Digital India
Power To Empower

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ICRIER

ESTIMATION AND MEASUREMENT OF INDIA'S DIGITAL ECONOMY

PREPARED BY

INDIAN COUNCIL FOR RESEARCH ON INTERNATIONAL ECONOMIC RELATIONS

STUDY BY

MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY
GOVERNMENT OF INDIA

JANUARY, 2025


4365,0
4230,0
4222,0
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852
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(4,065)
811

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Estimation and Measurement of India's Digital Economy

by **Deepak Mishra, Mansi Kedia, Aarti Reddy, Cledwyn Fernandez, Sanjana Shukla, Krithika Ramnath, and Sruthi Vanguri**

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Secretary

सत्यमेव जयते

इलेक्ट्रॉनिकी और सूचना प्रौद्योगिकी मंत्रालय
भारत सरकार
Ministry of Electronics &
Information Technology (MeitY)
Government of India

India's journey of digital transformation has been rapid and path-breaking. Not only is India the third largest digitalised country in the world, it has made significant strides in empowering individual users and delivering services at population scale. At the global forefront of digital transformation, India mainstreamed the idea of Digital Public Infrastructure through its G20 presidency in 2023. The government's Digital India programme laid the foundation for building the world's largest digital identity program, Aadhaar, and the fastest growing real time payment system, UPI. These have become force multipliers for private sector innovation.

Further, India's electronics sector has also witnessed a remarkable growth in manufacturing in the last decade, which is further boosted in recent years by the introduction of various schemes including Production Linked Incentive (PLI). The domestic production of electronic goods has increased substantially from ₹ 1.90 lakh crore in FY 2014-15 to ₹ 9.52 lakh crore in FY 2023-24, growing at a Compound Annual Growth Rate (CAGR) of 17.5%. Under PLI Scheme for Large Scale Electronics Manufacturing, India has emerged as the 2nd largest manufacturer of mobile handsets, in volume terms, in the world. Government has also approved 5 Semiconductor Manufacturing Units including 1 Semiconductor fab under the Semicon India Programme. The chips produced in these approved units will cater to a wide variety of applications which include segments such as industrial, automotive, electric vehicles, consumer electronics, telecom, mobile phones, etc.

However, measuring this progress in a holistic manner, has been a challenge. Quantifying its contribution to various facets of the economy, especially as digital technologies permeate every sector of the economy, has proven to be demanding. This report is a pioneering effort to produce globally comparable estimates of the contribution of digital technologies to India's national economy. Put together meticulously, through a combination of primary and secondary data, and extensive stakeholder consultations, the report presents a first-of-its-kind estimates of value addition and employment attributable to the digital economy. Designed to be consistent with and estimated alongside macro-economic indicators, this set of estimates provides an impetus for systematically tracking our progress on this front. The study expands the scope of coverage by incorporating digitalization in sectors outside the core digital economy, such as in traditional sectors including banking, education, and retail trade.

The contribution of the digital economy in 2022-23 is estimated at over 11.7% of gross value-added with a value close to 370 billion USD. Correspondingly, the digital economy accounted for 14.67 million workers, or 2.55 per cent of India's work force in 2022-23. Projecting forward, India's digital economy is expected to grow almost twice as fast as the overall economy, contributing to nearly one-fifth of national income and surpass the 1 trillion-mark by 2029-30.

This quantification exercise is essential for policymakers, businesses and other stakeholders to grasp the nuances of the evolving digital landscape, ensuring that resources are effectively aligned and that growth strategies are both adaptive and forward-thinking. As we move forward, it is crucial to continue refining the quality of data and methodology for estimation and closing the existing data gaps so to improve our measurement and forecasting of the digital economy. I encourage policymakers, business leaders, and researchers to engage with this report.

(S. Krishnan)

Place: New Delhi
Date: 16th January, 2025

आज़ादी का अमृत महोत्सव

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We are also thankful to the team at RBI, including Dhirendra Gajbhiye, Rashika Arora, Arham Nahar, Rigzen Yangdol, and Ishu Thakur, for providing us with a helpful starting point by the presentation of their estimates. We are deeply grateful to the team at the Asian Development Bank (ADB) including Mahinthan J. Mariasingham, Faith Hyacinth Balisacan, John Arvin C. Bernabe, Maegan S. Saroca, Julieta Magallanes, and Ana Francesca Rosales, for helping us apply the ADB framework to our estimation. Our sincere thanks to Nicky Kuijpers and Joram Vuik at Statistics Netherlands for helping us understand their compilation of the digital Supply Use Tables (SUTs). We would also like to thank Amey Sapre at the National Institute of Public Finance and Policy (NIPFP) and Ramesh Kolli (formerly at MoSPI) for helping us with the technical understanding of Indian SUTs and creation of satellite accounts.

Our analysis is built on data that was sourced from numerous reports and databases. We are thankful to Dr. Saurabh Garg, Secretary, MoSPI Shri Manoj Govil, Expenditure Secretary, Ministry of Finance (Former Secretary, MCA) for directing their staff to provide necessary support in preparing this study. We are grateful to Atishay Jain, Kavita Aggarwal, and the team at CapItAll for helping us with data extraction from the MCA database that was instrumental to our estimates. We would also like to thank Rajeev Ranjan, Assistant Vice President, CMIE for addressing our queries and the team at Tracxn for helping us with data extraction. We extend our sincere thanks to the Confederation of Indian Industry (CII), especially Amita Sarkar, G. Srivastava, Suraj Jaiswal, and Tanvi Garg, for undertaking the primary survey and facilitating connections with various industry stakeholders. We are also thankful to Pramod Bhasin and Pramath Sinha for facilitating further conversations with industry stakeholders.

Our heartfelt appreciation goes to the stakeholders themselves for their cooperation and valuable inputs. We would sincerely like to thank all the firms that took out their time and resources to participate in our survey, including Kapsons, Marks & Spencer, Pepperfry, BigBasket, Trent Ltd, Zappfresh, Aditya Birla Fashion and Retail, Arvind Ltd, Bestseller Retail, Nykaa, Bank of Baroda, Punjab National Bank, India Post, Union Bank, Canara Bank, Jammu & Kashmir Bank Ltd, Bandhan Bank, Tamilnad Mercantile Bank, Federal Bank, Equitas Small Finance Bank, Yes Bank, Industrial Development Bank of India, Karur Vysya Bank, DBS Bank, Deutsche Bank, State Bank of India, Bank of Maharashtra, National Bank for Agriculture and Rural Development, Indian Bank, Paytm, Groww, Bajaj Finserv Ltd., U Gro Capital, Policybazaar, Shriram Finance Ltd, Kotak Mahindra Asset Management Company Ltd., CRED, Yubi, Hero FinCorp, Tata Capital, Sodexo Group, Nippon Life India Asset Management Ltd, Jio Financial Services, National Stock Exchange of India Ltd., Cholamandalam

Investment and Finance Company, Le Méridien Hotels and Resorts, The Park Hotels, Royal Orchid Hotels, Marriott Hotels & Resorts, Movin Express, Çelebi Airport Services India Pvt. Ltd, DHL, Total Shipping & Logistics Pvt Ltd, Sravan Shipping Services Pvt Ltd, CJ Darcl Logistics, DCM Shriram Ltd, upGrad, Coursera, Manipal Academy of Higher Education, Pratham, Indian School of Business, and TeamLease.

Finally, we are grateful to our colleagues at ICRIER for being our backbone and helping us put together this report. *All errors remain our own.*

Glossary

ADB	Asian Development Bank
AI	Artificial Intelligence
ASI	Annual Survey of Industries
BEA	Bureau of Economic Analysis
BFSI	Banking, Financial Services and Insurance
CII	Confederation of Indian Industry
CIS	Change in Stocks
DEI	Digitally Enabling Industries
DIP	Digital Intermediary Platform
DPI	Digital Public Infrastructure
EPFO	Employees' Provident Fund Organisation
FISIM	Financial Intermediation Service Indirectly Measured
GDP	Gross Domestic Product
GFCE	Government Final Consumption Expenditure
GFCF	Gross Fixed Capital Formation
GMV	Gross Merchandise Value
GVA	Gross Value Added
ICT	Information and Communications Technology
ID	Identity Document
IOT	Input Output Table
MCA	Ministry of Corporate Affairs
MeitY	Ministry of Electronics and Information Technology
MoHFW	Ministry of Health and Family Welfare
MoSPI	Ministry of Statistics and Program Implementation
MSME	Ministry of Micro, Small & Medium Enterprises
NAD	National Accounts Division
NAS	National Accounts Statistics
NIC	National Industrial Classification
OECD	Organization for Economic Cooperation and Development
P2P	Peer-to-peer
PFCE	Private Final Consumption Expenditure
PLFS	Periodic Labour Force Survey
SNA	System of National Accounts
SUT	Supply Use Table
UIDAI	Unique Identification Authority of India
UPI	United Payments Interface
UPSS	Usual Principal and Subsidiary Status
USD	United States Dollar

Executive Summary

The Indian economy has been digitalising at a remarkable pace over the last decade. According to the State of India's Digital Economy Report 2024, India is the third largest digitalised country in the world in terms of economy-wide digitalisation and 12th among the G20 countries in the level of digitalisation of individual users. Yet, there are no credible and up-to-date estimates on the contribution of the digital economy to national income and employment.

Quantifying and understanding the role of the digital economy in driving economic growth, employment, and sustainable development are essential for both policymakers and the private sector. This can help align resources and adopt appropriate growth strategies. However, the cross-cutting and integrated nature of digital technologies makes the concept of a distinct digital economy difficult to define and measure. Moreover, the conventional system of national accounts does not lend itself directly to the measurement of the new economy. The problem is not unique to India. Few countries have attempted to size up their digital economy and even these efforts are works in progress.

This report uses globally adopted methodologies—frameworks developed by the Organisation for Economic Co-operation and Development (OECD) and the Asian Development Bank (ADB)—to estimate the size of India's digital economy, both as a share of national income and total employment. With the publication of these numbers, India will be among a handful of countries, and the first among developing countries, to have used the OECD framework to produce the most up-to-date estimate for the size of its digital economy. The report goes beyond the OECD approach to also include the digital share of traditional industries like trade, banking, financial services, and insurance (BFSI) and education.

Our estimates are based on a triangulation of data from multiple sources, including data published by the national accounts division (NAD) of the Ministry of Statistics and Programme Implementation (MoSPI), Ministry of Corporate Affairs (MCA) database, CMIE Prowess, Tracxn, Employees' Provident Fund Organisation's Establishment Search portal, Periodic Labour Force Survey (PLFS), Annual Survey of Industries (ASI), and various market studies, industry reports, and company annual reports. In addition, we undertook a survey, held focus-group discussions, and consulted extensively with industry experts and company officials while preparing this report.

We estimate that India's digital economy stood at 11.74% of the national income in 2022-23 and is likely to rise to 13.42% by 2024-25.[1] In absolute numbers, the digital economy in 2022-23 was equivalent to INR 28.94 lakh crore (~USD 368 billion) in GVA and INR 31.64 lakh crore (~ USD 402 billion) in GDP.

While the traditional ICT sector remains the largest component of the digital economy, digital platforms and the digitalisation of brick-and-mortar sectors are growing rapidly. The digitally enabling industry, which includes sectors such as information and communication related services, telecommunication (traditionally referred to as the ICT sector), and manufacturing of electronic components, computers, and communication equipment, is the highest contributor, accounting for 7.83% of GVA. The new digital industries, which include Big Tech players, other digital platforms and intermediaries, and firms dependent on digital intermediaries, account for nearly 2% of GVA. The digital contribution of three traditional industries (BFSI, trade, and education), which are not part of the OECD framework but are included in our estimates, amounts to 2% of national GVA, rivalling in importance to the new digital industries. This is a clear indication that India's digital economy is steadily moving beyond the realm of the ICT industries, diffusing across all parts of the economy through digital platforms and the digitalisation of brick-and-mortar sectors.

[1] *The estimates in this report are for 2022-23, which is the latest year for which disaggregated national accounts data are available.*

Based on our projections, India's digital economy is expected to grow almost twice as fast as the overall economy, contributing to nearly one-fifth of national income by 2029-30. This means that, in less than six-years, the share of digital economy will become larger than that of agriculture or manufacturing in the country. In the short run, the highest growth is likely to come from the growth of digital intermediaries and platforms, followed by higher digital diffusion and digitalisation of the rest of the economy. This will eventually lower the share of digitally enabling ICT industries in the digital economy.

In 2022-23, the digital economy accounted for 14.67 million workers, or 2.55% of India's estimated work force. In comparison, agriculture accounted for 263.6 million (or 45.8% of total workforce), while manufacturing employed 65.6 million workers (or 11.4% of workforce). Our estimation of the workforce is based on the same definition and scope as that for the digital economy GVA, implying that the digital economy is five times more productive, where productivity is measured by output-worker ratio, than the rest of the economy.

This report is an attempt to compile the first set of credible, comprehensible, and current estimates of India's digital economy, based on the OECD framework, that is likely to be recommended to the System of National Accounts (SNA) update for 2025. There is significant scope to improve the estimates reported here through the better utilisation of existing data as well as closing data gaps. The latter can be divided into two broad categories: data that exists but has not been compiled or matched; and data that does not exist.

With the methodology and data presented in this report, the government has a ready template to produce periodic updates and expand the measurement of the digital economy. Our recommendations focus on three main areas: (i) narrowing data gaps, both by collating and harmonising available data and collecting new data on the digital activities of enterprises and individuals; (ii) using new data to build digital SUTs that can enable the visibility of digitalisation in macroeconomic statistics; and (iii) engaging with the OECD to improve the measurement framework and facilitate global alignment. The report provides specific recommendations to improve the quality and coverage of national statistics pertaining to the digital economy as well as suggestions to accelerate the digitalisation of India's economy.

Background and Motivation

The scope and speed of digitalisation in India has been remarkable in recent years. India has the world's second largest mobile and internet network by number of users. Few countries see data traffic per smartphone as high as in India. The country has rolled out 5G faster than in other countries. It is also the global leader in terms of the volume of digital transactions and export of ICT services. India has become the largest contributor to global GitHub AI project, and ranks third in the number of homegrown unicorns (see Box 1). During its G20 Presidency, India was recognised as the champion of digital public infrastructures (DPIs) and is also seen as a well-established digital powerhouse. According to the State of India's Digital Economy Report 2024, India is the third largest digitalised country in the world in terms of economy-wide digitalisation and 12th among the G20 countries in the digitalisation of individual users.[2]

Despite significant digitalisation, there are no credible and up-to-date estimates for the size of the digital economy in terms of its contribution to national income and employment. While the depth and breadth of India's digitalisation can be measured through various indicators of connectivity, adoption of digital services, and investment in new technologies, these factors cannot help ascertain its contributions to macro-aggregates, such as its share in the GDP and

Box 1: India's Digital Strides

Mobile subscription: Of the latest estimated 8.36 billion mobile cellular subscriptions worldwide, 1.78 billion are in China, followed by 1.14 billion in India and 372 million in the US.

Internet traffic: Saudi Arabia has the highest average monthly data traffic, at 35 GB, followed by Russia and India, with 18.4 GB and 16.9 GB, respectively.

5G deployment: According to Ericsson's Mobility report, at the end of 2023, 10% of India's population had subscribed to 5G. India became the second largest market for 5G smartphones in the first of 2024, following China.[3,4]

Digital identity: As of January 8, 2024, India has given out over 1.3 billion biometric IDs.

Digital payments: Over 1644 billion digital transactions took place in India in FY 2023-24, the highest volume for a country.[5] China reported 41.3 billion transactions (in Q3 of 2023), marginally ahead of Brazil, with 41 billion transactions in 2023.

ICT service exports: In 2023, India's ICT services exports, the second highest in the world, stood at USD 162 billion, behind Ireland, which was leading at USD 236 billion.

AI projects: India's contribution to GitHub for AI projects is the highest in the world, at 23%, followed by US (14%).

Unicorns: As of April 2024, the third largest number of homegrown unicorns by country were in India, following the US and China.

Sources: World Bank Databank, Nokia MBiT Index 2023, Ericsson Mobile Traffic Forecast, Ericsson Mobility Report 2023, GSMA, Speedtest Intelligence, UIDAI Aadhaar Dashboard, Invest India, Banco Central do Brasil Pix Key Statistics, NPCI Retail Payment Statistics, OECD.ai, China Internet Network Information Centre, RBI Report on Currency and Finance, 2024, Counterpoint Research

[2] *Reserve Bank of India. (2024). Report on Currency and Finance. Retrieved from https://rbi.org.in/Scripts/AnnualPublications.aspx?head=Report%20on%20Currency%20and%20Finance*

[3] *Ericsson. (June 2024). Ericsson Mobility Report. Retrieved from https://www.ericsson.com/en/reports-and-papers/mobility-report/reports/june-2024*

[4] *Reserve Bank of India. (2024). Payment System Indicators. Retrieved from https://www.rbi.org.in/Scripts/PSIUserView.aspx*

[5] *When product taxes are added, and subsidies are subtracted from Gross Value Added (GVA), we get Gross Domestic Product (GDP)*

employment. Quantifying and understanding the role of the digital economy in driving economic growth, employment, and sustainable development is essential for both policymakers and the private sector to align resources and adopt strategies. Doing this requires a robust measurement system that enables continued estimation and monitoring.

Previous studies by researchers and statistical and multilateral agencies have not yielded satisfactory results. The current system of national accounts does not lend itself directly to the measurement of the digital economy. A key challenge is defining its scope. The increasingly cross-cutting and integrated nature of digital technologies makes the concept of a distinct digital economy difficult to define. The second key challenge is the scarcity of appropriate and granular data, which poses a potential trade-off between accuracy and completeness in capturing the digital economy.

The problem is not unique to India. Few countries have attempted to size up the digital economy, and even these efforts are works in progress. Appendix 1 provides a review of methodologies and their corresponding estimates across countries that have attempted to measure their digital economies. This report uses globally adopted methodologies—i.e., frameworks developed by the OECD and ADB—to provide estimates of India's digital economy, both as a share of GVA/GDP and employment.[6]

Our study builds on previous work done by RBI and MoSPI. The most recent estimate of India's digital economy (Gajbhiye et al., 2022), which showed 8.5% of GVA in 2019, was based on the ADB framework using the input-output tables prepared by ADB. Anjoy et al. (2022) estimated the size of the digital economy in 2017-18 to be 7.38% of GVA through measuring employment in digital occupations and labour-input across 65 sectors using national accounts data and the PLFS 2017-18. Singh et al. (2022) presented an estimate of 7% of GVA in 2020-21 for ICT goods and services. They also broadened the scope of measurement by using machine-learning techniques to classify digital and brick-and-mortar companies.

With the publication of this report, India will become among a handful of countries, and the first developing country, to provide a comprehensive and up to-date measurements of the digital economy, including new digital businesses and platforms.

[6] *Asian Development Bank. (2021). Capturing the Digital Economy: A Proposed Measurement Framework and its Applications. Retrieved from https://www.adb.org/sites/default/files/publication/722366/capturing-digital-economy-measurement-framework.pdf*

Approach to Measurement

New approaches for measuring a new economy

There are two popular approaches to measure the digital economy, one proposed by the ADB and the other by the OECD, respectively. The one laid out by the ADB uses the input-output analysis to estimate the value-added contribution of the digital industry and the share of the non-digital industries that enables production in the digital industry.[7] This approach equates the digital industry with the ICT industries, presenting a narrow scope of digitalisation. Specifically, the ADB approach does not fully or explicitly account for the activities of digital platforms and intermediaries or benefits to the downstream activities supported by them, such as the income and employment created by MSMEs selling on these platforms.

The OECD approach, which is increasingly accepted globally, expands the scope of the digital economy to non-ICT industries.[8] The OECD framework focuses on two aspects of transactions in non-ICT industries: whether goods and services are digitally ordered or digitally delivered. It also defines new digital industries to include digital platforms and digital intermediaries, e-tailers, and financial service providers that operate digitally.[9] While the OECD approach is more accurate and intuitive, it also requires high-quality primary data; therefore, its implementation can be both expensive and time consuming.

Most existing estimates for India are based on the ADB approach. This is the first study to estimate the size of India's digital economy by using the OECD approach. For appropriate international and domestic comparison, this study provides three estimates: (i) based on the ADB approach; (ii) based on the OECD approach; and (iii) the OECD augmented approach. As the ADB approach is narrower in scope and the global consensus gravitates towards the OECD approach, the main text of the report will focus on the OECD methodology and estimates, with the ADB approach and estimations presented in Appendix 2.

Given the data limitations associated with developing digital Supply Use Tables (SUT) for India, this study estimates one of the high-priority indicators recommended by OECD, i.e., digital industries GVA and its components.[10] Our augmented approach goes beyond the OECD to estimate the digital share of three non-digital industries that have been significantly disrupted by digitalisation: trade, BFSI, and education.

OECD approach

The OECD's approach is based on the ways in which digital technologies are used to create value for industries, i.e., while producing, ordering, and delivering goods and services. Accordingly, it defines seven digital industries: (i) digitally enabling industries (DEIs); (ii) digital intermediary platforms charging a fee; (iii) data and advertising driven digital platforms; (iv) firms dependent on intermediary platforms; (v) e-tailers; (vi) digital-only firms providing financial and insurance services; and (vii) other producers only operating digitally. These categories are summarised in Figure 1.

