driven platforms industry

Industries - Template

	Column	A	B	C	D	E
	Industry perspective	Nominal values				
Row		Output	Gross Value Added	Compensation of employees	Gross operating Surplus	Taxes less subsidies on production and imports
1	All industries					
2	Non-digital Industries					
3	Digitally enabling industries					
4	DIPs charging a fee					
5	Data and advertising driven digital platforms					
6	Producers dependent on DIPs					
7	E-tailers					
8	Financial service providers predominantly operating digitally					
9	Other producers only operating digitally					

Source: Annex Figure 6.11 OECD Handbook on Digital SUTs (OECD, 2023)

Summary:
High priority indicators

Digital SUT framework - High Priority Indicators

- It may be too demanding to compile full-fledged Digital SUTs
- For that reason, the IAG formulated high priority indicators that compilers may focus on:
  1. Expenditures split by nature of the transaction, includes estimates of digital trade
  2. Output and/or intermediate consumption of Digital Intermediation Services (DIS), Cloud Computing services (CCS) and total ICT goods and digital services
  3. Digital industries' output, gross value added (GVA) and its components

- Provides a wide scope for countries to begin producing estimates despite the various levels of data sources and resources available across countries
- Help in coordinating the initial results that can be derived from the Digital SUTs

Country examples

Example: Canada - Industries

Statistics Canada updated and published their estimates in 2023:

- Covers the period from 2017 to 2020
- Contribution of digital industries/ economy to GDP trended up from 5.2 % to 5.9 % in 2020
- ICT sector dominates, especially software and telecommunications production, followed by e-commerce

https://www150.statcan.gc.ca/n1/daily-quotidien/230725/dq230725a-eng.htm

	2017	2018	2019	2020
	millions of dollars	millions of dollars	millions of dollars	millions of dollars
Total, all industries	**1,991,534**	**2,083,379**	**2,161,924**	**2,076,634**
Total digital industries	104,356	110,633	122,018	122,628
Information and communications technology				
Hardware	6,536	6,913	7,454	6,575
Software	41,891	46,067	52,840	54,565
Telecommunications	36,166	36,399	38,133	38,526
Other services	9,912	9,981	10,151	9,966
Digital intermediary platforms	1,762	2,446	3,025	2,504
Data- and advertising-driven digital platforms	1,024	1,106	1,326	434
Online retailers and wholesalers	3,793	4,017	4,611	5,699
Digital-only firms providing finance and insurance services	2,204	2,476	2,947	2,944
Other producers only operating digitally	1,069	1,229	1,530	1,415

Example: United States - Products

Bureau of Economic Analysis (BEA) published their Digital Economy Satellite Account in 2022

- Covers the period from 2005 to 2021.
- Revises and updates previous estimates due to new source data and improved methodology.

https://www.bea.gov/data/special-topics/digital-economy

Table 1. Digital Economy Gross Output by Activity, 2021

[Millions of dollars]

Digital economy	3,701,722
Infrastructure	1,167,116
Hardware	445,089
Software	722,027
E-commerce	941,970
Business-to-business e-commerce	642,998
Business-to-consumer e-commerce	298,972
Priced digital services	1,592,217
Cloud services	186,589
Telecommunications services	802,139
Internet and data services	213,290
All other priced digital services	390,200
Federal nondefense digital services	420

Example: United States - Industries

- Also breakdown by North American Industry Classification System (NAICS)
- Over 80 percent of gross output produced by 3 industries:
  - information (43.2 percent)
  - Wholesale trade (21.4 percent)
  - Professional and business services (16.6 percent)

Table 2. Digital Economy Gross Output for Major Sectors, 2021

[Millions of dollars]

Digital economy	3,701,722
Information	1,600,191
Wholesale trade	792,532
Professional and business services	615,714
Retail Trade	308,818
Manufacturing	303,349
All other industries	81,118

https://www.bea.gov/data/special-topics/digital-economy

Example: Korea (digital supply table, 2019)

($ billion)

