



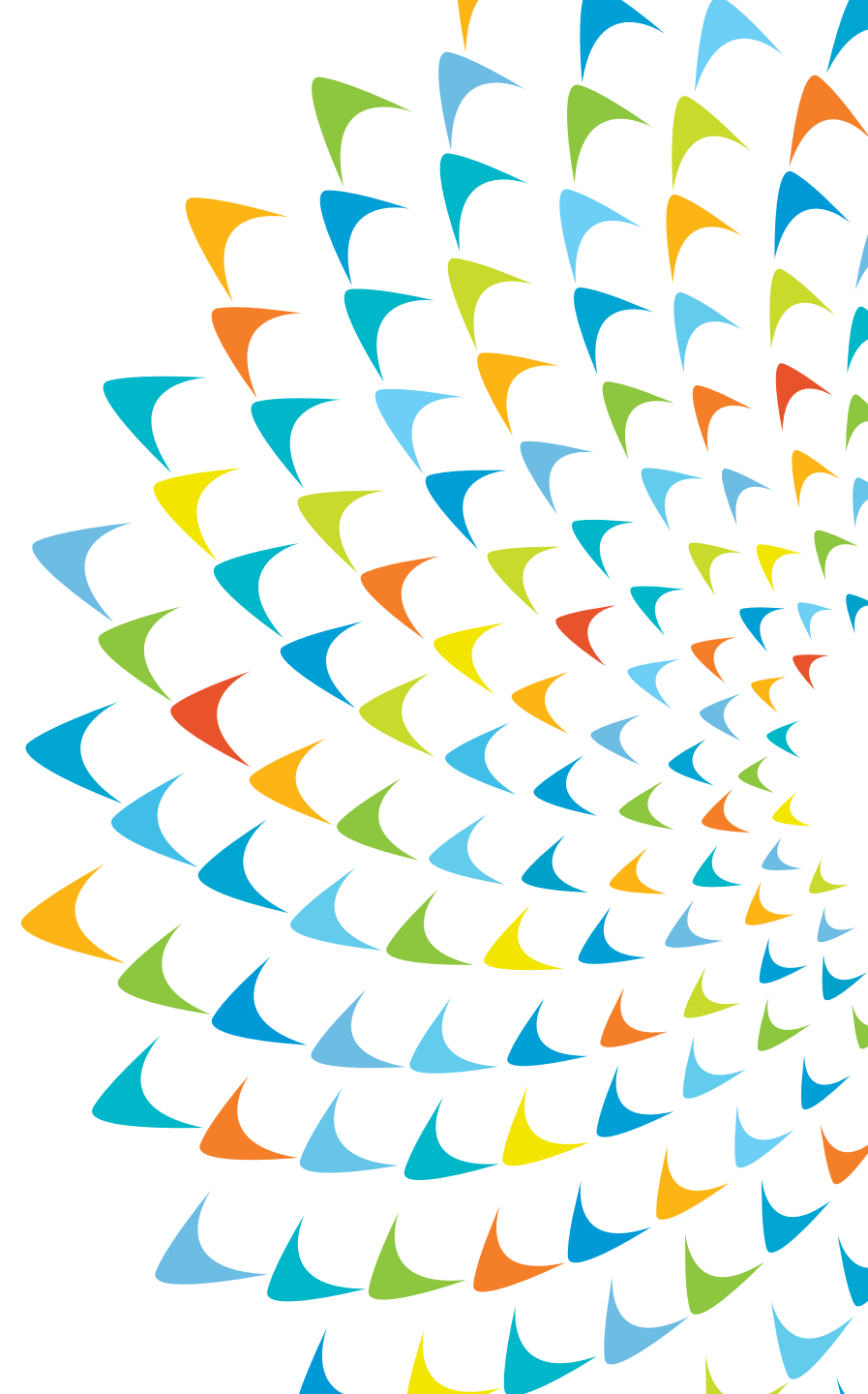
The Development of the Digital Supply and Use Tables of Georgia

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I. Background on the initiative

II. Construction of Georgia's DSUTs

- a. Progress, key challenges and some proposed refinements;
- b. Preliminary aggregate results;

III. Alternative approach: ADB's IO-based approach to measuring the Digital Economy

IV. Key takeaways



2018 Digital Supply and Use Tables of Georgia

- **Technical assistance** to the National Statistics Office of Georgia (GEOSTAT) by the between the Asian Development Bank (ADB) **to develop DSUTs** to its developing member countries (DMCs)

KSTA 6856: Development of New Statistical Resources and Building Capacity in New Data Sources and Technologies, which will end by December 2024

- Reference year of the tables: 2018
- Scope: 2008 SNA boundary
- Priority indicators:
 - Digital Industries: Output, Intermediate Consumption, and Gross Value Added;
 - Intermediate Consumption of digital products;
 - Split of digitally-ordered products: total products; and
 - Split of digitally-delivered products: imports, exports, and total product supply.