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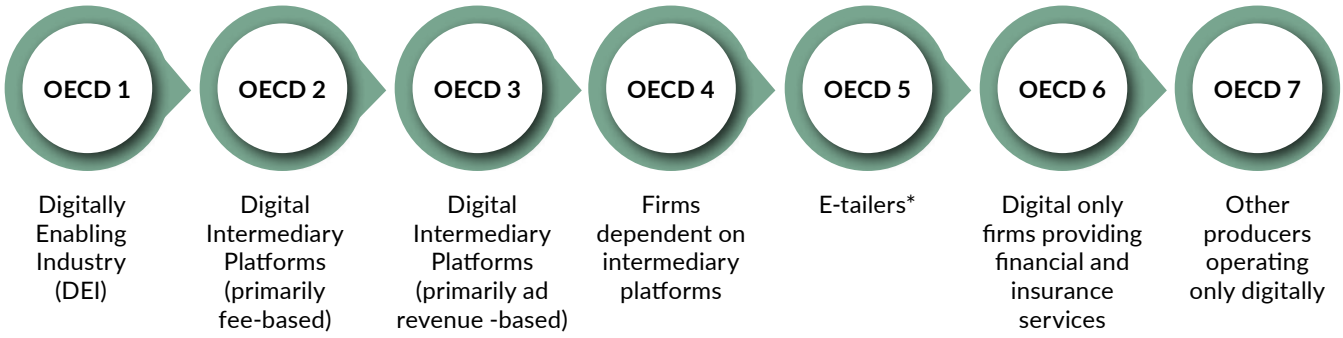
[7] *OECD's digital SUT framework is recommended to be included in the 2025 update of the System of National Accounts (SNA), the internationally agreed standard set of recommendations on how to compile measures of economic activity*

[8] *Organization for Economic Cooperation and Development. (2019, March 11). Measuring the Digital Transformation: A Roadmap for the Future. Retrieved from https://www.oecd-ilibrary.org/science-and-technology/measuring-the-digital-transformation_9789264311992-en*

[9] *Organization for Economic Cooperation and Development. (2023, November 3). OECD Handbook on Compiling Digital Supply and Use Tables. Retrieved from https://www.oecd.org/en/publications/2023/11/oecd-handbook-on-compiling-digital-supply-and-use-tables_b127cb7a.html*

[10] *Highfill, T & Surfield, C. (2022, November). New and Revised Statistics of the U.S. Digital Economy, 2005–2021. Bureau of Economic Analysis. Retrieved from https://www.bea.gov/system/files/2022-11/new-and-revised-statistics-of-the-us-digital-economy-2005-2021.pdf*

Figure 1: Digital Industries as Classified in the OECD Framework



Source: ICRIER

**We have expanded the scope of e-tailers to include e-sellers, i.e., digital platforms that not only resell goods and services purchased from others but also sell their own goods. There are several examples of e-sellers in India, including Country Delight, Treebo, and House of Ganges.*

While the OECD 1 classification, i.e., DEI, is straightforward and its output is directly computable from the national accounts, the scope of other digital industries (i.e., OECD 2-7, excluding 4) has to be defined at the firm level. As shown in Table 1, we used four characteristics of digital transactions to classify firms into OECD 2, 3, 5, 6, and 7. These characteristics are: (i) revenue model—subscription or advertisement based; (ii) intermediation or ownership of goods and services being provided; (iii) products/services being digitally or physically ordered; and (iv) products/services being digitally or physically delivered. Firms in all industries take digital orders, but goods and services may not be digitally delivered. These characteristics help distinguish between the OECD 2, 3, 5, 6, and 7 classifications. OECD 4 is self-explanatory, as it includes the income of individuals and businesses—including small manufacturers, home-based entrepreneurs, gig workers, delivery partners, contracted drivers, content creators, and influencers—who depend on these digital platforms. For detailed OECD definitions of the seven industries, see Appendix 3.

Table 1: OECD 2-4 Classifications Based on Business Characteristics

Other Digital Industries	Description	Examples of Firms Operating in India	User Pays Fee	Digitally Ordered	Digitally Delivered	Intermediary
OECD 2	Digital Intermediary Platforms (primarily fee-based)	Amazon, Uber, Urbanclap, Makemytrip	Y	Y	N	Y
OECD 3	Digital Intermediary Platforms (primarily ad revenue-based)	YouTube, Meta, Sharechat	N	Y	Y	Y
OECD 4	Firms dependent on Intermediary platforms	MSMEs selling online, Uber drivers, delivery partners, content creators	**Firms and individuals dependent on intermediary platforms**			
OECD 5	E-tailers	Nykaa, Pepperfry, Lenskart, BigBasket	Y	Y	N	N
OECD 6	Digital only firms providing financial and Insurance services	Razorpay, Lending Kart, WazirX, Groww	**Pure fintech players**			
OECD 7	Other producers operating only digitally	Byju's, SonyLiv, Gaana, PlaySimple	Y	Y	Y	N

Source: ICRIER

The OECD approach uses these seven industry categories to create digital SUTs for an estimation of the digital economy. Conventional SUTs provided by national statistics agencies, are disaggregated to reallocate domestic output and intermediate use of industries to the new digital industries defined by OECD. This disaggregation and rebalancing exercise requires detailed information on digital transaction type and volume for each industry, which are usually collected through government enterprise surveys. The OECD itself admits that this might be an ambitious ask from countries. Accordingly, the Informal Advisory Group on Measuring GDP in a Digitalised economy proposed a set of high-priority indicators that can help coordinate initial results across countries. Countries like Canada, US, Sweden, Japan, UK, Australia, New Zealand, Ireland, and Netherlands have attempted to measure their digital economy using the OECD framework, but their coverage has varied widely. US's BEA defines some digital activities from the OECD guidelines, namely, infrastructure, e-commerce, and priced digital services, which are mapped back to their industries.[11,12] Canada and Australia both follow approaches similar to that of US.[13,14] Canada published its initial set of SUTs in 2020, which are currently being revised and updated.[15] Netherlands and Sweden produced their updated digital SUTs in 2021.[16] The OECD recommends publishing high-priority indicators and digital SUTs, even if they are experimental.[17]

In the absence of detailed information on transaction type and digital volume at the sector level in India, creating a digital SUT is not feasible. There is not adequate granular data to split conventional industry groupings and reclassify them for digital products and digital industries. We therefore estimate the GVA for OECD 1-7, one of the high priority indicators for measuring the digital economy.

Our estimates are based on a triangulation of data from multiple sources, including data published by the NAD of MoSPI, the MCA database, CMIE Prowess, Tracxn, Employees' Provident Fund Organisation's Establishment Search portal, PLFS, ASI, and various market studies, industry reports, and company annual reports.

Non-digital industries are outside the scope of the OECD approach. Given the digital disruptions in several traditional industries, we recommend the OECD augmented model to capture the digitalisation of firms within traditional industries that are also selling digitally but are not included in the OECD 1-7 classification. We used primary surveys and focus group discussions to estimate the trends for three sectors—trade, BFSI, and education—and add their estimated digital output to the overall estimate, excluding any duplication.

Scope of Measurement

There is no single source of data for estimating all seven OECD digital industries. The different data sources and assumptions used to estimate the GVA of OECD 1-7 are discussed below.

OECD 1: Digitally Enabling Industry (DEI). This industry is similar in scope to the ADB's definition of the core digital economy, which includes computer-related services, telecommunication services, manufacture of ICT goods (computers, communication equipment, etc.), and trade and repair of ICT goods. Given the increasingly digital nature of services involved in motion pictures, video and television programme production,

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[11] *Nicholson, J. (2020, August). New Digital Economy Estimates. Bureau of Economic Analysis. Retrieved from https://www.bea.gov/system/files/2020-08/New-Digital-Economy-Estimates-August-2020.pdf*

[12] *Statistics Canada. (2023, July 25). Digital supply and use tables, 2017 to 2020. The Daily. Retrieved from https://www150.statcan.gc.ca/n1/en/daily-quotidien/230725/dq230725a-eng.pdf?st=YRCZ9FFJ*

[13] *Zhao, P & Research Hub. (2019, February 27). Measuring Digital Activities in the Australian Economy. Australian Bureau of Statistics. Retrieved from https://www.abs.gov.au/statistics/research/measuring-digital-activities-australian-economy*

[14] *Statistics Canada. (n 11)*

[15] *Hooijmaaijers, S., Kuijpers, N & Vuik, J. (2021, September). Supply-Use tables for the digital economy. Centraal Bureau voor de Statistiek. Retrieved from https://www.cbs.nl/-/media/_pdf/2021/49/nl_d3_1_finalreportdigitalsuts.pdf*

[16] *Organization for Economic Cooperation and Development. (n 8)*

[17] *Some manufacturers sell on their own digital platforms as well as through intermediaries. In the absence of clear information on the share being sold through digital intermediaries, a small share of online sales might be double counted with the inclusion of the augmented digital GVA.*

and broadcasting activities, these factors have also been added to the scope of the digitally enabling industry (see Table 2). These sub-sectors have also been included in the BEA's estimate for the size of the US's digital economy (see Appendix 4 for a comparison of the scope of the digitally enabling industry as defined by different countries). The estimation of the digitally enabling industry is entirely based on estimates from the NAS, provided by MoSPI in their 2024 report. The data pertains to the year 2022-23.

Table 2: Unpacking the digitally enabling industry (DEI) into identifiable industries and sub-industries with relevant NIC codes

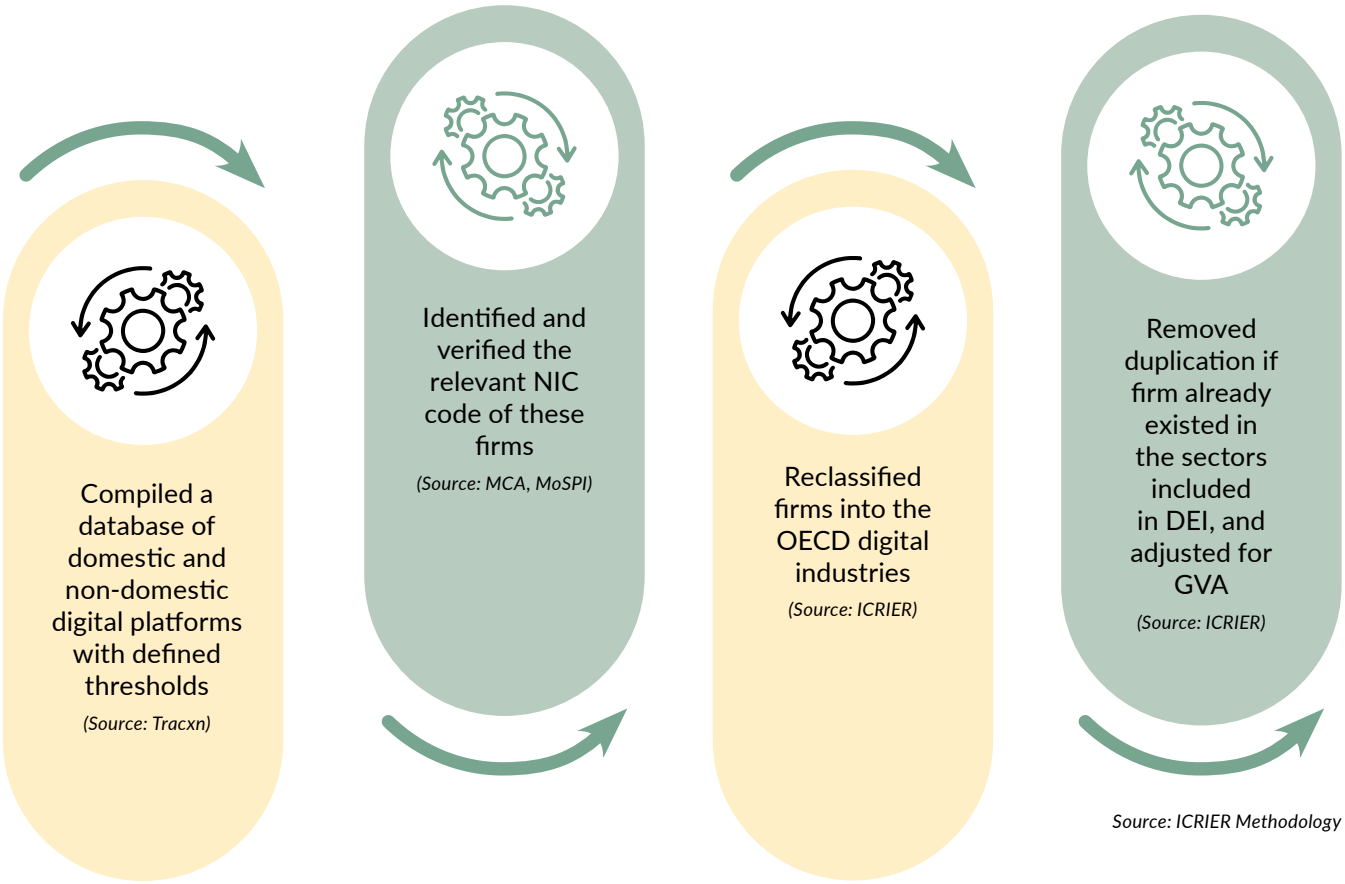
	Industry Category	NIC Code
OECD 1: Digitally Enabling Industry (DEI)	Manufacture of electronic component, consumer electronics, magnetic and optical media	261,264,268
	Manufacture of computer and peripheral equipment	262
	Manufacture of communication equipment	263
	Telecommunication	61 - 61103
	Information and computer related services	62, 63
	Wholesale trade and repair of computers	9511, 9512, 4651, 4652
	Cable operators, broadcasters, recording and publishing	61103, 59, 60

Source: ICRIER

OECD 2, 3, 5, 6 and 7: Digital Intermediaries and Platforms. Firms within OECD 2, 3, 5, 6 and 7 cut across different industries according to the existing national accounts classification. For example, Amazon and Spinny while classified by NAS under wholesale and retail trade, by OECD definitions, they are classified as digital intermediary platforms charging a fee (OECD 2). Other digital intermediary platforms have been included under information and communication, administrative and support service categories, etc., implying that a sectoral approach of estimation or directly attributing values from NAS, for these digital industries will not work.

We therefore compiled a database of domestic and non-domestic digital platforms using Tracxn's company database. We filtered companies that were either categorised as consumer digital and selected those with a revenue of USD 50 million and above in 2022-23. The threshold, observably, included most companies that had any meaningful market share. However, for some upcoming companies, or those that were smaller in size, but considerably popular were also added, irrespective of their revenue. The final usable list of companies included 253 digital intermediaries and platforms. See Appendix 5 for the list of intermediaries used in our estimation and classification into OECD digital industries. It is important to note that some of the firms in this list were already a part of the corporate GVA for the digitally enabling industry (DEI or OECD 1). To avoid any double counting, we have removed the GVA of these select companies from the total of the DEI. Finally, the revenue figures for these companies have been converted to GVA values for aggregation- the ratios used are as per those in the NAS. For companies where revenue of 2022-23 has not been filed with the MCA, we extrapolate values using past year growth rates. See Figure 2 for steps followed for estimating the value of OECD 2, 3, 5, 6 and 7.

Figure 2: Steps in Estimation for OECD 2, 3, 5, 6 and 7 Industries



Source: ICRIER Methodology

OECD 4: Firms and Individuals Dependent on Digital Intermediary Platforms. This category includes incomes and profits of a variety of stakeholders, such as MSME manufacturers and service providers, home-based entrepreneurs, gig workers such as delivery partners, content creators, and online influencers. As expected, there is no single source of credible data from which this category can be measured. Therefore, we used a combination of approaches. For the income of firms and individuals selling on intermediary platforms, we used estimates of GMV, subtracted the margin charged by platforms, and assumed a share of profit from the residual.[18] The share of profit for MSMEs was determined through survey-based research studies.[19] For the income of gig workers on shared mobility platforms, we only subtracted the commission paid by driver partners to the platform. The net income, after subtracting for costs such as vehicle maintenance and fuel, could not be estimated. Therefore, this is an upper limit for gig workers' income. For content creators and influencers, we used a lower bound estimate, including only the reported income of YouTubers.[20] All assumptions and sources of data are provided in Appendix 6.

OECD Augmented. Finally, we extended the OECD estimation to include the digital share of a few traditional industries: retail and wholesale trade, banking, BFSI, and education, which are industries that have experienced high levels of digitalisation and

[18] *Annual Survey of Micro, Small, and Medium Enterprises (MSMEs) in India, ICRIER 2023 https://icrier.org/publications/annual-survey-of-micro-small-and-medium-enterprises-msmes-in-india-leveraging-e-commerce-for-the-growth-of-msmes/*

[19] *https://www.cnbctv18.com/technology/youtube-india-ishan-john-chatterjee-fanfest-creator-economy-content-creators-17904491.htm*

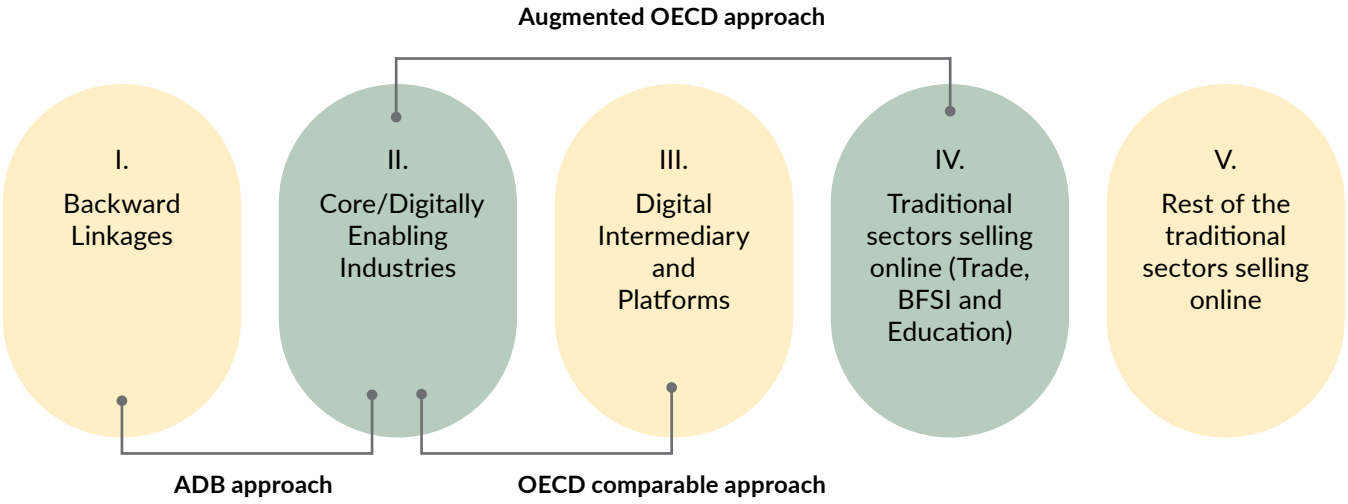
[20] *Ranipeta, S. (2023, September 28). Creator economy exploding in India, 40% growth in hours of content uploaded: YouTube. CNBC TV 18. Retrieved from https://www.cnbctv18.com/technology/youtube-india-ishan-john-chatterjee-fanfest-creator-economy-content-creators-17904491.htm*

disruption in their business models.[21] This analysis is entirely based on a primary survey and focus-group discussions to understand the nature of digitalisation, the use of emerging technologies, and shares of digitalisation, both from a revenue and an employment perspective. This was indeed a first-of-its-kind survey for the industry, which has not compiled any data, statutory or internal, to estimate the share of the digital economy.

The survey was conducted in partnership with the CII and supported by MeitY, especially for data from the banking sector. The sample was restricted to the corporate sector and comprised the top 10-30 companies in each industry, especially those in which digitalisation was most likely. The data sought was for the year 2023-24 and focused mainly on revenue that was digitally generated and employment that was driving the digital aspects of the business. Questionnaires had to be customised for some sectors to reflect the differences in business models, types of transactions, and sources of revenue. Copies of the questionnaires and the estimated digital share for each sector are provided in Appendix 7. Data was collected from March to May 2024. The survey estimates were used to extrapolate only for the corporate share of GVA for the sector.

The scope of estimation for this study is summarised in Figure 3. The ADB estimates are provided separately and largely overlap with the OECD's digitally enabling industry. Aggregating the rest of the OECD industries provides an estimate of the overall digital economy. The OECD augmented approach captures the digital share for a few traditional sectors over and above the OECD digital industries but is currently limited to three sectors of the economy. Figure 3 indicates why determining a point estimate of the size of the digital economy is neither easy nor desirable. The scope between digital and non-digital is shifting every day, and depending on where one decides to draw the line, the point estimate could vary considerably. Thus, even the OECD augmented estimates presented here can be criticised for not capturing the entire digital economy as it excludes the digital output of several traditional sectors such as health, logistics and transport, and public administration (see Box V in Figure 3).

Figure 3: Measurement frameworks for India's digital economy using global approaches



Source: ICRIER

Note: The original OECD framework does not require separate estimates for box IV and V, as their estimates are captured through the digital SUTs. This study takes a slightly modified approach because of data limitations and hence includes box IV but not V.