	Non-digital industries	Digital industries (A)								Digital import (B)	Digital Supply (A+B)	Digital transactions	
			Digitally enabling industries	Data and advertising driven digital platforms	Digital Intermediary platforms charging a fee	Firms dependent on intermediary platforms	E-Tailers	Digital predomina-ntly firms providing financial & insurance services	Other producers only operating digitally			Order	Deli-very
Non-digital products	3,143	163	-	6	-	94	51	1	10	3	165	165	19
Manufactured goods	1,235	73	-	-	-	49	25	-	-	2	76	76	0
Services	1,529	84	-	6	-	42	25	1	10	0	84	84	19
Construction	220	0	-	-	-	0	-	-	-	-	0	0	0
Others[2)]	158	6	-	-	-	4	2	-	-	0	6	6	0
Digital products	-	322	308	-	14	-	-	-	-	72	393	208	112
ICT goods	-	216	216	-	-	-	-	-	-	66	282	97	0
Priced Digital services	-	90	90	-	-	-	-	-	-	5	95	95	95
Priced Cloud computing services	-	2	2	-	-	-	-	-	-	0	2	2	2
Priced Digital intermediary services	-	14	0	-	14	-	-	-	-	1	14	14	14
Gross domestic output	3,663	484	308	6	14	94	51	1	10	74	559	374	130

1) In basic prices

2) Agricultural, forest and fishery products, Mined and quarried products, Electricity,gasandwatersupply, waste management

Source: 2023 OECD EGESUT meeting (2023.11.27) – presentation by Junsung Kim – Bank of Korea

Example: Korea (digital use table, 2019)

($ billion)

	Intermediate demand[2)3)](A+B)							Digital exports	Ordered digitally	
		Non-digital industries (A)					Digital industries(B)		private Consum-ption	exports
			Manufacturing	Services	Construction	Others[4)]				
Non-digital products	1,501	1,376(91.7)	639(42.6)	561(37.4)	119(7.9)	58(3.8)	124(8.3)	14	38	0.2
Manufactured goods	721	670(92.9)	415(57.6)	153(21.2)	78(10.8)	24(3.3)	51(7.1)	0	9	0.2
Services	637	576(90.5)	164(25.8)	357(56.1)	39(6.1)	16(2.5)	61(9.5)	14	28	0
Construction	12	12(95.8)	1(9.5)	10(79.7)	0(1.5)	1(5.1)	1(4.2)	-	-	-
Others[4)]	130	119(90.9)	59(44.9)	41(31.3)	2(1.2)	18(13.6)	12(9.1)	0	2	0
Digital products	116	79(67.7)	37(31.7)	39(33.9)	2(1.4)	1(0.7)	37(32.3)	145	25	0
ICT goods	72	43(60.3)	33(46.1)	9(12.2)	1(1.6)	0(0.5)	28(39.7)	138	4	0.01
Priced Digital services	39	31(79.8)	3(7.9)	27(69.9)	0(0.9)	0(1.0)	8(20.2)	5	19	0
Priced Cloud computing services	1	1(84.3)	0(8.5)	1(73.9)	0(1.1)	0(0.8)	0(15.7)	0	0	-
Priced Digital intermediary services	4	3(77.8)	1(16.6)	3(58.1)	0(1.9)	0(1.2)	1(22.2)	2	1	0
Total intermediate input	1,617	1,455(90.0)	676(41.8)	600(37.1)	120(7.4)	58(3.6)	1162(10.0)	159	62	0.2
Total value added	1,512	1,296	303	844	90	59	216	-	-	-

1) In basic prices
2) In domestic Use table
3) ( ) : Share of intermediate demand by product
4) Agricultural, forest and fishery products, Mined and quarried products, Electricity,gasandwatersupply, waste management

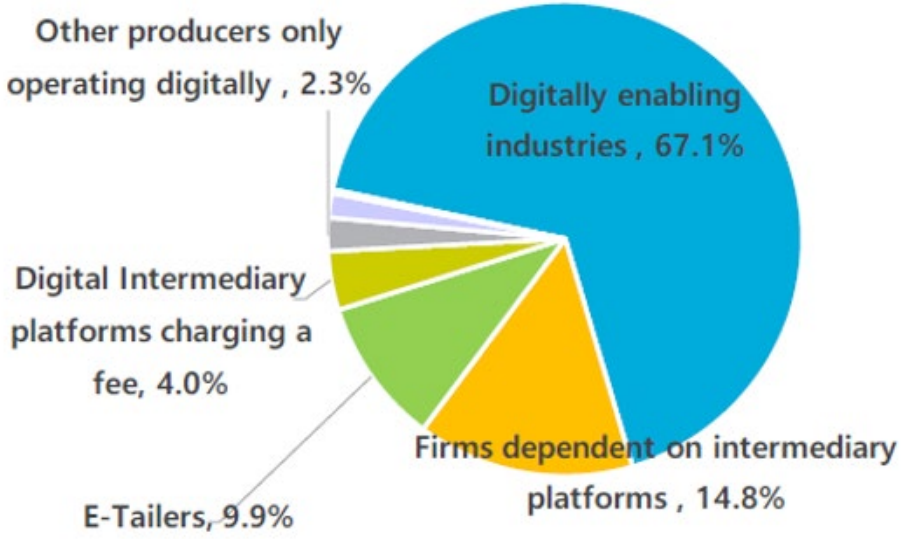
Source: 2023 OECD EGESUT meeting (2023.11.27) – presentation by Junsung Kim – Bank of Korea