Construction of Georgia's 2018 Digital Supply and Use Tables

Methodology and data sources



Framework of the 2018 Georgia DSUTs

Digital Supply Table

	Output		Total Supply Digital Industries	Total Supply Non-digital Industries	Imports	Total Supply	
	Digital industries	Other industries				Digitally-delivered	Non-digitally delivered
Digital Products							
Non-digital products affected by digitalisation							
Non-digital products							
Total Output							
<i>Digitally-ordered</i>							
<i>Non-digitally ordered</i>							

Digital Use Table

	Input		Total Input Digital Industries	Total Input Non-digital Industries	Domestic Final Demand	Exports		Domestic Final Demand
	Digital industries	Other industries				Digitally- delivered	Non-digitally delivered	
Digital Products								
Non-digital products affected by digitalisation								
Non-digital products								



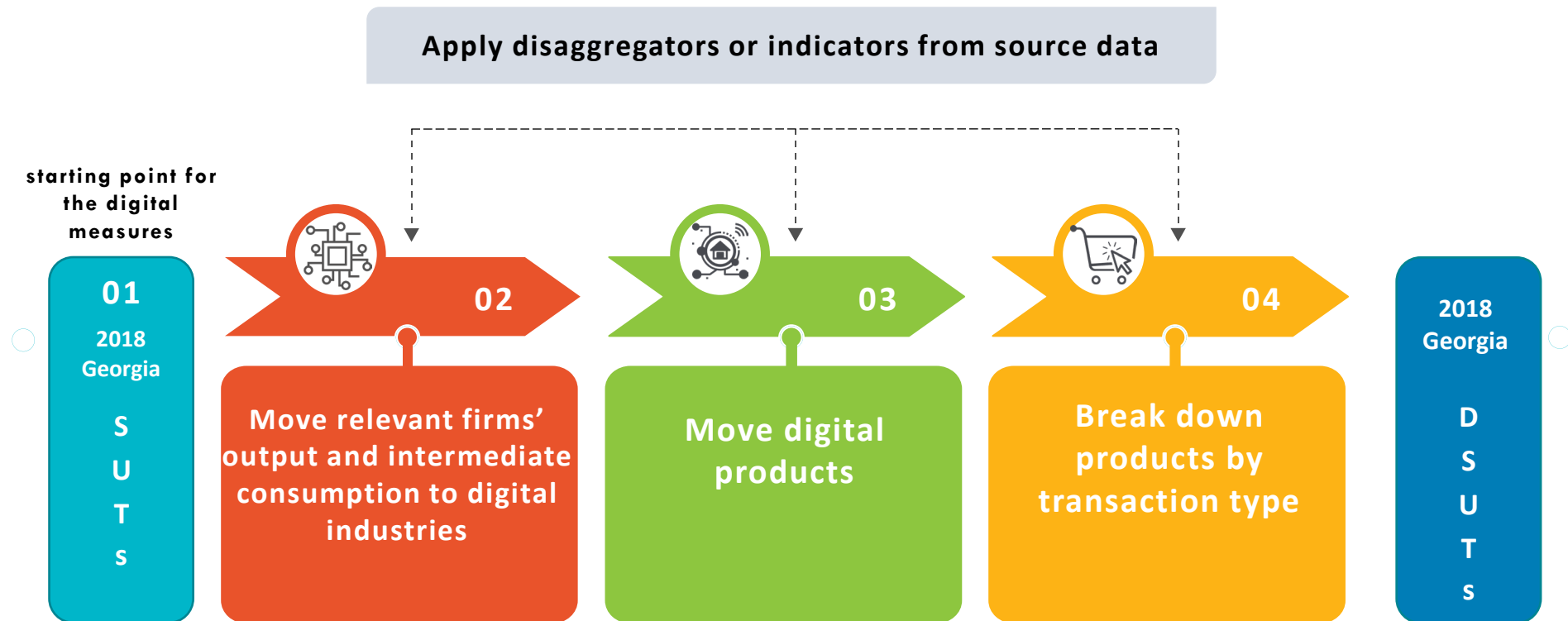
Primary Data Sources

- Georgia's 2018 experimental SUTs;
- 2018 business surveys;
- 2018 Intermediate Consumption survey;
- 2018 Enterprise and Household Information and Communication Technology Usage (ICT) surveys; and
- Annual Financial Statements.