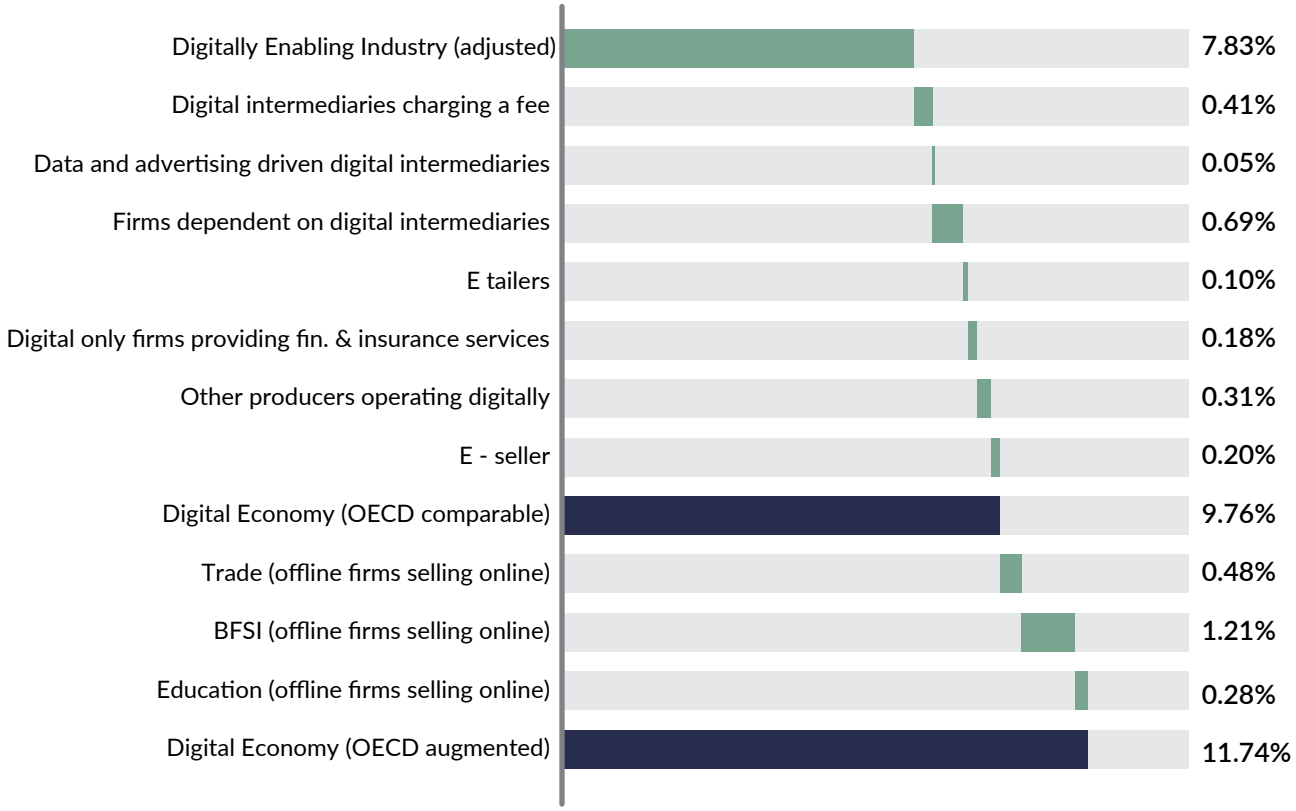
[21] *Calvino, F., Criscuolo, C., Marcolin, L., & Squicciarini, M. (2018, June). A taxonomy of digital intensive sectors. Organization for Economic Cooperation and Development. https://www.oecd.org/content/dam/oecd/en/publications/reports/2018/06/a-taxonomy-of-digital-intensive-sectors_3a1f0ed9/f404736a-en.pdf; Chin, H., Marasini, D.P., & Lee, D. (2022, December 20). Digital transformation trends in service industries. Springer. https://doi.org/10.1007/s11628-022-00516-6; Gurrala, M., & Bondade, V. (2022). Study and analysis of digital transformation in the Indian education sector. IIM Bangalore. https://repository.iimb.ac.in/handle/2074/21992; Sepulveda, A. (2020). The digital transformation of education: Connecting schools, empowering learners. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000374309; Asian Development Bank. (2023, June). Reimagine tech-inclusive education: Evidence, practices and roadmap. https://www.adb.org/sites/default/files/publication/892641/tech-inclusive-education-evidence-practices-road-map.pdf*

Output and Employment Estimates

Digital economy accounts for nearly 12 per cent of national GVA

In 2022-23, the size of India's digital economy stood at 11.74 per cent of total national income, which is equivalent to Rs. 28.94 lakh crore (~ USD 368 billion) in GVA and 31.64 lakh crore (~ USD 402 billion) in GDP.[22] Figure 4 provides a break-up of its components. The share of OECD 1 or the digitally enabling industry (DEI), which is also defined as the core of the digital economy, in national GVA is found to be 7.83 per cent. The new digital industries, which include big techs, other digital platforms and intermediaries as well as firms dependent on digital intermediaries (OECD 2-7), account for nearly 2 per cent of GVA. As expected, firms dependent on digital intermediaries (OECD 4) have a higher output than the intermediaries themselves (OECD 2 and 3), reflecting the multiplier effect of the latter. Also, the combined contribution of the three traditional industries (BFSI, trade and education) to national output is around 2 per cent, rivaling in importance to the new digital industries. This is a clear indication of the digital economy moving outside the realm of big tech and digital platforms to digitalization in the rest of economy. Going forward the increasing share of the digital economy in GVA is likely to come from traditional industries adopting digital tools and practices. Among all sectors, the BFSI sector seems to be the most digitized, with nearly 20 per cent of the sectoral output coming from the digital side (see 'Sector Highlights' for more details).

Figure 4: GVA of India's Digital Economy, 2022-23



Source: ICRIER Estimates

Note: E-sellers, an extension of the e-tailer segment is reported separately in case one would want to exclude its value for estimation of the pure OECD framework

[22] *GVA 2022- 23 is INR 246.59 lakh crore and GDP 2022-23 is INR 269.5 lakh crore https://iced.niti.gov.in/economy-and-demography/key-economic-indicators/gva USD estimate using 2022 average exchange rate of 78.598 from https://www.irs.gov/individuals/international-taxpayers/yearly-average-currency-exchange-rates*

The corollary is to see the share of these components in the overall digital industry. The digitally enabling industry, which also includes some of the high growth sectors of the economy such as cloud computing services and some global capability centres, is the largest contributor to the GVA of the digital economy (see Box 2). It accounts for 67 per cent of the digital economy GVA (see Table 3). As per our estimates the other highest contributors to the OECD definition of the digital economy are firms dependent on digital intermediaries and digital intermediary platforms, accounting for 5.9 per cent and 3.5 per cent of the digital sector's GVA. In the augmented segment, while banking and financial sector contribute 10.3 per cent of the digital economy's GVA, retail trade and education contribute 4.1 per cent and 2.4 per cent respectively (see Appendix 8 for estimation for the Augmented sectors).

Table 3: GVA Estimates for the Digital Economy, 2022-23

Sectors	GVA (Rs. Crore)	Share in Total Economy	Share in Digital Economy (OECD + Augmented)	GDP (Rs. Crore)
Digitally Enabling Industry (adjusted)	19,30,158	7.83%	66.7%	
Digital intermediary platforms charging a fee	99,951	0.41%	3.5%	
Data and advertising driven digital platforms	12,479	0.05%	0.4%	
Firms dependent on digital intermediaries	1,70,766	0.69%	5.9%	
E tailers	24,752	0.10%	0.9%	
Digital only firms providing financial and insurance services	44,313	0.18%	1.5%	
Other producers operating digitally	75,557	0.31%	2.6%	
E - seller	48,665	0.20%	1.7%	
Digital Economy (OECD)	**24,06,642**	**9.76%**	**83.2%**	**26,30,320***
Augmented (excluding firms covered in OECD)				
Trade	1,19,374	0.48%	4.1%	
Banking and Financial Services	2,99,165	1.21%	10.3%	
Education	68,970	0.28%	2.4%	
Digital Economy (OECD + Augmented)	**28,94,150**	**11.74%**	**100%**	**31,63,930***

Source: ICRIER Estimates, https://iced.niti.gov.in/economy-and-demography/key-economic-indicators/gva

**Value of GDP attributable to the digital economy is calculated by applying the share of GVA attributable to the digital economy to the estimate of total GDP (INR 269.5 lakh crore in 2022-23).*

The digital economy's share in national income has seen a consistent rise over time. We present the trajectory using a combination of estimates provided by previous studies, our estimates from the ADB approach (which use a more disaggregated input-output table (66 X 66 industries) than those used by ADB), and the OECD approach.[23] The size of the digital economy was estimated to be 11.74% in 2022-23 (see Figure 5). Although the comparison is between two different approaches of measurement that define the scope differently, a comparison of ADB estimates over time would also indicate an increase. Since the OECD approach delves into the changing nature of digital business models and their contribution to the GVA, in addition to the role of the digitally enabling industry, the approach would be better suited for estimating the digital economy. There is, however, scope to improve and adapt the OECD approach to capture important 'digital industries'. A flexible approach will allow the OECD approach to capture the changing nature of digital businesses as well as capture the digitalised components of traditional businesses. We have used the OECD augmented approach to reflect the latter factor.

Box 2: Some of the Faster Growing Segments of the Digital Economy

Cloud Market: India's cloud market (public) accounted for 1.1-1.2% of the global market in 2020-23 and is estimated to have grown at a CAGR of 29% to reach USD 8.3 billion. With businesses increasingly adopting AI for streamlining operations, enhancing productivity, improving customer experience, and launching new services, the cloud market is expected to grow at a CAGR of 24% over the 2024-27 period to reach USD 20.3 billion by the end of 2027.

In the NAS, cloud services are recoded under computer-related services (OECD 1). Computer-related services also happens to be the fastest growing sub-sector for the digitally enabling industry. Between 2011-12 and 2022-23, the CAGR of this sector is 16.2%, compared to 15.6% for the manufacture of communication equipment and 10% for both the manufacture of computer and peripheral equipment and telecommunication services.

GCCs: GCCs are offshore centres established by multinational corporations to provide a variety of services to their parent organisations, including R&D, IT support, and business process management. India has also become an international leader for GCCs, home to almost 55% of the world's GCCs in 2022. The number of operational GCCs in India has been on the rise, from 1250 in 2017-19, to 1580 in 2020-22, and predicted to rise to 1900 in 2023-25. Among 22 of the top GCCs in India, nine are classified within the ICT sector, specifically computer-related services. In 2022-23, the revenue of these companies stood at around 3.1% of the total output of DEI and 6% of total output of computer-related services. India's growth in computer-related activities has been consistently strong, with more opportunities on the horizon in this sub-sector.

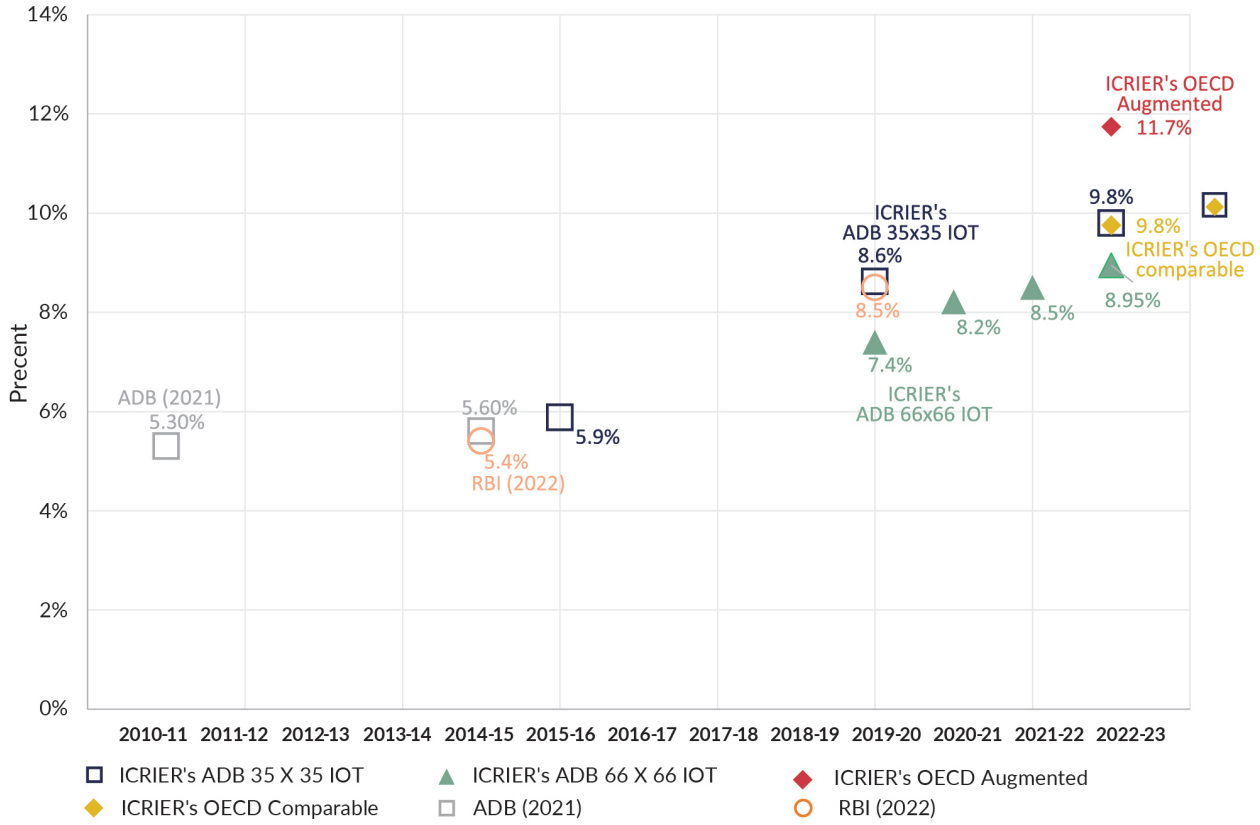
Sources:
https://www.ibef.org/blogs/global-capability-centres-gccs-in-india
https://mktgdocs.cbre.com/2299/89231456-8dfe-47dd-adc4-0ed8f48be5c8-196986914.pdf

Ranjan, R. (2024, June). Indian Cloud Market Analysis. IDC

Note: It is important to note that statement like cloud market reaching $20.7 billion is not the same thing GVA of the cloud market will reach $20.7 billion. The former refers to overall sale, while the latter is gross value added.

[23] *Refer to Appendix 2 for details on the ADB approach*

Figure 5: Estimates for Size of India's Digital Economy 2014-15 to 2022-23



Source: Compiled by ICRIER

Note: RBI (2022) refers to the following study conducted by RBI researchers: Gajbhiye, D., Arora, R., Nahar, A., Yangdol, R., & Thakur, I. (2022, December). Measuring India's digital economy. RBI Bulletin. https://rbidocs.rbi.org.in/rdocs/Bulletin/PDFs/05ART201220221265B8E871824B98970F03E87228C0FE.PDF:

Digitalisation of traditional sectors

The primary survey and stakeholder discussions highlighted interesting facts about how different sectors are digitalising and their contribution to the revenue generated by firms. Not all aspects of businesses are digitalising uniformly. For example, retail sales are digitalising much more than wholesale sales. Firms are also investing in digital methods for customer acquisition and business development. Chatbots and AI applications are fairly commonplace. Sector-specific highlights are summarised below.

BFSI. In the BFSI sector, the highest level of digitalisation has occurred in the payments segment of banks. On average, over 95% of payment transactions for public and private sector banks are now digital. Other transaction categories, such as loan applications and investments, are relatively less digitalised. While the digital share of transactions for banks is observed to be very high, the digital share of revenue is low, as some of the highest revenue-generating activities are largely offline. Other financial services institutions are relatively less digitalised than banks.

Retail. For the retail sector, most companies are opting for an omni-channel model, of which digital is a steadily growing part. In fact, many companies are developing their own platforms in addition to selling on intermediary platforms. An interesting trend is that e-tailers and e-sellers such as Nykaa, Urban Ladder, FirstCry that began as completely online models have, over time, invested in physical stores. While the share of online selling is growing, offline formats will continue to exist and grow for some companies. Additionally, while the use of AI chatbots is becoming very common among retail companies at the customer end, internal processes are being optimised through the use of digital inventory-management tools.

Education. Among educational institutions, there are three clear formats exist: complete offline, hybrid, and complete online. Most large institutions use a

combination of the three in the delivery of education services, with offline being their largest component. As is the case with retail, some edutech firms such as Physics Wallah have transitioned from a completely online to a hybrid model.

Hospitality and logistics. Hotels are digitalising several aspects of their business, including supply chain, vendor management, customer experience, and sales. On the sales side, by investing in new technologies like metaverse and AI, hotels are creating virtual experiences for potential customers, which are near-perfect substitutes for physical visits. Most interviews suggest that digital sales for their sector are likely to increase by 10-25% in the next five years. Most large logistics companies have completely digitalised the tracking of shipped goods. Pick-ups and delivery are also coordinated digitally. However, smaller courier and shipping companies and those operating in the informal sector are only partially digitalised.

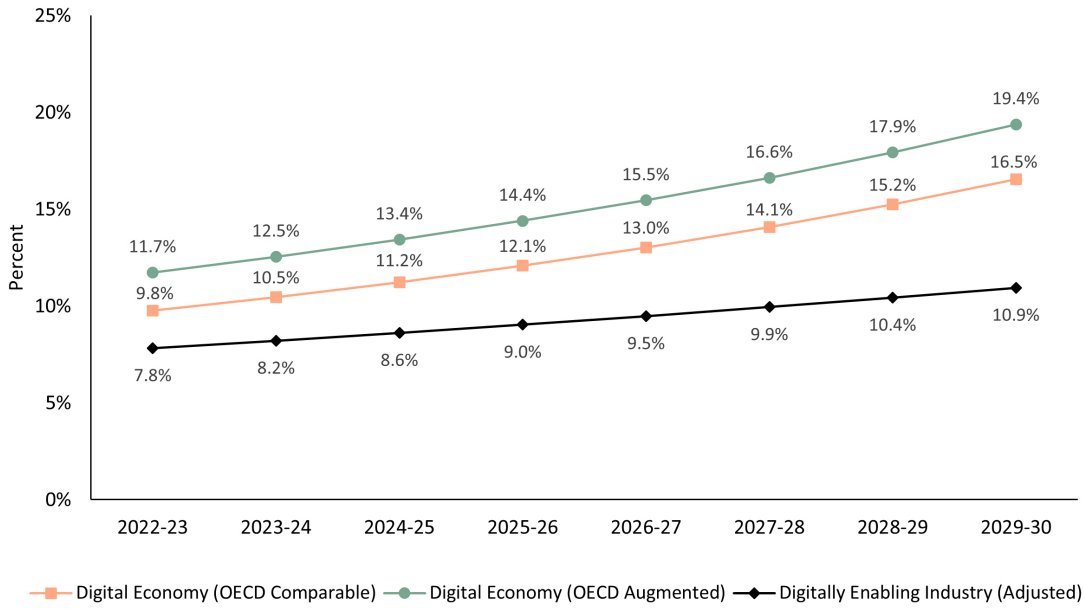
Projections: The future is bright

Digital economy will account for nearly one-fifth of the economy by 2030

India's digital economy is expected to grow almost twice as fast as the overall economy, accounting for nearly 20% of the GVA by 2030. This includes the digital economy defined by OECD as well as the digital share of three sectors identified as digitally disrupted. If we only consider the OECD definition, then the digital economy is estimated to be 16.5% of the total economy in 2030 (see Figure 6a). The projections are based on four assumptions: (i) the decadal rate of growth of the DEI enabling industry, data for which is available in the national accounts; (ii) the rate of growth of revenue for digital businesses and platforms for the last two years; (iii) the rate of growth of the traditional industries included in the augmented analysis; and (iv) the expected rate of digitalisation for these traditional industries.

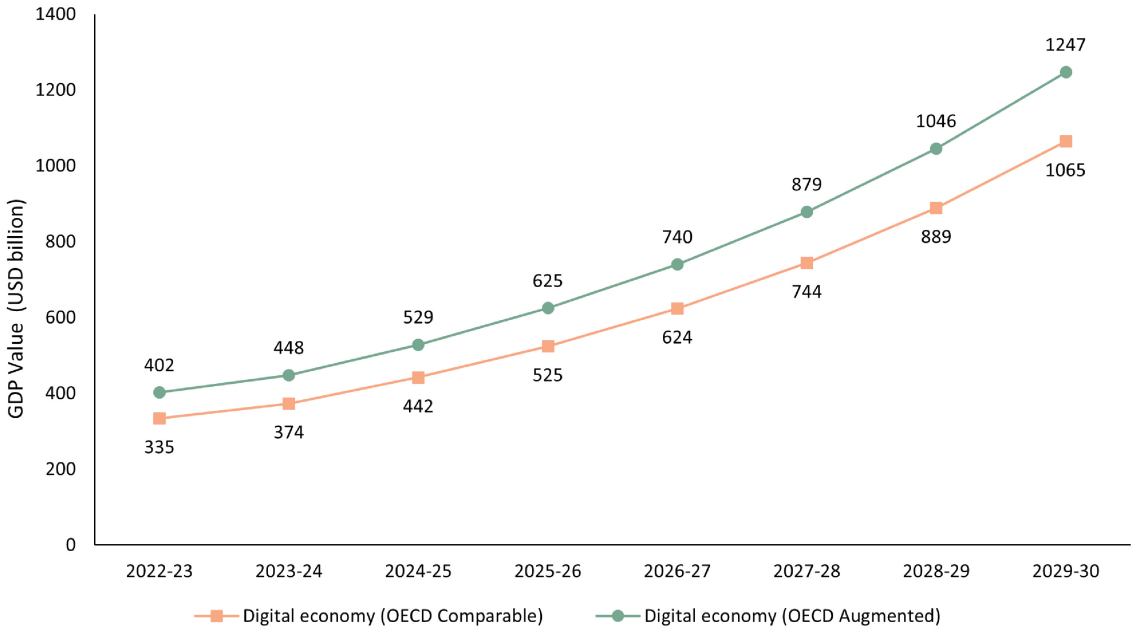
As expected, the digital economy has been growing much faster than the rest of the economy. While the overall economy, measured in nominal GVA, was growing at a rate of 11.8% over the last 10 years, the sectors comprising the digital-enabling industry were growing at 17.3%. Digital platforms and intermediaries are growing much faster (~30%) and are likely to do so for the next few years. Consequently, the gains to businesses and individual entrepreneurs are also going to be higher. The diverging trends between the DEI enabling industry and the OECD estimate of the entire digital economy, and between the OECD and OECD augmented estimates, suggest that the share of India's digital economy is expected to increase not only from the growth of the DEI enabling industries but its wider diffusion in the rest of the economy. For all assumptions and calculations, see Appendix 9.

Figure 6a: Projections of the Share of India's Digital Economy in Total GVA



Source: ICRIER estimates

Figure 6b: Projections of the Size of India's Digital Economy (GDP)



Source: ICRIER estimates, MoSPI and IMF[24].

Note: : 2022-23 estimates of GDP at current prices are from MoSPI, and projected GDP at current prices from are from IMF.

Note: Size of GDP attributable to the digital economy in Figure 6b are projected by applying the estimated percentages of GVA attributable to the digital economy shown in Figure 6a to estimates of projected GDP from IMF. Based on these assumptions, the digital economy is expected to surpass USD 1 trillion by 2029.

Contribution to Employment

Digital economy employs nearly 2.5% of the workforce

In 2022-23, the digital economy accounted for 14.67 million workers, or 2.55% of India's workforce. The estimation is based on the same definition and scope as that for the digital economy GVA. The data has also been triangulated from different sources, as was the case for GVA. See Figure 7 for a disaggregation of the employment estimates, which shows that the highest share of employment is in the DEI enabling industry (58.07%), corresponding to the digital GVA shares. Men constitute about 78% of the employment in the DEI enabling industry; however, the services sub-sectors show a slightly lower gender gap (75% male). The gender split for the rest of the components is not available.

While core activities involving the production of digital technologies or services may still be dominated by men, such as in coding and programming activities and STEM-related occupations, the digitalisation process itself has been associated with increased female employment.[25] Not only do digital platforms create new job opportunities for women, the digitalisation of

[24] *2022-23 GDP estimates from https://iced.niti.gov.in/economy-and-demography/key-economic-indicators/gva converted to USD estimate using 2022 average exchange rate of 78.598 from https://www.irs.gov/individuals/international-taxpayers/yearly-average-currency-exchange-rates. IMF projections from https://www.imf.org/external/datamapper/NGDPD@WEO/IND?zoom=IND&highlight=IND.*

[25] *Canavire-Bacarreza, Y. Y. G. G., Yang, Y., Ghazanchyan, M., & Granados-Ibarra, S. (2024, January 12). Digitalization and employment gender gaps during the COVID-19 pandemic: Evidence from Latin America and the Caribbean. IMF. https://www.imf.org/en/Publications/WP/Issues/2024/01/12/Digitalization-and-Employment-Gender-Gaps-During-the-COVID-19-Pandemic-Evidence-from-Latin-543709; Bajaj, K. (2024). Digitization and its effects on female labour force participation in India. IWWAGE. iwwage.org/wp-content/uploads/2024/05/Deep-dive-Working.pdf; Ahmad, R., Sharif, F., Ahmad, S., Gul, A., & Zhainagul, A. (2024). Does the digital economy improve female employment? A cross-country panel data analysis. Heliyon, 10(13).*

traditional sectors also create options for women that were hitherto unavailable due to mobility restrictions and safety concerns. Finally, as suggested above, while the platform economy has the potential to be gender inclusive in its employment creation (such as professional services and writing and translation through online web-based platforms[26]), some occupations within the platform economy, such as delivery services, remain male-dominated.[27] A detailed sectoral analysis of gendered impacts on employment is recommended.