Example: Korea

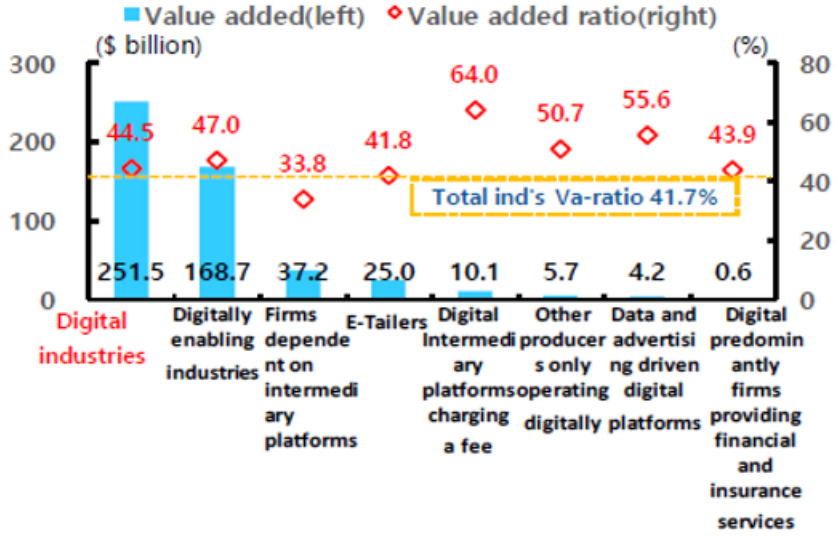
- Value added of digital industries was $216 bn (14.3% of total GDP)
  - Digitally enabling industries $145 bn
  - Firms dependent on intermediary platforms $32 bn
  - E-tailers $21 bn
- The value added ratio of digital industries average was 44.5%, slightly higher than value added ratio of total industry (41.7%)

2023 OECD EGESUT meeting (2023.11.27) – presentation by Junsung Kim – Bank of Korea

Composition of value added of digital industries



Value added ratios of digital industries



Example: Digital industries

Proportion of total Gross Value Added (GVA), %

	Sweden (2017)	Netherlands (2018)	Canada (2019)
Digital enabling industries	5.23	5.25	4.83
DIPs charging a fee	0.05	0.8	0.15
Data- and advertising-driven digital platforms	-	-	0.05
Producers dependent on DIPs	0.06	0.1	-
E-tailers	2.88	1.8	0.24
Financial service providers predominantly operating digitally	-	0.06	0.16
Other producers operating only digitally	0.88	-	0.04
Total digital industries	**9.10**	**7.9**	**5.46**

Source: Statistics Canada, Statistics Netherlands, Statistics Sweden

Example: Nature of transaction

Proportion of domestic output, %

	Canada (2020)	Netherlands (2018)	Ireland (2020)
Digitally Ordered	7.5%	16.1%	21.8%
Digitally Delivered	2.6%	22.6%*	31.0%*

* Potentially digitally deliverable

Source: Statistics Canada, Statistics Netherlands, CSO Ireland

Conclusions

Final considerations

- Digital SUTs are not the panacea of digital economy measurement.
- Part of a broader attempt to better capture digitalization (e.g., updates to ISIC and CPC)
- Digital SUTs handbook offers a non-prescriptive framework to produce international comparable indicators consistent with SNA
- Can create feedback loop improving national accounts.
- Continue to be developed and refined as more countries compile
- Included as extended (and thematic) accounts in Chapter 22 of the 2025 SNA

THANK YOU

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