2018 Georgia DSUTs' components are reallocated from the existing columns and rows of the experimental SUTs

using reallocation ratios of output and intermediate consumption, derived from primary source data (and additional indicators and assumptions), as disaggregators





2018 GEO DSUTs: Digital Industries

Digital firms are reorganized into:

1. Digitally Enabling

- refer to the ‘Information and Communication Technologies’ (ICT) industries

2. Digital intermediation platforms (DIPs) charging a fee

- companies falling under *NACE Codes 4799 ‘Other retail sale not in stores, stalls or markets’* and *7990 ‘Other reservation service and related activities’* from the 2018 business survey

3. E-tailers

- firms falling under NACE Code 4791 ‘Retail sale via mail order houses or via Internet’ are assumed to be E-tailers



Digital Industries – Key Estimation Challenges

- **Availability and limitations in the data** (i.e. representativeness and level of disaggregation)
 - a significant proportion of the digital industries may still not be captured by these datasets as they are provided **only based on a sample**;
 - **not all the digital firms have readily available annual/corporate reports** in Georgia's reportal;
- Only a few of the DIPs, which were manually identified with the help of GEOSTAT **had available financial statements for the year 2018.**



Digital Industries – Proposed Refinements

- Supplement with the merged dataset of the statistical business register, business survey and tax revenue, which is being prepared by the GEOSTAT;
- For the firms dependent on intermediary platforms, estimation will be attempted once datasets are complete particularly, DIPs' annual corporate/financial reports, applying US BEA's methodology



2018 GEO DSUTs: Digital Products

Digital products are reorganized into:

1. ICT goods
2. Priced digital services except digital intermediation services, or DIS (includes cloud computing services)
3. Digital Intermediation Services
 - added as a new product as this is a new category not currently included in the classification of Georgia's SUTs



Digital Products – Key Estimation Challenges and Proposed Refinements

- Initial estimates of the output for DIS needs to be improved further as coverage only includes output of firms categorized as DIPs
 - Financial statements of relevant intermediary platforms will be tapped to refine estimates on the DIS;
 - GEOSTAT may also consider adding questions or modules related to digital intermediation platforms (e.g. fees charged by firms on the provision of intermediation services) in their annual business/e-commerce surveys



2018 GEO DSUTs: Digital Transactions

Dimensions on the nature of transaction is also provided:

1. Digitally-ordered output/products

- only provided at the total supply due to data limitations
- Disaggregator used: information from firms on their revenues made over the internet and EDI-type message

2. Digitally-delivered products

- Lower-bound estimate: imports and exports of products identified as digitally-deliverable
- Upper-bound estimate: total supply of products identified as digitally deliverable



Digital Transactions – Key Estimation Challenges and Proposed Refinements

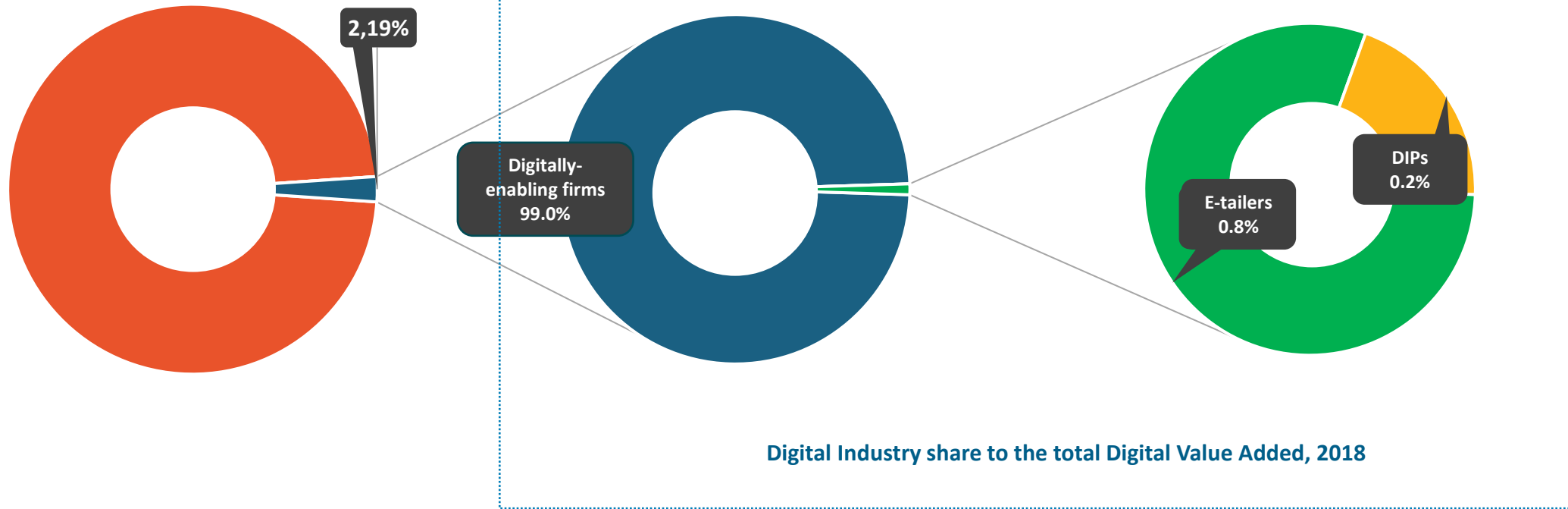
- Lack of indicators that provide the value of transactions made online, ordered or delivered, in the ICT Usage survey;
- For future refinements of surveys of the GEOSTAT, values of these transactions may also be captured in the survey to be used as alternative or additional sources for estimating the digitally delivered services to households and exports of services.