Box 3: Comparison of other estimates of employment in the digital economy

NASSCOM estimates direct employment of 5.43 million people in 2024 in the following sectors: IT services, business process management, engineering research & development, software products, and hardware.[28] On the other hand, our estimate for DEI is 8.52 million. However, the NASSCOM estimate is not directly comparable with ours because the scope of DEI is broader and the NIC industries included in the two estimates are also different.

NITI Aayog's Gig Economy report estimated that, in 2020-21, 77 lakh (7.7 million) workers were engaged in the gig economy (2.6% of the non-agricultural workforce or 1.5% of the total workforce). They used data from the NSS Employment Unemployment Survey and the PLFS to estimate the number of individuals employed in the gig economy (non-agricultural sectors) by using broader filters. The first level of filtering uses data for individuals between 18 and 45 years in the top 100 cities, with education from secondary school to graduation, and household consumption expenditure below the 75th percentile of monthly per-capita consumption expenditure. This estimate was then narrowed down to occupations that can be part of the gig economy and industries with large concentrations of gig work. Finally, the share of workers with a mobile phone and bank account were applied based on World Bank estimates to arrive at an estimate of employment in the platform gig economy.

Other estimates for gig work include **Fairwork's** 2020 report that estimated that about 30.3 lakh (3.03 million) individuals were employed by eleven large platforms as gig workers.

Our estimates of gig workers and content creators, which is part of OECD 4 industry, is 45.2 lakhs in 2022-23—which is between the NITI Aayog and Fairwork estimates. Our estimates are likely to be lower than the actual numbers because they include gig workers in only 75% of total platform and intermediaries, which were the only ones for which reliable data was available.

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[25] *Canavire-Bacarreza, Y. Y. G. G., Yang, Y., Ghazanchyan, M., & Granados-Ibarra, S. (2024, January 12). Digitalization and employment gender gaps during the COVID-19 pandemic: Evidence from Latin America and the Caribbean. IMF. https://www.imf.org/en/Publications/WP/Issues/2024/01/12/Digitalization-and-Employment-Gender-Gaps-During-the-COVID-19-Pandemic-Evidence-from-Latin-543709; Bajaj, K. (2024). Digitization and its effects on female labour force participation in India. IWWAGE. iwwage.org/wp-content/uploads/2024/05/Deep-dive-Working.pdf; Ahmad, R., Sharif, F., Ahmad, S., Gul, A., & Zhainagul, A. (2024). Does the digital economy improve female employment? A cross-country panel data analysis. Heliyon, 10(13).*

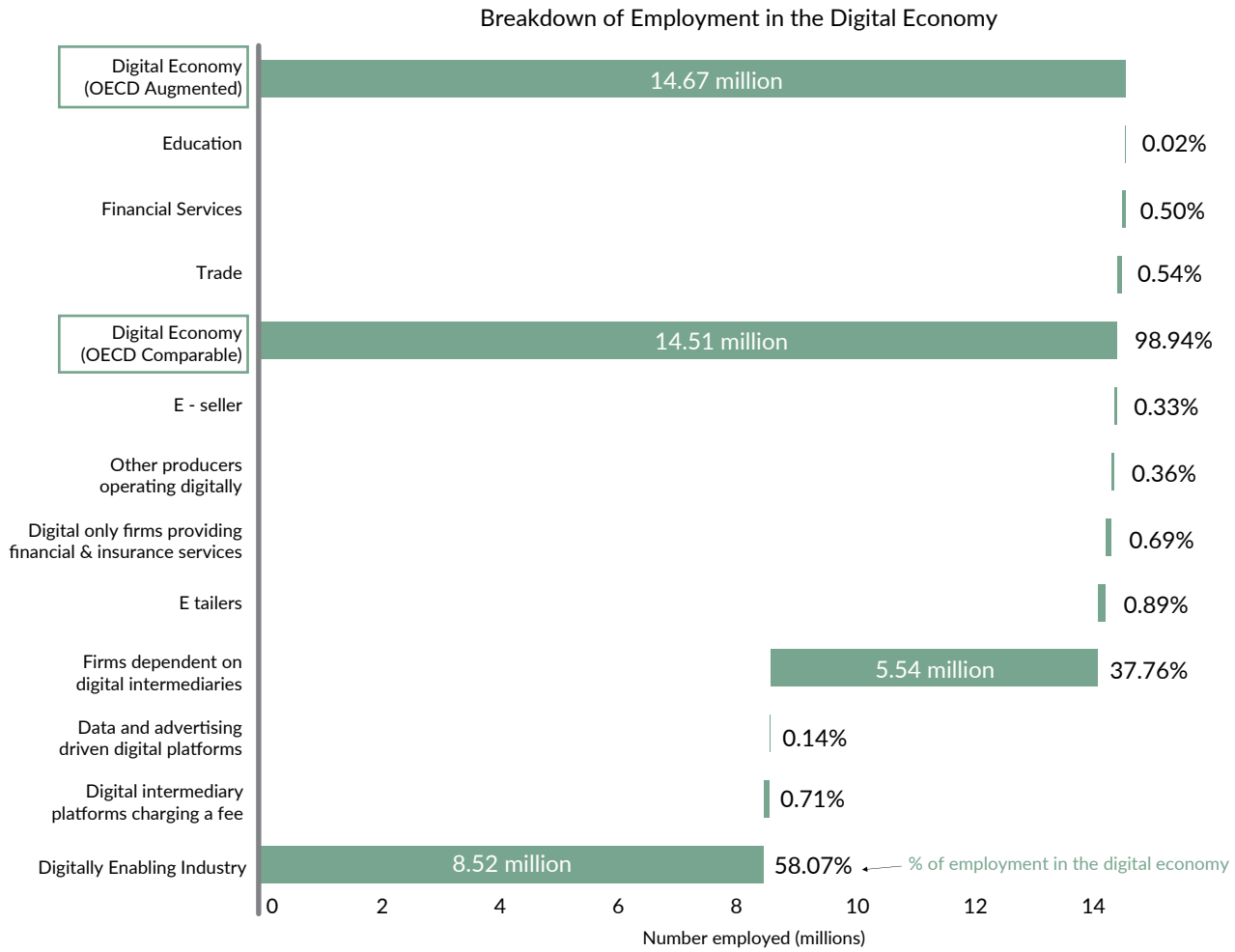
[26] *ILO. (2024). World Employment and Social Outlook 2021 - The role of digital labour platforms in transforming the world of work. https://www.ilo.org/publications/flagship-reports/role-digital-labour-platforms-transforming-world-work*

[27] *Goyal, D. (2021). Increasing women participation in our delivery fleet. Zomato. https://blog.zomato.com/more-inclusive-delivery-fleet*

[28] *NASSCOM. (2024). Strategic review 2024: Rewiring growth in the changing tech landscape.*

The structure of employment for the digital economy appears to be bimodal, with over 37% comprising platform gig workers, content creators, and digital sales in MSMEs (OECD 4) and the rest accounting for a mix of manufacturing workers, managers, engineers, and other professionals. In its current form, the former group tends to be more precarious and lower paid, while the latter group tends to be characterised by salaried jobs with higher pay levels and better working conditions.

Figure 7: Breakdown of Employment in the Digital Economy



Source: ICRIER estimates

For the OECD augmented section, employment estimates are considerably lower than their GVA estimates, constituting only 1.06% of the overall estimate of employment in the digital economy, compared to 16.8% in the share of digital GVA. This estimation is based on the primary survey. In general, besides the IT department, firms have limited jobs that are dedicatedly digital. Resources that serve digital sales or digital content usually perform other roles as well. See Appendix 10 for detailed calculations of the employment estimate.[29]

[29] *Estimates of percentage of employment that is attributable to the digital economy for the three sectors is calculated as average over the firms surveyed, weighted by their revenue. The survey defined digital employment as those engaged in the following digital activities: IT management, software management, computer management, web publishing, digital media marketing, data analytics, telecommunications, and telemarketing. These sector-wise estimates of percentage attributable to digital were then applied to estimates of the number of individuals employed in the private sector (public/private limited companies), which were calculated based on percentages from the PLFS applied to an estimated total employment of 575,540,000 based on MoHFW projections.*

Accordingly, the labour productivity calculated for the digital share of these traditional sectors is higher than for the rest of the sector. For example, in the retail and trade sector, the estimated labour productivity based on reported statistics from NAS and PLFS is approximately INR 4.5 lakhs per unit of labour for the overall sector, while that for the digital share is INR 1.5 crore.[30] In general, we find that labour productivity for the digital economy is five times greater than the rest of the economy, highest for digital intermediaries and platforms, followed by the digitally enabling industry, and lowest for firms benefitting from digital intermediaries. The labour productivity of firms dependent on intermediaries is similar to that of the overall economy.[31]

Box 4: Our Estimates are Likely to be Conservative and Downward Biased

While our estimates go beyond the OECD framework to include digitalisation in traditional sectors, not all components of the OECD framework have been adequately represented in our estimation. This is largely due to challenges of data availability and usability.

Sectors under the digitally enabling industry (OECD 1) are well aligned to the national industry classification and therefore adequately captured. However, minor discrepancies may exist when differentiating between the GVA of industries that are often grouped together, such as ICT trade, repair of communication equipment, and computers & peripheral equipment, for which disaggregated values are not available.

There is no comprehensive list available for digital platforms covered under OECD 2, 3, 5, 6, and 7. For this data, we relied on our own compiled list of companies categorised as consumer digital companies, most of which have a revenue of USD 50 million (INR 400 crores equivalent) and above, thereby excluding several small and medium-sized start-ups. Even for this list, data for all companies was not available. The employment estimates are also based on this list. Estimates for GVA as well as employment for OECD 2, 3, 5, 6, and 7 are therefore underestimated.

[30] *Total GVA for trade and repair services was INR 2615146 crore in 2022-23. The corresponding employment number for retail and wholesale trade estimated from PLFS is 58.7 million (10.2% of total UPSS employment).*

[31] *These are rough estimates for labour productivity, as the composition of labour unit across sectors is not uniformly defined. The employment numbers include both full-time and part-time workers are also based on assumptions.*

[32] *Estimates for GVA of 4651 and 4652, and 9511 and 9512 will be partitioned from aggregate values as available in the NAS.*

Data Gaps in the Measurement of the Digital Economy

This report is an attempt to put together the first set of credible, comprehensible and current estimates on India's digital economy. The limitations of this report are largely a result of the data gaps that make assessment of a dynamic phenomenon like the digital economy very challenging. The data gaps can be divided into two main categories: (i) data that exists but has not been compiled or matched and (ii) data that does not exist.

In the first category, the following require attention:

- The way NIC codes are assigned to companies is not uniform across different agencies (e.g., MCA and MoSPI). This makes the matching and compilation of data from different sources challenging.
- The assignment of companies to industries in the NAS is not public information. In the absence of knowledge of how companies are assigned—particularly those that are largely digital or are registered as IT companies but create value in other sectors like retail, education, transportation, or finance (i.e., their parent industry)—can result in the aggregation of GVA at the sectoral level being inaccurate. A uniform principle for their classification going forward would be important.
- A universal database of digital intermediaries and platforms is not available. Data when compiled from different market research databases, MCA, EPFO, or a web search, cannot be verified. Important companies may also be left out in the filtering process.
- Lack of public data on disaggregates affects the accuracy of the estimation. Availability of sector disaggregates helps distinguish between the digital and non-digital components of a sector, which are otherwise grouped together in national accounts. For example, publishing includes web and software publishing as well as the publishing of books and printed material.

In the second category, the gaps are as follows:

- Lack of updated input-output table IOTs and SUTs that capture digitalisation-led structural changes in the economy
- Lack of enterprise surveys (both for manufacturing and services) that can estimate the number and share of firms receiving orders digitally and delivering digitally. These surveys will help build digital SUTs from national SUTs.
- Lack of data on gig workers, including home-based entrepreneurs, delivery partners, contractual drivers, influencers, content creators, and freelancers

Recommendations for measuring the size of India's digital economy

The recommendations are developed from the data gaps and limitations identified in this report. While recommendations have been categorised into four distinct categories, they are interdependent and flow into each other.

- **Narrow the data gap**
  - Expand the enterprise surveys—for both manufacturing and services—to include questions on digitalisation and the use of digital technologies, including questions on digital exports and imports. These surveys will help build digital SUTs from conventional SUTs. Some sample questions from the enterprise survey of the UK, Netherlands, and the US are provided in Appendix 11.
  - Expand household surveys to collect information on expenditure that is digitally ordered. This will help build high-priority indicators on the expenditure for digital SUTs.

- Harmonise NIC codes across different government departments for comparability of data
- Create a register of digital platforms and intermediaries, including fintech, which are easily verifiable. The Netherlands has created one by using web scraping.
- Collect data on gig workers either through a systematic change in occupation codes and/ or industry codes or by asking the necessary questions to identify them (degree of dependence on employer or intermediary, nature of receiving orders, terms of contract, payments, and commissions) in regular surveys like the PLFS or other enterprise surveys
- Ensure that employment surveys like the PLFS incorporate questions on digital activities to better measure the extent of digitalisation of employment, rather than simply employment by industries that are digitalising
- Consider using non-traditional data sources such as web scraping for dynamic data collection on digital services

- **Produce periodic updates and expanding estimates for the digital economy**
  - Consider using the exercise undertaken in this study as a template to produce periodic updates on the share of the digital economy in national income and employment by using currently available information
  - Aim to address the data gaps to improve the quality and coverage of these estimates and publish yearly updates for high-priority indicators (for the new digital industries)
  - Use new data to build a digital SUT that provides the visibility of digitalisation in macroeconomic statistics

- **Facilitate global alignment**
  - Expand the framework to measure aspects of digitalisation beyond digital ordering and delivery
  - Adapt the framework to keep up with the emergence of new business models and digital phenomena. In this report, we added e-sellers to the e-tailers category.
  - Expand the scope of digitalisation beyond digital industries that are defined by thresholds of digitalisation. It is equally important to recognise the efforts of digitalisation in traditional industries, which may currently be small but are will expand significantly over time. In this report, this approach has been presented as OECD augmented for the trade, BFSI and, education sectors.

- **Move beyond the estimation of size to measure impact**
  - MeitY should consider undertaking a separate study on estimating the productivity gains from digitalisation that help ascertain supply-side efficiencies, especially for manufacturing sectors that do not necessarily order and deliver digitally. The analysis will complement estimates presented in this report that define digital industries based on a narrow set of characteristics for firms.
  - The Ministry of Labour & Employment should consider undertaking a study to understand the impacts on employment and labour markets, especially from the gender lens. It is important to study the impact of digitalisation on different occupations and the net effect on employment in different sectors.

Recommendations for Accelerating the Pace of Digitalisation in India

Following from our analysis and measurement of India's digital economy, there can be three levers that contribute to the size of India's digital economy: (i) the DEI enabling industry, which broadly comprises IT services, manufacture of electronic components, and computers; (ii) digital platforms and intermediaries; and (iii) traditional non-digital sectors of the economy, which are also digitalising rapidly. Digitalisation of the economy can be accelerated through each of these levers. When it comes to policies, we group them into five categories, as shown in Table 4. Each policy pillar can apply to one or more than one lever. For instance, digital literacy and skilling is applicable to all levers while ensuring regulatory certainty seems most pressing for digital platforms and intermediaries.

Table 4: Policy recommendations to accelerate the pace of digitalisation in India

Lever ↓ / Policy →	Digital Literacy and Skilling	Regulatory Certainty	Cyber Security & Trust	Ease of Doing Business	Digital Infrastructure
Digitally Enabling Industry	✓			✓	
Digital Platforms and Intermediaries	✓	✓	✓		✓
Traditionally non-digital sectors	✓		✓	✓	✓

Adopt collaborative and concerted efforts for digital literacy and skilling

Digital literacy has been at the centre of government policies to promote digitalisation. The Digital Saksharta Abhiyaan (DISHA) or National Digital Literacy Mission was formulated in 2017 to provide IT training to 52.5 lakh people. Subsequently, the government introduced the Pradhan Mantri Gramin Digital Saksharta Abhiyaan (PMGDISHA) with a target train six crore individuals, including Anganwadi workers and ASHA workers.[33] Although both programmes have concluded, survey results reflect that the country lags behind in digital literacy. According to the NSSO's Multiple Indicator Survey published in 2023, 70% of Indian youth aged between 15 and 29 years cannot send emails with files attached, and nearly 60% cannot copy and move a file or folder.[34] In the absence of these basic digital skills, citizens will find it challenging to benefit from the digitalisation of government services. Moreover, employability is a huge challenge. The gains of digitalisation will reflect when citizens and businesses are able to use available digital tools at scale. Accordingly, we recommend the following:

- Encourage improvement in outcomes of basic education and literacy in primary and secondary schools as a prerequisite for strengthening digital literacy, and incorporate digital literacy in the K-12 programme in schools
- Make concerted efforts towards reducing adult illiteracy and skilling that necessitates improved coordination between different government

[33] *MeitY. (2022). Promotion of digital literacy. https://pib.gov.in/PressReleasePage.aspx?PRID=1885958*

[34] *NSSO. (2023). Multiple indicator survey in India – 202-2021. NSS Report No. 589. https://www.mospi.gov.in/sites/default/files/publication_reports/MultipleIndicatorSurveyinIndiaf.pdf*

departments, greater involvement of the private sector, and increased use of technology-aided programmes
- Implement well-designed and curated programmes that help improve employability
- Incorporate the use of edge technologies like AI and robotics

Minimise regulatory uncertainty for digital platforms and intermediaries

The rapid scaling of digital platforms and new digital businesses have also raised alarm bells on the risks of misselling, the misuse of personal data, misinformation, and monopolisation, among others. Regulators and policymakers have responded with a series of new regulations addressing the risks from new digital businesses. Many regulations are either under consultation, in draft stage, or have rules pending. Most regulations see at least a few shifts. Until finalised, businesses, especially new businesses, would find it challenging to navigate uncertainty. We recommend the following:

- Conduct transparent and timely consultations
- Coordinate with all involved government bodies to ensure regulatory alignment
- Minimise time between the announcement of intent and passing of law
- Bring regulatory clarity on the use of emerging technologies such as cryptocurrencies, gaming, and generative AI, and removing frictions in the operation of digital platforms

Enhance cybersecurity and trust

Cyberattacks and cybercrimes are the weakest link of in rapidly digitalising economies—in India as well as most countries in the world. Some sectors, such as health, banking, and government institutions, are more susceptible to attacks than others. Accelerating digitalisation requires building resilience and trust. We recommend the following:

- Incentivise businesses to invest in cybersecurity systems
- Increase cybersecurity awareness, making it a key component of digital skilling programmes
- Build cross-country collaboration for the identification and mitigation of cybercrimes
- Strengthen cybersecurity response teams
- Invest in R&D to build stronger and more secure IT networks

Improve the ease of doing business

Government policies and fiscal incentives, such as for IT services, mobile phones, and telecommunications, have helped the Indian industry grow. However, the push is not adequate to create the acceleration that the digitally enabling industry requires to produce resilient, indigenous products both for domestic needs and for exports. The off-take on semiconductors is slow, value addition in mobile phones is low, telecom is yet to unleash competitive forces, and representation in standard-setting is limited. In light of this, we recommend the following:

- Enhance coordination among key government departments, such as the Department of Commerce, MeitY, and Department of Telecom, to provide comprehensive policies and targeted fiscal schemes that help reduce cost disabilities
- Invest in high-quality physical infrastructure, such as logistics and energy resources, that lower the cost of doing business
- Improve Centre-State coordination, and provide friendly terms to investors, both foreign and domestic
- Review and re-evaluate business laws, including labour laws (e.g., extending work hours in ICT sector, providing adequate safeguards for workers, etc.) to create a balance between labour rights and compliance cost

Make high-quality broadband universal

India's digital ambition relies on access to high-quality and universal broadband. The coverage and quality of infrastructure has increased by leaps and bounds, but the journey is far from complete. The increase is data consumption has proven that existing bandwidth levels are grossly inadequate, leading to challenges such as call drops. Additionally, besides urban blind spots, several rural government schools and hospitals are not connected to the internet. Access to broadband infrastructure will not only help expand the footprint of digital businesses but also enable traditional businesses to offer their services digitally. We recommend the following:

- Make continued efforts towards building resilient fixed-line broadband networks to supplement mobile coverage
- Incentivise the private sector to invest in quality upgrades through appropriate policy interventions
- Combine supply-side efforts with demand-side interventions to ensure the affordability of devices and data services

Appendices

Appendix 1: Cross-Country Review of Methodologies and Estimates

Table A1: Cross-Country Review of Methodologies (other than OECD approach)

Author, Year of Publishing	Country	Estimate	Year	Estimation approach	Other details
RBI, 2022	India	8.5% of GVA	2019	Uses satellite accounts based on national SUTs and IOTs. Input-output analysis using the Leontief coefficients to estimate backward and forward linkages.	Core digital sectors are identified and GVA attributed to its forward linkages are calculated to estimate the core digital economy. A broader 'digital dependent' economy is calculated from the forward linkages of the core digital sectors to a set of sectors identified to be 'digitally disrupted'.
	India	5.4% of GVA	2015		
ADB, 2021	India	5.3%	2010	Uses satellite accounts based on national SUTs and IOTs. Input-output analysis using the Leontief coefficients to estimate backward and forward linkages.	Core digital sectors are identified and GVA attributed to its forward linkages are calculated to estimate the core digital economy. A broader 'digital dependent' economy is calculated from the forward linkages of the core digital sectors to a set of sectors identified to be 'digitally disrupted'.
	India	5.6% of GDP (USD 112 billion)	2014		
	USA	8.1% of GDP	2010		
	USA	9.2% of GDP (USD 1,899 billion)	2019		
Huawei & Oxford Economics, 2020	Global	15.5% of GDP (US $11.5 trillion)	2016	Uses a combination of methods to capture value beyond sectors producing digital technologies. Attempts to incorporate how those technologies are being used in business and the associated direct and indirect value that flows with that use. Capturing the spillovers provides estimates more than three times larger than traditional measures would suggest. Panel data for 100 economies over five years are used to arrive at estimates of economic returns driven by investment in digital and non-digital technologies.	Captures the following: • Value generated by businesses from their stock of digital assets (hardware, software, and telecommunications equipment) rather than the amount of money spent on it, with adjustments to capture differences in quality improvements over time • Current expenditure on digital technologies that are not counted as assets • Spillover effects as the total returns to digital investment (from econometric analysis) minus private returns to the stock of digital assets received by companies (from growth accounting data).
	India	USD 230 billion (2% of global digital economy)	2016		

Author, Year of Publishing	Country	Estimate	Year	Estimation approach	Other details
Bureau of Economic Analysis, 2018	USA	6.5% of current-dollar GDP (USD 1,209.2 billion value added) 3.9% of total employment (5.9 million jobs) 6.7% of employee compensation	2016	Identifies goods and services within the supply-use framework relevant for measuring the digital economy. Use the supply-use framework to identify the industries responsible for producing these goods and services. Estimates the output, value added, employment, compensation, and other variables associated with these activities.	Definition includes: the digital-enabling infrastructure needed for computer networks and the internet to exist and operate; the digital transactions that take place using that system (e-commerce); the content that digital economy users create and access (digital media).
Bureau of Economic Analysis, 2022	USA	10.3% of GDP (USD 2.41 trillion value-added) 8 million jobs USD 1.24 trillion in compensation	2021	Identifies goods and services within the supply-use framework relevant for measuring the digital economy. Use the supply-use framework to identify the industries responsible for producing these goods and services. Estimates the output, value added, employment, compensation, and other variables associated with these activities.	Definition includes: the digital-enabling infrastructure needed for computer networks and the internet to exist and operate; e-commerce; priced digital services; federal non-defence digital services.
Google, Temasek & Bain, 2022	South-East Asia (Vietnam, Thailand, Philippines, Malaysia, Singapore, Indonesia)	~USD 200 billion in gross merchandise value (GMV) Created 160,000 high-skilled jobs and indirectly supports nearly 30 million jobs	2022 (predicted)	Five leading sectors (e-commerce, transport & food, online travel, online media, financial services) and four nascent sectors in the digital economy (health-tech, SaaS, Web3, ed-tech)	
McKinsey, 2019	Global	Core digital sectors to add USD 355-435 billion to global economy	2025	IT, manufacturing, business communication to double GDP; adding value between USD 355 to USD 435 billion by 2030.	Studies the challenges and opportunities in the digital economy.

Author, Year of Publishing	Country	Estimate	Year	Estimation approach	Other details
China Academy of Information and Communica-tions Technology[35]	China	39.8% (USD 7.1 trillion)	2021	Includes digital industrialisation (ICT, electronic information manufacturing, telecommunication, software & IT services, internet industries); industrial digitisation (application of technology in traditional industries); digital governance; data valuing (data collection, data standards, data confirmation, data annotation, data pricing, data transactions, data transfer, data protection).	Estimates attempt to capture both increased output and improved efficiency through, for example, integrated new industries, new models and new business formats, intelligent manufacturing, internet of things, and the platform economy.
Herrero & Wu, 2018	China	2.6% of employment	2010	Internationally comparable estimate based on China's input-output and census data (but based on IO table from 2012 and population census of 2010)	ICT sector (core of digital economy)
		4.8% of value added	2012		
		5.6% of value added	2016		
Kumar & Ghosh, 2019	India	6.7% of the economy	2011-12 to 2017-18	Estimate of the core digital economy based on the ICT sector using NIC codes.	
Byrne, 2022	USA	-	-	Growth accounting. Augment the conventional measure of IT contribution to productivity in a growth accounting framework (which captures innovation in the production of IT capital plus labour-saving use of IT throughout the economy) with contribution from digital platforms used to navigate information landscape.	Proposed data sources and methods to address issues with measurement. For example, provides recommendations to quantify intangible assets created by platforms and their users by measuring the consumption of intangible services provided by platforms and identifying platforms within the existing statistical system.
Jia et al., 2023	Theoretical economy	-	-	Growth accounting, while incorporating 'data elements'. Compares general equilibrium results under different scenarios and assumptions (new classical economics, new structural economics).	Results show that data production structure and data elements accumulation rate also affect economic growth rate (in addition to technological progress rate and capital production structure).

[35] *Xinhua. (2022, July 30). China's digital economy hits $7.1t: White paper. China Daily. http://www.chinadaily.com.cn/a/202207/30/WS62e4ef9ca310fd2b29e6f520.html#:~:text=Digital%20economy%20is%20a%20key,20.9%20percent%20to%2039.8%20percent*

Author, Year of Publishing	Country	Estimate	Year	Estimation approach	Other details
Zhang et al., 2021	China	-	2015-19	Panel data from 2015 to 2019 to conduct empirical analysis. Results verify the mediating effect of technological progress between the digital economy and high-quality economic development.	Development of the digital economy refers to the use of a new generation of information technology and information infrastructure to infiltrate all aspects of economic and social development. Calculates a digital economic development index for 30 cities using the three dimensions of digital infrastructure, digital industry, and digital integration.
Brynjolfsson et al., 2019	USA	Welfare gains from Facebook would have added between 0.05 and 0.11 percentage points to GDP-B growth per year.	GDP-B	Welfare contributions of the digital economy through new and free goods that are not well measured in current national accounts. Explicit terms derived for the welfare contributions through the new metric of GDP-B. Quantifies their benefits rather than costs.	Applies their framework to empirical examples such as Facebook and smartphone cameras. Estimates valuations through incentive compatible choice experiments.

Table A2: Cross-Country Comparison of Estimates of the Size of the Digital Economy Based on the OECD Approach

Sweden (2017)		Netherlands (2019)		US (2021)		Canada (2017)		UK (2020)
9.1%		8%		10.3%		5.5%		Narrow – 5.01% Broad – 20.72%
Digitally Enabling	5.23%	Digitally Enabling	5.25%	Priced Digital Services	4.4%	Digitally Delivered Products	0.58%	Narrow includes only digital products—ICT goods, cloud computing services, digital services excluding digital intermediary services Broad includes digitally affected products as per OECD guidelines
Digital Intermediary Platforms	0.05%	Digital Intermediaries Platform	0.78%	Infrastructure	3.24%			
Firms Dependent on Platforms	0.06%	Firms Dependent on Platforms	0.1%			E-commerce	0.68%	
E-Tailers	2.88%	E-Tailers	1.8%	E-commerce	2.62%			
		Digital-Only Finance and Insurance Services	0.06%			Infrastructure	4.23%	
Other Producers Operating Only Digitally	0.88%							

1. Countries have adapted OECD to their local context
2. Estimates are not directly comparable due to the scope of coverage

Appendix 2: Details of the ADB approach adopted to estimate India's core digital economy

Our estimation based on the ADB approach relies on the SUT published by the Ministry of Statistics and Program Our estimation based on the ADB approach relies on the SUTs published by MoSPI as the starting point. This appendix provides details about how this was conducted. The SUTs depict the structure of an economy by showing linkages between how products are produced and used by an industry. The latest available SUT for India is for 2019-20. These SUTs are transformed into IOTs, an industry-to-industry matrix that provides inter-industry linkages. Industries in the IOT can be classified into fully digital, partially digital, or non-digital. For partially digital industries, only the relevant shares are included in the estimation.

The existing estimate for India's digital economy is based on ADB's annually published 35 industry by 35 industry (35 x 35) national IOT.[36] According to their analysis, India's digital economy was estimated at 8.5% of GVA in 2019-20. The IOT used for this analysis is based on the World Input Output Database (WIOD), which relies on MoSPI's 2014-15 SUT. While it has been updated by ADB to reflect aggregate changes in the economy for 2019-20, the underlying production structure of the economy continues to reflect that of 2014-15. In other words, massive digitalisation since the launch of the Digital India programme and further acceleration due to the COVID-19 pandemic are not captured in their estimates. Digital shifts for industries such as financial services, including the scaling of digital payments, direct benefit transfer, retail through e-commerce, and education through e-learning services, which lead to higher productivity and output are therefore not fully reflected in these estimates.

In addition to providing comparable and updated estimates using the ADB's 35 x 35 IOT for 2022, this study builds upon previous work in two ways:

- **Provides more updated data,** reflecting a more updated structure of the economy by using the latest SUT of 2019-20, which was not available for previous studies
- **Provides more disaggregated data,** transforming the SUTs into corresponding IOTs that are more disaggregated than the ones used in previous studies, allowing for more granular partitioning of industries into digital and non-digital, thus providing more accurate estimates. Our final estimates are based on this IOT.

This study uses the latest 2019-20 SUT from MoSPI, and transforms it into a 66 industry x 66 industry IOT using ADB's methodology[37]. Unlike the 35 industry X 35 industry IOT, there are fewer partially digital sectors. This reduces the assumptions in the model and serves as a more accurate representation of the core digital economy.

The core of the digital economy is defined as products or industries belonging to 5 groups: hardware, software publishing, web publishing, telecommunication services, and specialized & support services. Table A3 below provides the list of industries that fall within this definition as per the ISIC classification and matches them to the industry categories for the two IOTs.

[36] *Gajbhiye, D., Arora, R., Nahar, A., Yangdol, R., & Thakur, I. (2022, December). Measuring India's digital economy. RBI Bulletin. https://rbidocs.rbi.org.in/rdocs/Bulletin/PDFs/05ART201220221265B8E871824B98970F03E87228C0FE.PDF*

[37] *We follow the model B transformation approach conducted under the industry technology assumption, which states that "each industry has its own specific way of production, irrespective of its product mix". More details on the transformation are provided later.*

Table A3: Scope of Core Digital Industries

Core digital industries			ADB's 35 X 35 IOT	India's 66 X 66 IOT
Main Activity Group	**Code**	**Industry**	**Industry**	**Industry**
Hardware	2620	Manufacture of computers and peripheral equipment	Electrical and Optical Equipment (P)	Manufacturing of computer and peripheral equipment
	2680	Manufacture of magnetic and optical media		Manufacturing of electronic component, consumer electronics, magnetic and optical media (P)
Telecommunications services	61	Telecommunications services	Post and Telecommunication (P)	Communications (P)
Specialized and support services	62	Computer programming services, consulting, and other related services	Renting of Machinery and Equipment and Other Business Activities (P)	Computer-related services
	6311	Data processing, hosting, and related activities		
Web publishing	6312	Web portals		
Software publishing	5820	Software publishing		

Source: ADB (2021); Authors' calculations. Sectors marked with (P) are partitioned to include only digital components, while others are completely digital.

'Manufacturing of computer and peripheral equipment' and 'Computer related services' are treated as fully digital sectors in the 66 x 66 IOT. The partially digital sectors are identified as 'Communications' and 'Manufacturing of electronic components, consumer electronics, magnetic and optical media'. In line with ADB's definition, the digital component of the core digital industry, 'Telecommunications', is partitioned from the broader 'Communications' industry by using its share in GVA from NAS. The digital component of 'Manufacturing of electronic components' in 'Manufacturing of magnetic and optical media' is partitioned using the 2019-20 ASI. After partitioning the IOT into clean digital and non-digital industries, we use the Leontief inverse to arrive at new estimates for the digital economy for 2019-20.

To estimate the shares for 2020-21 and 2021-22, we extrapolate the 2019-20 IOT using corresponding financial year aggregates from NAS.[38] The approach followed for future projections is discussed in Section 4 of this paper.

Below is a comparison of the estimates, data, and assumptions.

[38] *The 2019-20 IOT has discrepancies between output-side and expenditure-side aggregates, consistent with the discrepancies reported in NAS. These have been addressed to arrive at a balanced matrix. Discrepancies in the IOTs of subsequent year have also been addressed similarly.*

Table A4: Comparison of Estimation Based on ADB Approach

ICRIER Estimate Based on Disaggregated IOT		ICRIER Estimate Based on Aggregated IOT		Gajbhiye et al. (2022)	
2022-23		2022	9.8%	2022	
2021-22	8.5%	2021	9.76 %	2021	
2020-21	8.2%	2020	9.5%	2020	
2019-20	7.4%	2019	8.6%	2019	8.5%
2015-16		2015	5.9%	2015	
2014-15		2014		2014	5.4%
Data & Assumptions					
• ICRIER's transformation of the 2019-20 SUT into 66x66 IOT using model B approach • Extrapolated IOTs for 2020-21 and 2021-22 using sectoral aggregates and final expenditure • Higher disaggregation results in two fully digital sectors and two partially digital sectors • Partially digital sector, 'Communications', partitioned using GVA from NAS (61.67% for 2019-20, 66.29% for 2020-21, 64.91% 2021-22) • Partially digital sector, 'Manufacturing of consumer electronics', partitioned using ASI to obtain 'Manufacturing of magnetic and optical media' (1.64% for 2019-20, 0.52% for 2020-21, 0.73% for 2021-22) • Partially digital sectors partitioned using the same ratio of digital and non-digital across all using industries • Only data published by MoSPI used for the partitioning process		• Based on ADB's 35x35 IOT, which is based on the WIOD structure, based on the 2014-15 SUT • No fully digital sectors; the three partially digital sectors require partitioning using alternative sources • The two partially digital services sectors, c27 and c30, are partitioned using net sales data from CMIE Prowess. The partitions are, respectively: 97.4% and 71.33% (2015), 92.53% and 63.65% (2019), 88.49% and 67.86% (2022) • c14 partitioned using ASI (2015: 11.89%, 2019: 12.99%, 2022: 12.99%) • The partially digital sectors are partitioned using the same ratio of digital and non-digital across all relevant industries • Data published by MoSPI and CMIE used for partitioning process		• Based on ADB's 35x35 IOT, which is based on the WIOD structure, based on the 2014-15 SUT • Partitioning of c14, c27, and c30 carried out using data from ASI for the manufacturing sector and CMIE Prowess for the services sector • The partially digital sectors are partitioned using the same ratio of digital and non-digital across all relevant industries	

Additional Details on Methodology

Transformation from SUT to IOT

To form a satellite account based on India's SUT, we must first transform it into an IOT. The IOT is based on basic-price use table, while the reported use table is at the purchaser's price. To arrive at the basic-price use table from a purchaser's price use table, we adjust the product-by-industry use by subtracting from it the product-by-industry values for 'product taxes less subsidies' and 'import duty' (referred to as 'taxes' in this section) and 'imports' and 'trade & transport margins'. While columns are often referred to as industries in this section, the same adjustments will be extended to the final consumption columns (PFCE, GFCE, GFCF, CIS, valuables, and exports).

Taxes, trade & transport margins, and imports are reported as aggregate columns for each product; therefore, they need to be redistributed into a product x industry matrix. This redistribution occurs based on the share of use of product i by industry j in total use of product i. In the redistributed 'trade & transport margins' matrix, we deviate from using shares for redistribution for trade and transport products (trade, railway transport, land transport, air transport, water transport, and supportive and auxiliary transport activities). This exception arises as margins for these products are reported incomes, i.e., they are negative rather than positive. We multiply the negative margins by the share of margins paid by all other non-trade and non-transport products in industry j in the total margins paid by all other products. Thus, the income from margins for trade and transport products is distributed across industries based on the share of margins paid by the users of products in those industries.

An adjustment to be noted in the supply table of the SUT prior to the redistribution exercise is in the treatment of 'product taxes less subsidies' for 'trade'. Even though 'trade' does report taxes and avails subsidies, as reflected in the supply table, the expectation would be that these ultimately get passed on to consumers of 'trade'. Therefore, we redistribute 'taxes less subsidies', as reported in the 'trade' row, between products that report a positive trade and transport margin on the basis of their share in total positive trade and transport margins. To ensure that the table balances itself, the changes in the 'product taxes less subsidies' column are accounted for within the 'trade and transport margins' column.

There are four transformation models that can be adopted to arrive at an IOT from an SUT: Model A (Product technology assumption), Model B (Industry technology assumption), Model C (Fixed industry sales structure assumption), and Model D (Fixed product sales structure assumption). Model A and model B assumptions result in a product-by-product IOT, and model C and model D result in industry-by-industry IOT (Eurostat, 2008). For the purposes of our study, we adopt the industry technology assumption of model B that "each industry has its own specific way of production, irrespective of its product mix". This means that we assume that each industry has its own input structure, irrespective of its different types of products. Even if the ratios/number of products in its output mix changes, the proportions of inputs required to produce the output remains consistent with the initial input structure (Eurostat, 2008).

Since model B's transformation matrix gives a product-by-product IOT, we rework the transformation matrix such that it yields an industry-by-industry IOT when multiplied with the basic-price use table. The transformation matrix is a product-by-industry matrix where each element is the share of supply of the product by the industry in the total supply of the product in the economy. The transpose of this transformation matrix is multiplied with the intermediate consumption matrix and the final consumption matrix from the basic-price use table. This multiplication results in an industry-by-industry intermediate consumption matrix where each element is a convex combination of the supply of products produced by the industry described in the row with the use of products by the industry described in the column. Therefore, each element describes the proportion of products used by the industry column that are provided by the industry row. Similarly, each element in the derived final consumption matrix is a convex combination of the share of products produced by the industry row and the quantity of final consumption of these products. The final step is to

add the row items of 'taxes', 'imports', 'gross output', and 'gross value added' for each industry. We also conduct two simple checks to assess whether the IOT is internally consistent: the sum of intermediate consumption, imports, taxes, and gross value added should equal the gross output for each industry, and the total use should equal the total output.

Calculation of estimates based on the IOT

ADB's methodology is based on the standard input-output framework, which uses the Leontief Inverse to represent the economy as a distribution of GVA:

$$\boldsymbol{x} = \boldsymbol{Zi} + \boldsymbol{y}$$

where $\boldsymbol{x}$ is an n x 1 matrix of output for *n* industries of the economy, Z is an n x n matrix of intermediate consumption and y is an n x 1 matrix of final demand for each industry. Constructing a matrix A such that $a_{ij} = \frac{z_{ij}}{x_j}$ where z_{ij} is intermediate consumption of products produced by industry i by industry j and x_j is the output of industry j, then we get:

$$x = Ax + y$$

Rearranging this equation, following the rules of matrix multiplication, gives us:

$$x = (I - A)^{-1}y$$

Pre-multiplying this equation by v where $v_j = \frac{gva_j}{x_j}$, we get an equation describing the entire economy's GVA.

$$vx = v(I - A)^{-1}y$$

If we diagonalise v the and y vectors $\hat{v}$ to and $\hat{y}$, we get the $\hat{v}B\hat{y}$ matrix in which $v_i b_{ij} y_j$ represents the value-added contribution of industry i in the final demand of industry j. Using the matrix, it's possible to isolate the value-added contribution of the digital industries to itself (own linkages), to non-digital sectors (forward linkages) as well as the value-added contribution of non-digital industries to digital industries (backward linkages).

Extrapolating the 2019-20 IOT for 2020-21 and 2021-22 and addressing discrepancies in the NAS

Since there is no SUT available for years 2020-21 and 2021-22, we extrapolate the IOTs for these years based on the structure of the 2019-20 IOT and corresponding financial year aggregates from the NAS.

Industry-wise GVA and output, taxes and import duties less subsidies, imports, and final expenditure (PFCE, GFCE, GFCF, CIS, valuables, and exports of goods & services) from NAS 2020-21 and 2021-22 are used to establish the row and column totals of the corresponding 2020-21 and 2021-22 IOTs. The structure of the 2019-20 IOT (i.e., the linkages between each industry—i.e., from each row to column) is used to populate the values of the new IOT based on these updated aggregate values. Each industry i's share in a given industry j's total use from the 2019-20 IOT is applied to the 2020-21 total use of industry j (column sum) to obtain estimates for industry j's use of industry i (each cell within that column). Similarly, each industry's share in total imports, total taxes, and import duties less subsidies and total expenditure are taken from the 2019-20 SUT and updated for the 2020-21 and 2021-22 SUTs based on aggregates obtained from NAS.

Aggregates from NAS: Assumptions

Due to a lack of complete data on FISIM per industry as well as disaggregation for all industries in the IOT, we make certain assumptions to determine the output, FISIM-adjusted inputs, and similarly adjusted GVA for 2020-21 and 2021-22 for the 66 industries in the IOT. These assumptions differ between sectors as we attempt to mirror the allocation present in SUT 2019-20. The rationale is to, at the very least, retain consistency in the absence of accurate published data on the allocation of FISIM. The assumptions are as follows:

- Mining and quarrying sector: The initial distribution of FISIM in 2019-20 as determined from the IOT is assumed to be consistent for the following periods to maintain consistency in distribution. First, FISIM is determined based on the 2019-20 distribution for the 'non-metallic minerals & minor minerals', 'fuel minerals', and 'metallic minerals' sectors. These newly determined FISIM-adjusted inputs are then divided based on the disaggregation present in the IOT.
- Crude petroleum and natural gas: We assume that their respective share in their total output remains the same across the three periods. This assumption is made due to a lack of disaggregated data for natural gas and petroleum separately.

- Manufacturing: We assume that the distribution of FISIM as reported in the SUT remains the same across all manufacturing sub-sectors. While there is a possibility that FISIM should be divided based on GVA, for consistency, we maintain the initial share of FISIM.
- Financial and insurance services: The share of output and input have been divided based on shares as reported in the SUT—27% and 73% for input and value added for the financial sector and 40% and 60% for the insurance sector.
- Real estate, ownership of dwellings, and other professional services: We deviate from assumptions made in previous sectors regarding the distribution of FISIM and calculate its shares based on the share of unadjusted GVA of sectors. An aggregate number for FISIM is provided, which is then multiplied by the share of the GVA of that sub sector in the sector.

Balancing Discrepancies - Assumptions

Both the 2019-20 IOT and the IOT for subsequent years have discrepancies between output-side aggregates and expenditure-side aggregates, consistent with those reported in the NAS, that need to be addressed to have a balanced table. In 2019-20, the NAS reported a discrepancy of INR 113,925 crore between the production side and the expenditure side, i.e., the national accounts reported a higher value for the supply of products than the use of products. This discrepancy is accounted for in the 2019-20 SUT published by MoSPI, mainly through adjustments in 'imports', 'private final consumption expenditure', 'change in inventories', and 'exports'. Similarly, NAS reported a discrepancy for 2020-21 and 2021-22, albeit a negative discrepancy, indicating a higher reported number for the expenditure side than the production side.