Preliminary Aggregate Results



Preliminary Aggregate Results

Digital Value Added Share to economy wide GDP, 2018

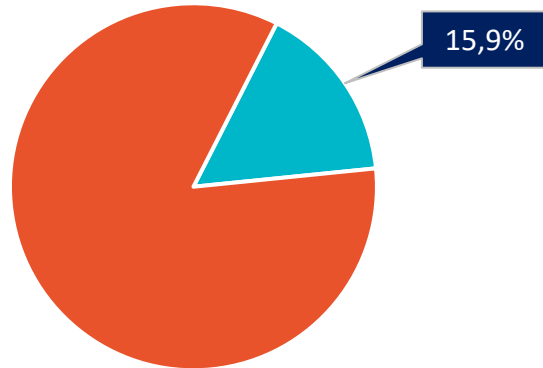


Digital Industry share to the total Digital Value Added, 2018

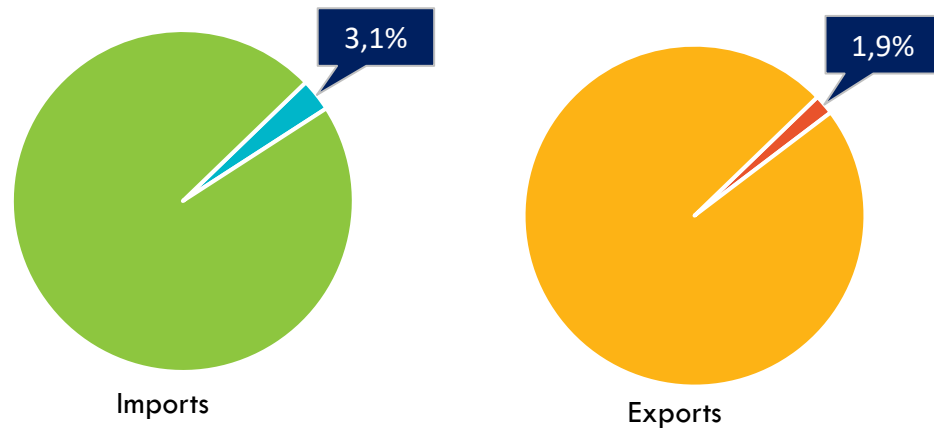


Preliminary Aggregate Results

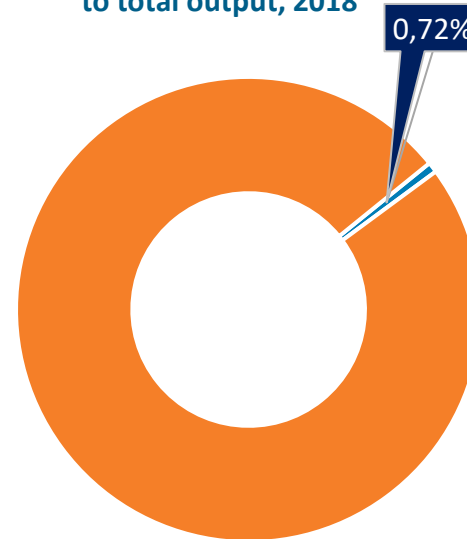
Upper bound estimate of digitally delivered services