For the 2020-21 IOT, the discrepancies between the output and total use per industry are smaller than the total expenditure for each industry. Therefore, these discrepancies are adjusted between industry-wise PFCE, CIS, and exports, in that order of preference. For the 2021-22 IOT, the discrepancies are adjusted similarly, except for three industries, whose discrepancies are considerably larger than the expenditure values—'coal & lignite', 'non-ferrous metal ores', and 'other mining'. For these three sectors, discrepancies are adjusted in the imports of industries that report high intermediate consumption. For 'coal & lignite', the imports of 'electricity' are adjusted. This adjustment has been made because the energy balance[39] of India shows that most imports of coal are consumed by this industry. For 'non-ferrous metal ores', imports of the 'manufacture of basic iron and steel + casting of iron and steel', 'manufacture of basic precious and non-ferrous metals + casting of non-ferrous metals', 'manufacture of electrical equipments', 'manufacture of other non-metallic mineral products', and 'other manufacturing' industries are adjusted. While the domestic production of non-ferrous metal ores has increased, these increases are missing for downstream non-ferrous metallic ores.[40] For 'other mining', the industries for which imports are adjusted are 'manufacture of basic iron and steel + casting of iron and steel', 'manufacture of basic precious and non-ferrous metals + casting of non-ferrous metals', 'manufacture of electrical equipments', 'manufacture of chemical and chemical products except pharmaceuticals, medicinal and botanical products', 'manufacture of other non-metallic mineral products', 'other manufacturing', and 'construction'. These industries have large import values and are also large intermediate consumers of products from other mining. The adjustments per industry appear to be 5% or less than corresponding import values. Storage and warehousing do not have final demand but does report a discrepancy between the supply and use side. For this reason, storage and warehouse discrepancies have been allocated to PFCE.

It should be noted that the choice of this allocation is not as important to the final estimate determined in this study because it does not affect the final value, but any analysis that tries to isolate or examine these components should consider how these allocations are done. Allocations for adjustment follow ADB's standard practice for balancing IOTs.

[39] *Ministry of Statistics and Program Implementation. (2023, March). Energy statistics India - 2023. https://www.mospi.gov.in/publication/energy-statistics-india-2023*

[40] *KPMG & MTLEXS. (2017, September). Non-ferrous metals industry: Building the future. https://assets.kpmg.com/content/dam/kpmg/in/pdf/2017/09/non-ferrous-metals.pdf*

Appendix 3: OECD digital industries

Table A5: Digital industries as defined by OECD

1	Digitally Enabling Industries	Companies involved in the manufacturing of electronic components and boards, computer and computer peripheral equipment, consumer electronics, magnetic and optical media, telecommunications services, computer-related services, wholesale and repair of computers, electronic and communication equipment
2	Digital Intermediary Platforms	Businesses that operate online interfaces that facilitate, for a fee, 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). Two important components that separate DIPs from other online platforms as well as from traditional retail and wholesale activity, are the charging of a fee for facilitating a transaction and the absence of economic ownership of the product or service by the business facilitating the transaction. DIPs do not include social media and platforms that provide services free of charge. Lyft, an example of a DIP, facilitates the transaction by acting as an agent and does not consider itself to take ownership of the services provided.
3	Data and Advertising-Driven Digital Platforms	Examples include search engines, web mapping platforms, public transport applications, mobile wallets, information sharing (e.g., sport results) applications, social media, and social networking sites
4	Firms Dependent on Intermediary Platforms	Producers dependent on digital intermediary platforms are units that sell most of their goods or services via intermediation platforms. These are largely workers or contractors that source work from digital labour platforms: Online web-based platforms, where tasks or work assignments are performed online or remotely by workers before being (digitally or physically) delivered to the client) or location-based platforms, where tasks or work assignments are carried out in person in specified physical locations by workers
5	E-Tailers	Traders engaged in the purchasing and reselling goods who receive most of their orders digitally
6	Digital-Only Firms Providing Financial and Insurance Services	Comprises financial service providers, including insurance, reinsurance, and pension schemes and funds, which operate predominantly online, with limited or no avenues to physically interact with consumers. Also includes financial platforms that facilitate digital P2P lending and crowdfunding.
7	Other Producers Only Operating Digitally	Comprises units operating exclusively online that are not included in one of the previous six digital industries. Includes businesses that produce their own goods and services and interact with consumers in an exclusively digital manner. All ordering within this industry would be considered as digitally ordered, and all services within this industry would be considered digitally delivered. Examples include 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. For example, it would include universities and other tertiary education providers that interact with students entirely online, where students do not have the option to attend in person and must receive their education service digitally but would exclude education providers that offer online courses in addition to in-person courses. Similarly, it would exclude newspaper publishers that sell newspapers through physical outlets such as shops and newspaper stands as well as selling via digital newspaper subscriptions, since the publisher is interacting with consumers both digitally and physically. However, if a newspaper sells its product only via digital subscriptions, it would be included in this industry even if the newspaper is delivered to the home or office of the online subscriber.

Source: OECD Handbook on Compiling Digital Supply and Use Tables. Section 5.
https://www.oecd-ilibrary.org/economics/oecd-handbook-on-compiling-digital-supply-and-use-tables_11a0db02-en

Appendix 4: Estimation for digitally enabling industries (OECD 1)

OECD's DEI produces products and services that enable digital activities and are meant to closely align with the definition of the traditional ICT sector.[41] Table A6 presents a cross-country comparison of the coverage of OECD's DEI enabling industries and the definition of ADB's core digital industries. The narrowest definition is that of ADB's core digital industry. This study builds upon the definition of OECD's digitally enabling industry by including motion pictures, television production, and broadcasting services, in alignment with the definition in BEA's report.

Table A6: Cross-Country Comparison of Estimates of Digitally Enabling / Core Digital Industries

Narrow to broad →

OECD's Digitally Enabling Industries	ISIC Rev 4. Sub-Division Code	Industry Description	ADB's Core Digital Sector	U.S. BEA's Equivalent of Digitally Enabling[42]	Netherland's Digitally Enabling Industries	ICRIER's Digitally Enabling
ICT manufacturing industries	2610	Manu. of electronic components & boards	No	Yes	Partitioned	Yes
	2620	Manu. of computers & peripheral equipment	Yes	Yes		Yes
	2630	Manu. of communication equipment	No	Yes		Yes
	2640	Manu. of consumer electronics	Yes	Partial		Yes
	2680	Manu. of magnetic & optical media	Yes	Yes		Yes
ICT trade industries	4651	Wholesale of computers, computer peripheral equipment, & software	No	Captured in BEA's e-commerce section	Yes	Yes
	4652	Wholesale of electronic & telecomm. equipment & parts	No	Captured in BEA's e-commerce section	Yes	

[41] *Organization for Economic Cooperation and Development. (2019, March 11). Measuring the digital transformation: A roadmap for the future. https://www.oecd-ilibrary.org/science-and-technology/measuring-the-digital-transformation_9789264311992-en*

[42] *BEA organizes its estimate of the digital economy into four sections: Infrastructure, Priced digital services, E-commerce, and Federal non-defence digital services. The first two together are roughly equivalent to OECD's digitally enabling industries.*

OECD's Digitally Enabling Industries	ISIC Rev 4. Sub-Division Code	Industry Description	ADB's Core Digital Sector	BEA's Equivalent of Digitally Enabling[42]	Netherland's Digitally Enabling Industries	ICRIER's Digitally Enabling
ICT services industries	5820	Software publishing	Yes	Yes	Yes	Yes
	6110	Wired telecomm. activities	Yes	Yes	Yes	Yes
	6120	Wireless telecomm. activities	Yes	Partial	Yes	Yes
	6130	Satellite telecomm. activities	Yes	Yes	Yes	Yes
	6190	Other telecomm. activities	Yes	Yes	Yes	Yes
	6201	Computer programming activities	Yes	Yes	Yes	Yes
	6202	Computer consultancy & computer facilities management activities	Yes	Yes	Yes	Yes
	6209	Other information technology & computer service activities	Yes	Yes	Yes	Yes
	6311	Data processing, hosting, & related activities	Yes	Yes	Yes	Yes
	6312	Web portals	Yes	Yes		Yes
	9511	Repair of computers & peripheral equipment	No	Yes	Cannot be determined	Yes
	9512	Repair of communication equipment	No	Yes	Cannot be determined	
Not in OECD definition of digital enabling	6020	Television programming & broadcasting activities	No	Yes	No	Yes
	5911	Motion picture, video, & television programme production activities	No	Yes	No	Yes
	6391	News agency activities	No	Yes	No	Yes
	8549	Other education n.e.c.	No	Partial	No	No
	3312	Repair of machinery	No	Partial	No	No
	3313	Repair of electronic & optical equipment	No	Partial	No	No

Due to its alignment with the traditional ICT sector, estimates of DEI are anchored in national accounts. National accounts statistics report provides disaggregated estimates of GVA and output for all subsectors of DEI except those in trade & repair services (9511, 9512, 4651, 4652) and cable operators, recording, publishing & broadcasting services (61103, 59, 60). For these two subsectors, we partition into digital and non-digital portions – assuming 4% and 55% for trade & repair services and cable operators, recording, publishing & broadcasting services respectively.[43] Table A7 gives GVA estimates for DEI and its subsectors

Table A7: Breakdown of Estimate for OECD's Digitally Enabling Industries

Digitally Enabling Industries	NIC Code	GVA (INR Crore, 2022-23)
Manufacture of electronic component, consumer electronics, magnetic and optical media	261+264+268	33,263
Manufacture of computer and peripheral equipment	262	12,230
Manufacture of communication equipment	263	21,024
Telecommunication	61 - 61103	292,896
Information and computer related services	62, 63	1,450,790
Digital portion of trade and repair services	9511, 9512, 4651, 4652	113,236
Digital portion of cable operators, recording, publishing & broadcasting services	61103, 59, 60	53,225
Size of Digitally Enabling Industry	**261,264,268,262,263,61,62,63,95 11,9512, 4651, 4652, 59, 60**	**1,976,664**
Digital intermediaries and platforms to be excluded from this sector		46,506
Re-Estimated Size of Digitally Enabling Industry		**1,930,158**
Economy		24,659,041
Share of Digitally Enabling Industry	**261,264,268,262,263,61,62,63,95 11,9512, 4651, 4652, 59, 60**	**7.83%**

[43] *The digital share partition values have been corroborated by MoSPI.*

Appendix 5: List of Digital Platforms and Intermediaries

This list has been prepared using Tracxn's Consumer Digital category company database. We retained companies with revenue of USD 50 million and above and included companies that are relevant for India's digital economy. To classify these companies according to NIC code, we used the MGT-7 Annual Return form's Main Activity Code section.[44]

Table A8: Detailed Estimates for Augmented Sectors

Company	CIN	OECD Classification
Plum Telehealth	U74140KA2019PTC129875	6 - Digital-only firms providing financial and insurance services
Lybrate	U74140HR2014FTC052854	2 - Digital intermediary platforms charging a fee
QuikrJobs	U74130KA2005PTC087280	2 - Digital intermediary platforms charging a fee
Jobaaj	U72900DL2020PTC369688	2 - Digital intermediary platforms charging a fee
Visit App	U72200DL2018PTC333356	2 - Digital intermediary platforms charging a fee
Disney + Hotstar	U64202MH2000PTC242292	7 - Other producers operating digitally
aha	U92412TG2012PTC082167	7 - Other producers operating digitally
Hoichoi	U93098WB2017PTC220628	7 - Other producers operating digitally
DocuBay	U74999MH2019PTC322194	7 - Other producers operating digitally
JioCinema	U92100MH1995PTC095508	7 - Other producers operating digitally
Eros Now	U33111TN1984PTC010826	7 - Other producers operating digitally
Discovery	U74300DL1996ULT082136	7 - Other producers operating digitally
Hungama	U22300MH1999PTC119259	7 - Other producers operating digitally
Gaana	U72900DL2012PLC241148	7 - Other producers operating digitally
ShareChat	U74999KA2015PTC103797	3 - Data and advertising driven digital platforms
Zupee	U72900DL2019PTC418467	7 - Other producers operating digitally
PlaySimple	U72900KA2014PTC077406	7 - Other producers operating digitally
JetSynthesys	U93000PN2012PTC144453	7 - Other producers operating digitally
Gameskraft	U74999KA2017PTC103635	7 - Other producers operating digitally
Junglee Games India Pvt. Ltd	U72200HR2011PTC114723	7 - Other producers operating digitally

[44]*The NIC codes have been corroborated by MoSPI.*

Company	CIN	OECD Classification
CutShort	U72200PN2015PTC155562	2 - Digital intermediary platforms charging a fee
Jugnoo	U72900CH2012PTC034269	2 - Digital intermediary platforms charging a fee
Practo	U72900KA2008PTC046374	2 - Digital intermediary platforms charging a fee
Dunzo	U74900KA2014PTC075256	2 - Digital intermediary platforms charging a fee
Onsurity	U74999KA2020PTC132386	6 - Digital-only firms providing financial and insurance services
Saathealth	U74999MH2019PTC324788	6 - Digital-only firms providing financial and insurance services
PharmEasy	U74999MH2019PTC320220	2 - Digital intermediary platforms charging a fee
Savaari Car Rentals	U60231KA2012PTC062501	2 - Digital intermediary platforms charging a fee
Mega Cabs	U74999DL2000PLC103535	2 - Digital intermediary platforms charging a fee
My Taxi India	U63040DL2013PTC254239	2 - Digital intermediary platforms charging a fee
Foodpanda India	U72900KA2012PTC127609	2 - Digital intermediary platforms charging a fee
OLX	U74900HR2009PTC053732	2 - Digital intermediary platforms charging a fee
Carzonrent	U71110DL2000PTC189230	E-seller
Even Healthcare	U85300MH2020PTC345050	2 - Digital intermediary platforms charging a fee
BluSmart	U74999GJ2018PTC104895	E-seller
Meru Cabs	U63040MH2006PTC165959	E-seller
Meru	U63040MH2006PTC165956	E-seller
TataCliq	U74999MH2007PLC173035	5 - E-tailers
Souled Store	U52100MH2014PTC253583	E-seller
Ethika	U66030TG2015PTC099365	6 - Digital-only firms providing financial and insurance services
Vital	U66000DL2019PTC344015	6 - Digital-only firms providing financial and insurance services
Kenko	U85100MH2020PTC335670	6 - Digital-only firms providing financial and insurance services
Planet Marathi Seller Services	U93000MH2020PTC342101	7 - Other producers operating digitally
Watcho	U74140DL2014PTC264838	7 - Other producers operating digitally
Wakau	U74900PN2014PTC152368	7 - Other producers operating digitally
MX Player	U93000DL2013PLC248555	7 - Other producers operating digitally

Company	CIN	OECD Classification
Saina Play	U22300KL2019PTC056641	7 - Other producers operating digitally
JioTV	U65910GJ1986PLC106745	7 - Other producers operating digitally
WinZO	U93090DL2016PTC307296	7 - Other producers operating digitally
Games24x7	U92490MH2006PTC162586	7 - Other producers operating digitally
MPL	U74999KA2018FTC113333	7 - Other producers operating digitally
Foundit	U72200TG2000PTC035617	2 - Digital intermediary platforms charging a fee
TimesJobs	U74999DL1999PLC135531	2 - Digital intermediary platforms charging a fee
Indeed India	U72900TG2014FTC095108	2 - Digital intermediary platforms charging a fee
Freshersworld	U74999MH2016PTC283227	2 - Digital intermediary platforms charging a fee
JobsforHer	U74900KA2015PTC078761	2 - Digital intermediary platforms charging a fee
Dream11	U72900MH2007PTC171875	7 - Other producers operating digitally
TRANSFIN	U22300DL2017PTC312539	7 - Other producers operating digitally
HealthAssure	U85100MH2011PTC223007	6 - Digital-only firms providing financial and insurance services
Truworth Wellness	U72900RJ2008PTC027763	7 - Other producers operating digitally
Healthi	U74999KA2017FTC101318	7 - Other producers operating digitally
QubeHealth	U73100MH2019PTC332590	6 - Digital-only firms providing financial and insurance services
Paz Care	U66000PN2021PTC200077	6 - Digital-only firms providing financial and insurance services
Zyla Health	U74999DL2017PTC343630	7 - Other producers operating digitally
TalktoAngel	U85190DL2018PTC329414	2 - Digital intermediary platforms charging a fee
Apna	U74999MH2019PTC325170	2 - Digital intermediary platforms charging a fee
Ekincare	U74900TG2014PTC095584	7 - Other producers operating digitally
Zoomcar	U63090KA2012FTC065834	5 - E-tailers
Purplle	U51101MH2011PTC224903	2 - Digital intermediary platforms charging a fee
WomanCart	U74999DL2018PLC336138	2 - Digital intermediary platforms charging a fee
Tata Neu	U74999MH2019PTC322353	5 - E-tailers
Zee5	L92132MH1982PLC028767	7 - Other producers operating digitally
Ullu	U92100DL2019PLC343697	7 - Other producers operating digitally

Company	CIN	OECD Classification
ALTBalaji	U74999MH2015PLC266206	7 - Other producers operating digitally
SonyLiv	U92100MH1995PTC111487	7 - Other producers operating digitally
Apple TV	U30007KA1996PTC019630	7 - Other producers operating digitally
Sun NXT	L22110TN1985PLC012491	7 - Other producers operating digitally
ShemarooMe	L67190MH2005PLC158288	7 - Other producers operating digitally
JioSaavn	U72300MH2011PLC221359	7 - Other producers operating digitally
Nazara	L72900MH1999PLC122970	7 - Other producers operating digitally
Naukri.com	L74899DL1995PLC068021	2 - Digital intermediary platforms charging a fee
Shine	L22121DL2002PLC117874	2 - Digital intermediary platforms charging a fee
Blinkit	U74140HR2015FTC055568	5 - E-tailers
Zomato	L93030DL2010PLC198141	2 - Digital intermediary platforms charging a fee
Vouchagram	U74999DL2012FTC234852	7 - Other producers operating digitally
Naaptol	U52190MH2008PTC179371	2 - Digital intermediary platforms charging a fee
BookMyShow	U99999MH1999PTC120990	2 - Digital intermediary platforms charging a fee
Navi	U72900KA2018PLC119297	6 - Digital-only firms providing financial and insurance services
Nykaa	L52600MH2012PLC230136	5 - E-tailers
MMTC-PAMP India	U27100HR2008PTC042218	E-seller
Paytm	L72200DL2000PLC108985	6 - Digital-only firms providing financial and insurance services
Patanjali Ayurved	U24237DL2006PLC144789	E-seller
Flipkart	U51109KA2012PTC066107	2 - Digital intermediary platforms charging a fee
Zerodha	U65929KA2018PLC116815	6 - Digital-only firms providing financial and insurance services
FirstCry	U51100PN2010PLC136340	5 - E-tailers
OYO	U63090GJ2012PLC107088	5 - E-tailers
EaseMyTrip	L63090DL2008PLC179041	2 - Digital intermediary platforms charging a fee
MedPlus	L85110TG2006PLC051845	5 - E-tailers
Myntra	U72300KA2007PTC041799	2 - Digital intermediary platforms charging a fee
IRCTC	L74899DL1999GOI101707	5 - E-tailers

Company	CIN	OECD Classification
Boat Lifestyle	U52300MH2013PLC249758	5 - E-tailers
Zigly	L92114DL1976PLC008355	5 - E-tailers
Angel One	U67120MH1997PLC111464	6 - Digital-only firms providing financial and insurance services
ALLEN IntelliBrain	U80100RJ2021PTC077131	7 - Other producers operating digitally
CaratLane	U52393TN2007PTC064830	E-seller
Verse	U72200KA2007PTC042493	3 - Data and advertising driven digital platforms
ACKO	U66000KA2016PLC138288	6 - Digital-only firms providing financial and insurance services
Navneet Toptech	L22200MH1984PLC034055	7 - Other producers operating digitally
MyTVS	U34100TN2009PTC071439	E-seller
CarTrade	L74900MH2000PLC126237	2 - Digital intermediary platforms charging a fee
Kissht	U72900MH2016PTC282573	6 - Digital-only firms providing financial and insurance services
Woohoo	U65910DL1998PTC093878	7 - Other producers operating digitally
Policybazaar	U74999HR2014PTC053454	6 - Digital-only firms providing financial and insurance services
Mahindra First Choice	U64200MH1994PLC083996	2 - Digital intermediary platforms charging a fee
Share India	L67120GJ1994PLC115132	6 - Digital-only firms providing financial and insurance services
Avanse	U67120MH1992PLC068060	6 - Digital-only firms providing financial and insurance services
eSwarna	U51909KL1998PTC012492	6 - Digital-only firms providing financial and insurance services
Paisabazaar	U74900HR2011PTC044581	6 - Digital-only firms providing financial and insurance services
InCred	U67190MH1995PLC360817	6 - Digital-only firms providing financial and insurance services
Slice	U72900AS2015PTC026165	6 - Digital only firms providing financial and insurance services
Physics Wallah	U80900UP2020PTC129223	E-seller
KreditBee	U74900KA2016PTC086953	6 - Digital-only firms providing financial and insurance services
Religare Online	U65999DL2016PLC314319	6 - Digital-only firms providing financial and insurance services
DreamFolks	U51909DL2008PLC177181	7 - Other producers operating digitally
KrazyBee	U65100KA2016PTC086990	6 - Digital-only firms providing financial and insurance services
Infibeam Avenues	L64203GJ2010PLC061366	6 - Digital-only firms providing financial and insurance services
PayUBiz	U72400MH2006PTC293037	6 - Digital-only firms providing financial and insurance services

Company	CIN	OECD Classification
360 ONE	L74140MH2008PLC177884	6 - Digital-only firms providing financial and insurance services
CLix Capital	U65929DL1994PTC116256	6 - Digital-only firms providing financial and insurance services
AGS Transact Technologies	L72200MH2002PLC138213	6 - Digital-only firms providing financial and insurance services
SBI Payment Services	U67100MH2010PTC200030	6 - Digital-only firms providing financial and insurance services
PayMate	U72200MH2006PLC205023	6 - Digital-only firms providing financial and insurance services
mPokket Financial Services	U65999WB2019PTC233120	6 - Digital-only firms providing financial and insurance services
FinoBank	L65100MH2007PLC171959	6 - Digital-only firms providing financial and insurance services
Hefa	U74999KA2017NPL103474	6 - Digital-only firms providing financial and insurance services
News9 Plus	U92200TG2003PTC040966	7 - Other producers operating digitally
Ferns N Petals	U71301DL2004PTC126650	E-seller
Credit Saison	U65999KA2018FTC113783	6 - Digital-only firms providing financial and insurance services
Lendingkart	U72900GJ2014PTC081539	6 - Digital-only firms providing financial and insurance services
Cashfree Payments	U72900KA2015PTC082987	6 - Digital-only firms providing financial and insurance services
Oxyzo	U65929DL2016PLC306174	6 - Digital-only firms providing financial and insurance services
Zaggle	U65999TG2011PLC074795	6 - Digital-only firms providing financial and insurance services
MediAssist	L74900KA2000PLC027229	6 - Digital-only firms providing financial and insurance services
RapiPay	U72200DL2009PTC189149	6 - Digital-only firms providing financial and insurance services
Cars24 NBFC	U65990HR2018PTC075713	6 - Digital only firms providing financial and insurance services
Mobikwik	U64201HR2008PLC053676	6 - Digital-only firms providing financial and insurance services
True Balance	U74999HR2016FTC063837	6 - Digital-only firms providing financial and insurance services
Ixigo	U63000HR2006PLC071540	2 - Digital intermediary platforms charging a fee
Matrimony.com	L63090TN2001PLC047432	2 - Digital intermediary platforms charging a fee
Unext	U80302KA2009PTC050865	7 - Other producers operating digitally
Pristyn Care	U85300HR2018PTC075460	2 - Digital intermediary platforms charging a fee
Rapido	U52210TG2015PTC097115	2 - Digital intermediary platforms charging a fee
WazirX	U72900MH2017PTC303170	6 - Digital-only firms providing financial and insurance services

Company	CIN	OECD Classification
Noise	U51109HR2009PTC082744	E-seller
Cashify	U27205DL2009PTC190441	5 - E-tailers
Blue Star Diamonds	U36911MH2008PTC188710	E-seller
Foresight Bullion India Private Limited	U51101MH2013PTC242116	E-seller
Licious	U74900KA2015PTC080321	5 - E-tailers
AMS Bullion	U51909TN2020PTC133653	E-seller
BlueStone	U72900KA2011PTC059678	E-seller
Ketch	U17290KA2014PTC077711	5 - E-tailers
Meengal	U05001TN1974SGC006597	5 - E-tailers
Recykal	U72300TG2015PTC101913	2 - Digital intermediary platforms charging a fee
Urban Company	U74140DL2014PTC274413	2 - Digital intermediary platforms charging a fee
Just Recharge It	U93030MH2011PTC221949	6 - Digital-only firms providing financial and insurance services
Times Knowledge	U22120MH2003PTC142239	7 - Other producers operating digitally
Sasta Sundar/Flipkart Health+	U74999WB2011PLC165465	E-seller
Fundzbazar	L91120GJ2003PLC042458	6 - Digital-only firms providing financial and insurance services
3A Deal	U72200MH1999PLC118579	6 - Digital-only firms providing financial and insurance services
Cashe	U74120MH2015PTC270608	6 - Digital-only firms providing financial and insurance services
One Consumer	U67100PN2022PTC212648	6 - Digital-only firms providing financial and insurance services
One Card	U74999PN2019PTC206053	6 - Digital-only firms providing financial and insurance services
Country Delight	U46901HR2023PTC113833	E-seller
Cars24	U74999HR2015FTC056386	2 - Digital intermediary platforms charging a fee
M2P	U72900TN2014PTC098036	6 - Digital-only firms providing financial and insurance services
Augmont	U74120MH2012PTC237346	E-seller
Fuel Buddy	AAH-6902	E-seller
RedBus	U72900HR2012PTC090199	2 - Digital intermediary platforms charging a fee
Quick Forex	U67190DL2005PLC139408	6 - Digital-only firms providing financial and insurance services

Company	CIN	OECD Classification
LinkedIn	U72900DL2009PTC197503	3 - Data and advertising driven digital platforms
Plum	U66000KA2022PTC160458	6 - Digital-only firms providing financial and insurance services
HealthySure	U65990MH2021PTC356943	6 - Digital-only firms providing financial and insurance services
Niva Bupa	U66000DL2008PLC182918	6 - Digital-only firms providing financial and insurance services
BigBasket	U74130KA2010PTC052192	5 - E-tailers
Apollo Pharmacies	U52500TN2016PLC111328	5 - E-tailers
MakeMyTrip	U63040HR2000PTC090846	2 - Digital intermediary platforms charging a fee
SafeGold	U74999MH2017PTC293205	E-seller
Scootsy	U60200KA2014PTC144616	2 - Digital intermediary platforms charging a fee
Cuckoo	U52609UP2018FTC101653	E-seller
Eruditus	U80902TN2010PTC077828	7 - Other producers operating digitally
PhonePe	U67190KA2012PTC176031	6 - Digital-only firms providing financial and insurance services
Ola Cabs	U72900KA2010PTC086596	2 - Digital intermediary platforms charging a fee
Dealshare	U74999RJ2018PTC062179	2 - Digital intermediary platforms charging a fee
Zepto	U46909MH2020PTC351339	2 - Digital intermediary platforms charging a fee
Porter	U74999MH2014PTC306120	E-seller
Lenskart	U33100DL2008PTC178355	E-seller
Aqualens	U74140DL2011PTC224819	E-seller
Source.one	U51909PN2018PTC178336	5 - E-tailers
Sln Bullion	U51100TN2010PTC076751	6 - Digital-only firms providing financial and insurance services
D.Navinchandra	U51398MH2005PTC155937	E-seller
Times Internet	U99999MH1999PTC119707	7 - Other producers operating digitally
Shadowfax	U72300KA2015PTC150324	E-seller
Tata 1mg	U24290DL2016PTC302634	2 - Digital intermediary platforms charging a fee
Treebo	U74900KA2015PTC080316	E-seller
Bharatpe	U74999DL2018PTC331205	6 - Digital-only firms providing financial and insurance services
Cred	U93090MH2018PTC308253	6 - Digital-only firms providing financial and insurance services

Company	CIN	OECD Classification
Groww	U65100KA2016PTC092879	6 - Digital-only firms providing financial and insurance services
Suvidhi Gold	U36911GJ2014PTC078858	6 - Digital-only firms providing financial and insurance services
UpGrad	U80902MH2012PTC258559	7 - Other producers operating digitally
Finshell Pay	U65990MH2019PTC328222	6 - Digital-only firms providing financial and insurance services
House of Ganges	U17119WB2002PTC094325	E-seller
luvlap	U74899DL2000PLC103817	E-seller
Alainne	U27100UR2004PLC032688	E-seller
Head Digital Works	U72900DL2017PTC325102	7 - Other producers operating digitally
Relipay	U74140DL2015PLC286390	6 - Digital-only firms providing financial and insurance services
Upstox	U65100DL2021PTC376860	6 - Digital-only firms providing financial and insurance services
Unacademy	U72200KA2015PTC082063	7 - Other producers operating digitally
Dezerv	U65999MH2021PTC358833	6 - Digital-only firms providing financial and insurance services
Cult.fit	U74999KA2016PTC095553	E-seller
Amazon	U52609DL2017FTC318364	2 - Digital intermediary platforms charging a fee
Amazon	U51900KA2010PTC053234	2 - Digital intermediary platforms charging a fee
Amazon	U51101DL2013FTC259251	2 - Digital intermediary platforms charging a fee
Meesho	U74900KA2015PTC082263	2 - Digital intermediary platforms charging a fee
WhatsApp India Payments	U72900TG2017FTC120337	3 - Data and advertising driven digital platforms
Swiggy	U74110KA2013PLC096530	2 - Digital intermediary platforms charging a fee
Twitter	U74900KA2013PTC183374	3 - Data and advertising driven digital platforms
CarDekho	U72200RJ2006PTC023499	2 - Digital intermediary platforms charging a fee
Healthkart	U51909DL2011PTC218346	E-seller
Just Dial	L74140MH1993PLC150054	3 - Data and advertising driven digital platforms
Inshorts	U74110DL2015FTC283202	7 - Other producers operating digitally
Housing.com	U74120HR2012PTC092506	2 - Digital intermediary platforms charging a fee
Chingari	U72900KA2020PTC135658	3 - Data and advertising driven digital platforms

Company	CIN	OECD Classification
ShopClues	U52590HR2011PTC055841	2 - Digital intermediary platforms charging a fee
Moglix	U72300DL2015FTC279856	2 - Digital intermediary platforms charging a fee
Spinny	U74999HR2019PTC077781	2 - Digital intermediary platforms charging a fee
Snapdeal	U72300DL2007PLC168097	2 - Digital intermediary platforms charging a fee
Nestaway	U72400KA2014PTC078018	2 - Digital intermediary platforms charging a fee
Airbnb	U74140HR2015FTC055584	2 - Digital intermediary platforms charging a fee
Airbnb	U74900DL2012FTC232757	2 - Digital intermediary platforms charging a fee
Facebook	U72900TG2010FTC068332	3 - Data and advertising driven digital platforms
KLiKK	U51109WB1995PTC075265	7 - Other producers operating digitally
YouTube	U72900KA2003PTC033028	3 - Data and advertising driven digital platforms
Rooter	U74999DL2016PTC300035	7 - Other producers operating digitally
Medikabazaar	U51397MH2013PTC245092	5 - E-tailers
Phygicart	U52609KL2017PTC049681	2 - Digital intermediary platforms charging a fee
Goibibo	U63040HR2000PTC090846	2 - Digital intermediary platforms charging a fee
Qwikcilver	U72200DL2006PTC360078	7 - Other producers operating digitally
Gozocabs	U72900HR2012PTC077953	2 - Digital intermediary platforms charging a fee
Castlight	U72900TG2021FTC150995	5 - E-tailers
Sulekha	U72900TN2002PTC049739	3 - Data and advertising driven digital platforms
Uber	U74120MH2013FTC247008	2 - Digital intermediary platforms charging a fee
magicpin	U74140HR2015PTC073829	2 - Digital intermediary platforms charging a fee
Nova Benefits	U86900KA2020PTC139731	6 - Digital-only firms providing financial and insurance services

Appendix 6: Estimation for firms dependent on digital intermediaries (OECD 4)

Since it is difficult to estimate the value added of firms dependent on digital intermediaries without enterprise surveys or employment surveys specifically designed to capture this, we use GMV as a proxy for the revenue of firms, and income for individuals, whose sales are intermediated through digital platforms. The GMV at the firm level for digital intermediaries is defined as the total value of the goods sold on the platform in a particular year. The GMV for digital intermediaries are sourced from a range of sources, including business reports, news articles, and investor presentations.

The GMV includes the intermediary platform fee along with the income earned by the dependent firm. This value has to then be adjusted to subtract the portion of value accrued to the intermediary to estimate the income earned by the firms dependent on digital intermediaries.

We use the average commission rates to partition out the intermediary platform fees (see Table A9). The amount that these intermediaries receive from their revenue is based on a marketplace commission rate. This is defined as the rate that is charged by the platform to the company selling their product on the platform. The marketplace commission rate differs across platforms and industries. Based on the marketplace commission rate, the revenue for the firms selling on these accordingly computed. The marketplace commission rate varied from 10 to 20 percent across industries.

Table A9: Average Commission Rates for Digital Intermediaries by Sector

Sector	Average Commission Rate (%)
Food Delivery	16.5
Shared Mobility	30
Travel	22.5
E-Commerce	14.1

Notes: 'Food Delivery' includes Zomato, Swiggy; 'Shared Mobility' includes Uber, Ola; 'E-Commerce' includes Flipkart, Myntra, Snapdeal, Shopclues, Pepperfry, Nykaa, Ajio, Tata Cliq, BigBasket, Tata 1mg.

Source: https://e-tailize.com/blog/top-20-marketplaces-in-india/ and others[45,46,47,48]

After removing the platform fees of intermediary firms from the GMV estimates, we multiply the income of the dependent firms with their profit margins. We use the average profit margins for MSMEs[49] as a proxy (for calculations, see Table A10). These estimates based on profit margins serve as a proxy for GVA but do not capture compensation to employees and may not include the consumption of fixed capital and production taxes less production subsidies, which should be included as part of GVA. In that sense, it underestimates value added by businesses selling on digital platforms. To capture the income of content creators, we use YouTube as a proxy and include YouTuber income estimates to the final result.

[45] *Infobeam Solution. (n.d.). What is the commission charge on Nykaa? https://infobeamsolution.in/what-is-the-commission-charge-on-nykaa/*

[46] *Monetize Deal. (n.d.). AJIO affiliate program: Earn 15% commission. https://blog.monetizedeal.com/ajio-affiliate-program/*

[47] *Borzo. (2024, April 30). How Dunzo's hyperlocal delivery model works. https://borzodelivery.com/in/blog/how-dunzos-hyperlocal-delivery-model-works#:~:text=Dunzo%20charges%20partner%20stores%20a,order%20volume%20and%20product%20category.*

[48] *Urban Company. (2023, October 25). Urban Company announces 12 point program to improve partner earnings and livelihood. https://www.urbancompany.com/blog/urban-company-announces-12-point-program-to-improve-partner-earnings-and-livelihood*

[49] *Kapoor, R., & Goyal, M. (2023). Annual survey of micro, small, and medium enterprises (MSMEs) in India: Leveraging e-commerce for the growth of MSMEs. ICRIER. https://icrier.org/pdf/E-commerce_MSME_Annual-Survey.pdf*

Table A10: Estimated GMV and Value-added by Firms dependent on Digital Intermediaries

Sector	GMV (USD Bn)	GMV (INR Crore)	Value-Added of Firms Dependent on Digital Intermediaries (INR Crore)
Food Delivery	6	48,218	7,259
Shared Mobility	11.05	88,802	62,161
Travel	9.5	76,345	10,668
E-commerce	60	4,82,181	74,678
Total	**86.55**	**6,95,546**	**1,54,766**
Content Creators on Youtube			16,000
GVA of firms dependent on digital intermediaries			**1,70,766**

Source: https://www.business-standard.com/companies/news/zomato-maintains-55-food-delivery-gmv-lead-vs-swiggy-in-cy22-kotak-123062900471_1.html;https emobilityplus.com/2022/03/10/indias-shared-mobility-industry-is-likely-to-witness-revenues-of-42-85-billion-by-2027/

Appendix 7: Survey questionnaires

Survey on Measuring the Digital Economy of India

Notes to Respondents

This survey is being undertaken as a part of the Ministry of Electronics and Information Technology (MeitY) project on "Measuring the Size of India's Digital Economy", being executed by the Confederation of Indian Industry (CII) and the Indian Council for Research on International Economic Relations (ICRIER).

The data collected for this survey will be kept fully confidential and used solely for this project. The data will not be attributable to any individual or firm.

For the purpose of this questionnaire, digital activities, digital investments, and digital platforms are defined as below:

Digital Activities: These activities include IT management, software management/computer management/web publishing/digital media marketing/data analytics/telecommunication/ tele-marketers.

Digital Assets/Investments: These investments include mobile phones, landlines, computers, hardware, software, servers, cloud devices, and any other forms of electronic, computing or network components

Digital Platforms: These include websites, e-commerce platforms, social media platforms, instant messaging platforms, apps, etc.

All data pertains to 2022-2023.

Questionnaire for Education Sector:

Q1) What is the **share of enrollments** in the following (2022-23)?

	Number of Enrollments	Share (%)
Offline courses and programs		
Online courses and programs		
Hybrid courses and programs		
Total		100%

Q2) What is the breakup of revenue in each of the following in 2022-23?

	Rs. Crore	Share (%)
Offline courses and programs		
Online courses and programs		
Hybrid courses and programs		
Total		100%

Q3a) For hybrid courses, please provide an average estimate of how much of these courses are taught online. Share done online:_____%__

Q3b) For hybrid courses, please provide an average projected estimate of how much of these courses will be taught online in 2030-31. Share done online:_____%__

Q4) Please provide information on the following:

	2022-23
Share of digital assets in total assets (in %) (stock as per the balance sheet, not only current year's investment)	
Current operating expenditure on digital activities as a share of total operating expenditures (in %)	

Q5a) How many of your employees are engaged in:

	2022-23		
	Total	Digital Activities	Non-Digital Activities
Total no. of employees			
% of total employees			

Q5b) Among the employees working in digital activities, how many are:

	Total	Male	Female
Number			
Share (% of total employees working in digital activities)	100		

Q5c) How many digital platform-based workers are dependent on your company (where workers use platforms to connect to customers)?

Q6) In the next five years, how do you expect the role of digital investments, digital activities, and digital platforms to change in your business?

	Decline by <25%	Decline by	Decline by 0-10%	Unchanged	Increase by 0-10%	Increase by 10-25%	Increase by >25 %
Share of online courses							
Share of revenue through digital platforms as a % of total domestic sales							
Share of revenue through digital platforms as a % of cross-border sales							

	Decline by <25%	Decline by 10-25%	Decline by 0-10%	Unchanged	Increase by 0-10%	Increase by 10-25%	Increase by >25 %
Share of employment in digital activities							
Share of women employed in digital activities							
Share of digital assets in total assets							
Share of expenditure in digital activities							

Q7) Please describe whether your company uses any of the following new-generation technologies. Specify Yes/No, and provide details.

	Yes/No	If Yes, please mention the activity/activities (such as customer acquisition, service customisation, risk management, accounting, supply chain management, etc.)
1. Artificial Intelligence		
2. Internet of Things		
3. Augmented/Mixed Reality		
4. Metaverse		
5. Robotics		
6. Quantum Computing		
7. Blockchain		
8. Crypto-tokens/Non-Fungible Tokens (NFTs)		
9. Any others, please specify _____		

Questionnaire for Banks:

Q1) What are the **number of transactions (both digital and non-digital)** in each of the following service categories in 2022-23?

Service Category	Number of Transactions			Share (%)		
	Digital	Non-Digital	Total	Digital	Non-Digital	Total
Payment side (digital—UPI, NEFT, RTGS, IMPS, debit cards, credit cards, PoS, ATMs; non digital—cash and transfer transactions at business locations)						100
Lending side (Personal and other loans given by the bank)						100
Investments (Mutual funds, fixed deposits, investments in other financial instruments)						100
Insurance (including third-party products)						100
Others (deposit accounts, locker facilities, etc.)						100
All transactions						100

Please note that for a transaction to be digital, the origination and approval must be completed virtually, without any human interface.

Q2) What is the **breakup of revenue** in the following service categories in 2022-23?

Service Category	INR Crore			Share (%)		
	Digital	Non-Digital	Total	Digital	Non-Digital	Total
Payment side						100
Lending side						100
Investments						100
Insurance						100
Others						100
All transactions						100

Please note that revenue may be either in the form of a fee or interest earned.

Q3) Please provide information on following:

	2022-23
Total digital assets (**stock as per the balance sheet in INR crore**)	
Current operating expenditure on digital activities as a share of total operating expenditures (in %)	

Q4a) How many of your employees are engaged in:

	2022-23		
	Total	Digital Activities	Non-Digital Activities
Total no. of employees			
% of total employees			

Please refer to "notes to respondents" for qualifiers for digital and non-digital activities. Vendors, contractors, and agents not on the company payroll are not to be considered for segregation into digital and non-digital categories.

Q4b) Among the employees working in digital activities, how many are:

	2022-23		
	Total	Male	Female
Number			
Share (% of total employees working in digital activities)	100		

Q5) In the next five years, how do you expect the role of digital investments, digital activities and digital platforms to change in your business?

	Decline by <25%	Decline by	Decline by 0-10%	Unchanged	Increase by 0-10%	Increase by 10-25%	Increase by >25 %
Share of revenue through digital platforms as a % of total domestic sales							
Share of employment in digital activities							
Share of women employed in digital activities							
Share of digital assets in total assets							
Share of expenditure in digital activities							

Q6) Please describe whether your company uses any of the following new-generation technologies. Specify Yes/No, and provide details.

	Yes/No	If Yes, please mention the activity/activities)such as customer acquisition, service customisation, risk management, accounting, supply chain management, etc.)
1. Artificial Intelligence		
2. Internet of Things		
3. Augmented/Mixed Reality		
4. Metaverse		
5. Robotics		
6. Quantum Computing		
7. Blockchain		
8. Crypto-tokens/Non-Fungible Tokens (NFTs)		
9. Any others, please specify _____		

Questionnaire for Other Sectors:

Q1) Which of the following business areas (sectors) does your firm operate in?

(a) Trade (Retail/Wholesale) ⭘

(b) Financial services (other than banking) ⭘

Q2) Within the business areas you have identified, please choose the category your company **largely operates in.**

Trade (Retail/Wholesale)	Banking and Finance Services
• Business to Business • Business to Consumer • If other, please specify____	• Retail Banking • Insurance • Wealth Management • Fintech Platforms • If others, please specify _____

Q3) What share of your revenue is from your main business activity selected in Q2?

_____

Q4) What is the approximate annual turnover of your company in 2022-23?

(Please select one)

(a) Less than Rs. 40 lacs ⭘

(b) Rs. 40 lacs to Rs. 5 crores ⭘

(c) Rs. 5 to 50 crores ⭘

(d) Rs. 50 to 250 crores ⭘

(e) More than Rs. 250 crores ⭘

Q5a) How many of your employees are engaged in:

	Total	Digital Activities	Non-digital activities
Number			
Share (% of Total Employees)	100		

Please refer to "notes to respondents" on the first page for examples of digital activities

Q5b) Among the employees working in digital activities, how many are:

	Total	Digital Activities	Non-digital activities
Number			
Share (% of Total Employees working in digital activities)	100		

Q5c) How many digital platform-based workers are dependent on your company (where workers use platform to connect to customers)? _____

Q6) What is your operating expenditure on the following:

	Total	Digital Activities	Non-Digital activities
INR Crore			
Share (% of Total operating expenditure)	100		

Q7) What is the share of digital assets in total assets (stock as per the balance sheet, not only current year's investment)?

	Total	Digital Assets	Non-Digital Assets
Value of Assets (INR Crore)			
% of Total Asset Value	100		

Q8) What is the value of the firm's revenue in 2022-2023 (or latest) earned through:

INR Crore	Total	Digital Platforms	Non-Digital Platforms
Domestic	100		
Cross-Border/Exports	100		
Total (%)	**100**		

Note: Revenue through digital platforms includes products ordered online (through own website, third-party platform, social media), including store pick-up and home delivery. Does not include purchases made in-store.

Q9) Out of the revenue made through digital platforms, what is the share of the following channels?