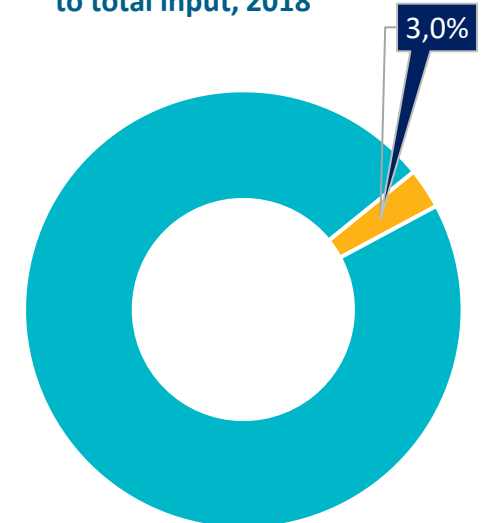
Lower bound estimates of digitally delivered services



Share of digitally ordered output to total output, 2018



Share of digital inputs to total input, 2018



Alternative Measurement Approach for the Digital Economy

ADB's proposed measurement framework



ADB Measurement Framework

- Rooted in input-output analysis, using the $\hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}}$ matrix:
 - \mathbf{v} – direct value-added coefficient vector
 - \mathbf{B} – Leontief inverse matrix $(\mathbf{I} - \mathbf{A})^{-1}$
 - \mathbf{y} – final demand vector

Core digital products/industries



$$\text{GDP}_{\text{digital}} = \underbrace{i^T \hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}} \varepsilon_1}_{\text{Backward linkage}} + \underbrace{i^T (\hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}})^T \varepsilon_1}_{\text{Forward linkage}} - \underbrace{[\text{diag}(\hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}})]^T \varepsilon_1}_{\text{Double-counted term}} + \underbrace{(i - \varepsilon_1)^T \hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}} \hat{\mathbf{r}} \varepsilon_2}_{\text{Backward linkage to other fixed investments by digital sectors}}$$



National Statistics Offices' Official Estimates: Digital Economy as a Proportion of Total Economy (% of gross domestic product)

ADB Framework Estimates (Core)		Economy	National Statistics Offices' Estimates		
Percentage of GDP	Year		Percentage of GDP	Year	Definition/Coverage
5.0	2018	AUS	5.6	2019	Value added of digital enabling infrastructure, digital media, and e-commerce
			5.9	2020	
5.3	2021		6.1	2021	
5.6	2016	CAN	5.4	2018	Includes e-tailers, digital-only firms providing financial and insurance services, and digital intermediary platforms
5.9	2019		5.5	2019	Includes e-tailers, digital-only firms providing financial and insurance services, and digital intermediary platforms
4.4	2015	FIJ*	3.8	2014	
2.5	2018	GEO			
3.5	2010	GER			
3.5	2016		4.8	2016	Value-added of the German ICT sector
4.0	2016	INO	4.5	2020	Value-added of ICT sector
7.6	2015	MAL	18.5	2018	Value-added of ICT and E-Commerce of Non-ICT industry
8.7	2020		15.6	2020	Includes production and use of digital technology by households, businesses, and government.
4.7	2012	PRC	32.9	2017	Includes the information industry and the improvements on traditional industry by using information and communication technology (ICT) as main content.
9.8	2020		39.8	2021	Value of technology products and integrated digital inputs
6.8	2016	SIN*	8.3	2014	Value added of Infocomm Media sector
6.5	2019		9.0	2017	ICT sector value added as a share of GDP
5.2	2015	THA	17.0	2018	Digital economy consists of digital sector plus digital and platform services (adapted definition of Bukht & Heeks 2017)
9.2	2019	USA	9.0	2018	Value added of ICT sector as defined by US BEA
9.8	2021		10.3	2021	

AUS = Australia; CAN = Canada; FIJ = Fiji; GEO = Georgia; GER = Germany; MAL = Malaysia; PRC = People's Republic of China; SIN = Singapore; THA = Thailand; USA = United States.

Note: * FIJ & SIN - No official estimates but UNCTAD estimates using 2-digit ISIC (ICT Manufacturing industries & ICT Service Industries) from NSO

Source: Asian Development Bank (ADB) 2023 Key Indicators Database. <https://kidb.adb.org> (accessed March 2023); and data as published from various national statistics offices.



Key Takeaways

- Despite the significant progress to produce the Georgia's DSUT, since early 2022, certain critical data related challenges still need to be resolved;
- Initiatives and discussions are underway to leverage supplementary data sources (e.g. special tabulation of the merged firm-level dataset) to bridge the data gaps and produce a viable DSUT for Georgia;
- Alternative approaches, such as the ADB's IOT based measurement framework, offer complementary methods for compiling and analyzing statistics on digital economy. By focusing on the core digital industries and the value-added concept, the ADB framework provides valuable insights into the generation and flow of value attributed to activities in the digital economy.