	Own Website	Online Platform (e.g., Amazon)	Social Media	Other Digital Channels	Instant Messaging Apps	Total (%)
Domestic						
Cross-border/ Exports						
Total (%)						**100**

Q10) In the next five years, how do you expect the role of digital investments, digital activities, and digital platforms to change in your business?

	Decline by <25%	Decline by	Decline by 0-10%	Unchanged	Increase by 0-10%	Increase by 10-25%	Increase by >25 %
Share of revenue through digital platforms as a % of total domestic sales							
Share of employment in digital activities							
Share of women employed in digital activities							
Share of digital assets in total assets							
Share of expenditure in digital activities							

Q11) Please describe whether your company uses any of the following new-generation technologies. Specify Yes/ No, and provide details.

	Yes/No	If Yes, please mention the activity/activities (such as customer acquisition, service customisation, risk management, accounting, supply chain management, etc.)
1. Artificial Intelligence		
2. Internet of Things		
3. Augmented/Mixed Reality		
4. Metaverse		
5. Robotics		
6. Quantum Computing		
7. Blockchain		
8. Crypto-tokens/Non-Fungible Tokens (NFTs)		
9. Any others, please specify _____		

Appendix 8: Breakdown of estimates for the augmented sectors

Table A11: Detailed Estimates for Augmented Sectors

Sector	Number of companies	Determined digital share in revenue	Digital Value Added (In Rs. Crore)	Digital share in economy GVA	Share in digital economy GVA
Trade	15	14.71%	1,19, 374	0.48%	4.1%
Financial Service	14	24.59%	2,99,165	1.21%	10.3%
Education	3	17.17%	68,970	0.28%	2.4%
Total			**4,87,508**	**1.98%**	

The above values were calculated as follows. The portion of output from the private sector is obtained from the National Accounting Division of MoSPI. From this, the revenue attributed to the companies already included in the OECD digital industries was subtracted to avoid double-counting. Then, the estimate share of revenue that was digitally estimated from the primary surveys was applied. This was calculated as the digital share weighted by firm revenue. This provided the value of digital output by sector. This was then apportioned to digital GVA by using the ratio of GVA-to-output ratio for the respective sector. This adjustment was not done for the financial services sector because NAS provides data only on value-added and not output. The estimation for the financial services sector excludes the GVA of central banks and pension funds. Calculations are provided below.

Table A12: Trade Sector Calculations for Augmented Sectors

Share of trade output that is from private sector as per MoSPI	36%
Output of trade and repair services (2022-23) according to NAS (Rs. Cr)	3,590,652
Output from private-sector trade (Rs. Cr)	1,292,634.72
Output already counted in OECD digital industries (overlap to subtract) (Rs. Cr)	177,918.00
Final output base	1,114,716.72
Weighted share of output that is digital (from primary survey)	14.71%
Value of digital output	163974.83
GVA/Output ratio from NAS	0.728
Value of digital GVA	119373.68

Table A13: Financial Sector Calculations for Augmented Sectors

GVA of relevant sub-sectors from NAS	1,238,328
GVA already counted in OECD digital industries (overlap to subtract) (Rs. Cr)	21,716.00
Final GVA base	1,216,612
Weighted share of GVA that is digited (from primary survey)	**24.59%**
Digital GVA	299,164.89

Table A14: Education Sector Calculations for Augmented Sectors

Share of education output that is from private sector as per MOSPI	36.90%
Output of education (2022-23) according to NAS (Rs. Cr)	1368493
Output from private sector education	504934.5
Output already counted in OECD Digital Industries (overlap to subtract) (Rs. Cr)	9771.33
Final output base	495,163.17
Weighted share of output that is digital (from primary survey)	**17.17%**
Value of digital output	85,019.52
GVA/Output ratio from NAS	0.811219738
Value of digital GVA	68969.51

Appendix 9: Projections

Projections were made based on the following assumptions:

The Digitally Enabling Industry (DEI) grows at 17.251% per year (based on the average growth rate of last 10 years), while the remaining 6 industries are projected to grow at 30.115% (based on the average growth rate of the total revenue of the list of companies identified and compiled in these sectors).

For the augmented sectors, the projected output values for these sectors are estimated based on the average growth rate of past ten years. The projected values of GVA are then estimated using a constant ratio of GVA to output of 0.728. Then, a projected digital share of GVA is applied to estimate the value of digital GVA. The projected digital share is calculated by assuming that it will grow at 25% over the next 5 years, based on the most commonly selected (modal) response in the primary survey. This calculation uses the digital share of revenue as a proxy for digital share of GVA.

The two tables below show these calculations.

Table A15: Assumptions and Projections for Augmented Sectors

		2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Digital Share									
Trade	25% growth over 5 years	0.15	0.15	0.16	0.17	0.18	0.18	0.19	0.20
Financial Services		0.25	0.26	0.27	0.28	0.30	0.31	0.32	0.34
Education		0.17	0.18	0.19	0.20	0.21	0.21	0.23	0.24
Output									
Trade	0.12664	1114717	1255884	1414929	1594114	1795992	2023436	2279683	2568381
Financial Services	0.11626	1216612	1358059	1515951	1692200	1888941	2108555	2353702	2627351
Education	0.15277	495163	570807	658006	758527	874403	1007981	1161966	1339473

Note: The shaded cells contain projected values

Table A 16.1: Assumptions and Calculations of Projections

Sector	Assumptions for Projection Calculation	Value Added (Rs. Crore)							
		2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
1 – Digital-enabling industry (adjusted)	Average growth rate over last 10 years: 0.17251413	19,30,158	22,63,137	26,53,561	31,11,337	36,48,087	42,77,433	50,15,351	58,80,570
2 - Digital intermediary platforms charging a fee	Average growth rate over last two years in revenue of the combined list of companies compiled under OECD digital industries 2-7: 0.301154512	99,951	1,30,052	1,69,217	2,20,178	2,86,486	3,72,762	4,85,021	6,31,087
3 - Data and advertising driven digital platforms		12,479	16,237	21,127	27,490	35,769	46,540	60,556	78,793
4 - Firms dependent on digital intermediaries		1,70,766	2,22,193	2,89,107	3,76,173	4,89,459	6,36,862	8,28,656	10,78,209
5 - E-tailers		24,752	32,206	41,906	54,526	70,946	92,312	1,20,112	1,56,285
6 - Digital-only firms providing financial and insurance services		44,313	57,658	75,023	97,616	1,27,013	1,65,264	2,15,034	2,79,792
7 - Other producers operating digitally		75,557	98,312	1,27,918	1,66,442	2,16,566	2,81,786	3,66,648	4,77,065
E-seller		48,665	63,321	82,391	1,07,203	1,39,488	1,81,495	2,36,153	3,07,271
Digital Economy (OECD)		**24,06,642**	**2883117**	**3460250**	**4160964**	**5013814**	**6054455**	**7327531**	**8889073**
Trade	Projected growth in digital share of revenue: Projected growth in sector output x GVA to output ratio x Current output	1,19,374	141216	166675	196319	230797	270859	320419	378187
Financial Services		2,99,165	350644	410050	478529	557389	648117	759643	888340
Education		68,970	83481	100816	121500	146151	175498	212423	256534
Digital Economy (OECD Augmented)		**28,94,150**	**3458457**	**4137791**	**4957312**	**5948150**	**7148929**	**8620015**	**10412135**
Projected GDP	Growth rate: 0.11.77%	2,46,59,041	2,75,60,563	3,08,03,493	3,44,28,005	3,84,78,997	4,30,06,652	4,80,67,057	5,37,22,896

Note: The shaded cells contain projected values

Table A 16.2: Assumptions and Calculations of Projections

Sector	GDP (USD billion)							
	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
% attributable to the digital economy (OECD)	9.8%	10.5%	11.2%	12.1%	13.0%	14.1%	15.2%	16.5%
Digital Economy (OECD)	**335**	**374**	**442**	**525**	**624**	**744**	**889**	**1065**
% attributable to the digital economy (OECD Augmented)	11.7%	12.5%	13.4%	14.4%	15.5%	16.6%	17.9%	19.4%
Digital Economy (OECD Augmented)	**402**	**448**	**529**	**625**	**740**	**879**	**1046**	**1247**
Projected GDP*	3428.84	3572.08	3937.01	4339.83	4789.83	5287.04	5833.42	6436.65

**2022-23 value of GDP is taken from 2022-23 MoSPI estimate of 269.5 lakh crores (https://iced.niti.gov.in/economy-and-demography/key-economic-indicators/gva), converted to USD using USD estimate using 2022 average exchange rate of 78.598 (https://www.irs.gov/individuals/international-taxpayers/yearly-average-currency-exchange-rates), and the remaining are projections from IMF.*[50]

Estimated value of GDP attributable to the digital economy is projected by applying the estimated percentages of GVA attributable to the digital economy, calculated as described earlier, to estimates of projected GDP (current prices).

[50] *IMF. GDP, current prices. Retrieved September 10, 2024, from https://www.imf.org/external/datamapper/NGDPD@WEO/IND?zoom=IND&highlight=IND*

Appendix 10: Details of Employment Estimates

Table A17: Breakdown of Estimates of Employment in the Digital Economy

Industry	In Numbers	Share in Total Economy	Share in Digital Economy (OECD + Augmented)
1 - Digital-enabling industry (adjusted)	85,17,992	1.48%	58.07%
2 - Digital intermediary platforms charging a fee	1,03,975	0.02%	0.71%
3 - Data and advertising driven digital platforms	20,100	0.00%	0.14%
4 - Firms dependent on digital intermediaries	55,38,839	0.96%	37.76%
5 - E-tailers	1,29,833	0.02%	0.89%
6 - Digital-only firms providing financial & insurance services	1,00,494	0.02%	0.69%
7 - Other producers operating digitally	52,431	0.01%	0.36%
E-seller	48,595	0.01%	0.33%
Digital economy (OECD)	1,45,12,259	2.52%	98.94%
Augmented (excluding firms covered in OECD)			
Trade	79,843	0.01%	0.58%
Financial services	72,879	0.01%	0.53%
Education	3,096	0.00%	0.02%
Digital economy (OECD + Augmented)	**1,46,68,077**	**2.55%**	

Industry 1 is estimated based on the share of total employment in usual principal and subsidiary status (UPSS) within the industry codes that comprise the digital enabling sector as per the OECD definition. This share is then applied to an estimated 57,55,40,000[51] total employed in UPSS status in 2022.

Table A18: Breakdown of Estimates of Employment in the Digital-Enabling Industry

NIC Code	Description	% in total employment (UPSS)
262	Manu. of computer & peripheral equipment	-
263	Manu. of communication equipment	0.02
261+264+268	Manu. of electronic component, consumer electronics, magnetic & optical media	0.05
582	Software publishing	0.02
59	Motion picture, video & television programme production, sound recording & music publishing activities	0.03
60	Broadcasting & programming activities	0.01

[51] *This is calculated as an estimated population (15+) of 1,02,77,50,000 in 2022 multiplied by the estimated Worker Population Ratio (15+) of 56/100 from PLFS 2022-23 (https://www.mospi.gov.in/sites/default/files/publication_reports/AR_PLFS_2022_23N.pdf?download=1). This WPR estimate is compatible with the UPSS definition used in the remaining estimation. The estimate of 2022 population (15+) is derived by linear extrapolation between the MoHFW projections for population (15+) in 2021 and 2026 (https://main.mohfw.gov.in/sites/default/files/Population%20Projection%20Report%202011-2036%20-%20upload_compressed_0.pdf).*

NIC Code	Description	% in total employment (UPSS)
61	Telecommunication	0.11
62	Information & computer related services	0.94
63	Information & computer related services	0.16
9511	Portions of trade & retail services	0.02
9512	Portions of trade & retail services	0.04
4651	Portions of trade & retail services	0.01
4652	Portions of trade & retail services	0.07
	Total Digital Enabling	**1.48**

Notes: This estimate varies slightly in scope compared to the estimate of GVA from the digital-enabling industry, as follows. The PLFS did not report values for NIC code 2680 in 2022-23. NIC 582 (Software Publishing) was included in the employment estimates but not in the GVA estimates because it could not be partitioned in the publicly available NAS and it is also largely captured in NIC 62 and 63. There are also fundamental differences between employment surveys and the NAS in methodology and the way industry classifications are done, due to which the actual scope may vary.

Estimates for employment in industries 2, 3, 5, 6, and 7 are based on a list of companies compiled and categorised into their respective categories from various other databases and secondary sources. This presents lower bound estimates for these categories because these lists may not be exhaustive. Employment in each of the identified companies is taken from the EPFO database.

Industry 4 is a lower bound estimate calculated as the number of gig platform workers in the top digital labour platforms (37,71,165), plus the number of estimated YouTube content creators with more than one lakh followers (7,50,000),[52] plus the estimated employment due to online sales by other firms selling online (10,17,674).

The table below provides the breakdown for gig platform workers.

Table A19: Breakdown of Estimates of Employment in OECD Industry 4

Company	Number of Partners	Source	Date
Ola	15,00,000	Ola	July 2024
Uber	10,00,000	Economic Times[53]	May 2024
Swiggy	3,00,000	Economic Times[54]	May 2023
Zomato	3,52,000	Financial Express[55]	June 2023

[52]*Ranipeta, S. (2023, September 28). Creator economy exploding in India, 40% growth in hours of content uploaded: YouTube. CNBC TV 18. https://www.cnbctv18.com/technology/youtube-india-ishan-john-chatterjee-fanfest-creator-economy-content-creators-17904491.htm*

[53]*The Economic Times. (2024, May 9). Uber's India driver count tops 1 million. https://economictimes.indiatimes.com/tech/technology/ubers-india-driver-count-tops-1-million/articleshow/109978440.cms?from=mdr*

[54]*The Economic Times. (2023, May 3). Swiggy pays Rs 31 crore to delivery workers in insurance claims. https://economictimes.indiatimes.com/tech/technology/swiggy-pays-rs-31-crore-to-delivery-workers-in-insurance-claims/articleshow/99965420.cms?from=mdr*

[55]*Krishna, T. (2023, October 30). Zomato delivered 647 million orders worth Rs 263.1 billion across 800 cities during FY23, says Rakesh Ranjan. Financial Express. https://www.financialexpress.com/business/industry-zomato-delivered-647-million-orders-worth-rs-263-1-billion-across-800-cities-during-fy23-says-rakesh-ranjan-3291075/*

Company	Number of Partners	Source	Date
Urban Company	45,000	Urban Company	July 2024
Dunzo	11,000	Dunzo[56]	July 2024
BigBasket	35,565	Business Standard[57]	December 2022
Flipkart	3,00,000	Flipkart[58]	December 2022
Zepto	50,000	TechCrunch[59]	2024
Amazon*	1,00,000	Fairwork[60]	2020
HouseJoy*	65,000	Fairwork	2020
Blinkit*	12,600	Fairwork	2020
Total	**37,71,165**		

**Older estimates*

The Fairwork (2020) estimates for February 2020 of these companies together (except Zepto) was ~3.03 million. While overall, this is an estimate of the total number of platform gig workers, these numbers are overestimates of the number of individuals employed by these particular platforms because many of these estimates are the number of registrations, which may be larger than the number of active partners, and some of these individuals are likely to be employed by multiple platforms and therefore double-counted.

The estimated employment due to online sales by other firms selling online is calculated as follows. This estimate may include some platform gig workers as well as firms selling online through means other than intermediaries and therefore may be an overestimate. The total employment by non-agricultural unincorporated firms that receive online sales is estimated based on the ASUSE 2022-23 survey (4.10% of total employment of all firms surveyed). This is applied to the employment generated by non-agricultural unincorporated firms of 11 crore, as reported in the ASUSE 2022-23 report,[61] providing as estimate of employment 45,07,004 by the subset of firms selling online. The share of employment within these firms that is attributable to digital sales is calculated by assuming that it is proportionate to the share of sales received online. This percentage (22.58%) is estimated from a survey that estimates the share of e-commerce sales in total sales for MSMEs.[62]

[56] *Dunzo. (n.d.). https://www.dunzo.com/grow-with-google?referrer=smb*

[57] *Gupta, A. (2022, December 30). Customers saved Rs 1,515 crore using discounts on BigBasket in 2022. Business Standard. https://www.business-standard.com/article/companies/customers-saved-rs-1-515-crore-using-discounts-on-bigbasket-in-2022-122122901218_1.html*

[58] *Team Flipkart Stories. (2022, December 13). Transparent & fair work principles for delivery partners at the Flipkart Group. https://stories.flipkart.com/fair-work-principles-and-transparency-for-delivery-partners-at-the-flipkart-group/*

[59] *Singh, M. (2024, June 20). Zepto, a 10-minute delivery app, raises $665M at $3.6B valuation. TechCrunch. https://techcrunch.com/2024/06/20/zepto-a-10-minute-delivery-app-raises-665-million-at-3-6-billion-valuation/*

[60] *Fairwork. (2021, January 17). Fairwork India Ratings 2020: Labour standards in the platform economy. Retrieved from https://fair.work/wp-content/uploads/sites/17/2021/01/Fairwork_India_2020_report.pdf*

[61] *MoSPI. (2024). ASUSE 2022-23 report. https://mospi.gov.in/sites/default/files/publication_reports/ASUSE_2022_23_Report_Final.pdf*

[62] *Kapoor, R., & Goyal T.M. (2023). Annual survey of micro, small, and medium enterprises (MSMEs) in India: Leveraging e-commerce for the growth of MSMEs. ICRIER. https://icrier.org/pdf/E-commerce_MSME_Annual-Survey.pdf. Data from Figure 17 is used to calculate the average share of e-commerce sales in total sales as follows. Firms were asked to choose a range that characterizes their share of e-commerce sales. The mid-point of these ranges was weighted by the percentage of firms that report being in that range.*

Appendix 11: Suggested Questions from Surveys Used by other Countries

Netherlands: ICT Usage in Enterprises

Netherland's survey on ICT usage by enterprises can be found here: https://ec.europa.eu/eurostat/cache/metadata/Annexes/isoc_e_simsie_nl_an_2.pdf

Netherlands: Resident Digital Intermediary Platform Survey

These are some sample questions translated by ICRIER from the questionnaire shared by Statistics Netherlands.

This questionnaire is about online platforms. Before you move on to the content part of the questionnaire, here are a few questions to verify that you are the owner of the website or app for which this survey is intended. We also check whether your website or app is indeed an online platform.

An online platform is a website or app where different people, organisations, or companies come into contact with each other and can exchange goods, services, or information. The online platform usually does not offer the goods, services, or information itself, but mainly acts as an intermediary.

1) Does your website or app mediate or support the exchange of goods, services or information between individuals, companies, or organisations?

   >>This can involve mediation or support in the sale of goods, bringing residents, patients, and family together, crowdfunding, dating, new friendships, renting out accommodations, borrowing items, etc.<<

   a) Yes
   b) No

2) If yes, are you, or is your company or organisation, the only provider of goods, services or information on your website or app?

   a) Yes
   b) No, in addition to our own offerings, there are also offerings from other parties
   c) No, there is only an offer from other parties

   If the answer to the above is b) or c), then continue to the next question.

3) In addition to the online platform indicated in the relevant line of the letter of registration, are there any other online platforms that are part of your company or organisation?

   a) Yes
   b) No

4) If yes, what are the most important other online platforms that are part of your company or organisation?

	Competitor Platform Name
Platform 1	
Platform 2	
Platform 3	
Platform 4	
Platform 5	

Block: Characterization [Type]

5) Please tick which characterisation best suits your online platform.

   The online platform focuses on (mediation in):

   Goods
   1. Retail trade
   2. Wholesale, interchange of goods between companies
   3. Second-hand goods
   4. Rental of (holiday) accommodation
   5. Sale of real estate
   6. Meals, food, and drinks
   7. Selling digital goods
   8. Rental of digital goods
   9. Other goods, namely:

   Services
   10. Work, odd jobs, or assignments online
   11. Work, odd jobs, or assignments on location
   12. Work, transport of persons or goods
   13. Financial services
   14. Other services, namely:

Information

15. Search engine
16. News
17. Reviews
18. Other information, namely:

Communication

19. Dating
20. Social media
21. Community building, getting to know people (not dating)
22. Communication or exchange around hobbies
23. Advertisements, advertising, marketing
24. Other communications, namely:

6) As of 1 January <Reference PeriodYear+1>, were employees with a temporary or permanent contract working for your online platform?

a) Yes
b) No

7) Enter below the number of employees with a temporary and permanent contract who were working at your online platform as of 1 January <Reference PeriodYear+1>, and convert this into the number of FTEs.

>>FTE (full-time equivalent): An employee who works a full week counts as one FTE. An employee who works part-time should only be counted in part. For example: an employee who works two days a week counts for 0.4 FTE (i.e. 2/5).<<

***Table Personnel**

	Number
Employees	
FTEs	

8) Is there a clear distinction to be made between providers and buyers among the users of your online platform?

>>In the case of platforms that focus on the exchange of goods or services, a clear distinction can often be made between those who offer the goods or services (the providers) and those who purchase them (the buyers). With platforms that focus on information or communication (such as search engines, dating sites, or social media), this distinction is often less clear. <<

a) Yes
b) No

Block: Users [Users]

9) How many unique users have used your platform in <Reference Period>?

>>An estimate is sufficient. If your platform focuses on establishing a match (or transaction), you can limit yourself to the number of unique users involved in a match (or transaction).<<

10) Can you indicate with percentages how the users on your platform are distributed among the following countries?

>>Give a percentage per country or group of countries. An estimate will suffice.<<

***Table: Percentage Distribution of Unique Users by Countries**

11) For the users of your online platform, the main concerns are:

>>More than one answer possible.<<

1. Business
2. Self-employed persons (incl. self-employed persons)
3. Non-profit organisations
4. Individuals or households (including volunteers)

12) Do users have to pay in any way for the use (including transactions) of your online platform?

1. Yes
2. No (Free)
3. The basics are free, but access to certain parts or features is paid

13) In what ways do users have to pay for using your online platform?

>>More than one answer possible.<<

1. One-off payment for access to (parts of) the online platform

2. Recurring payment (including subscription fees) for access to (parts of) the online platform
3. Fixed amount per transaction
4. Percentage per transaction
5. Variable amount per transaction, but no percentage

Block: Providers [Providers]

14) How many unique providers have used your online platform in <Reference Period>?

>>An estimate is sufficient. If your platform focuses on establishing a match (or transaction), you can limit yourself to the number of unique providers involved in a match (or transaction).<<

15) Can you indicate with percentages how the providers on your platform are distributed over the following countries?

>>Give a percentage per country or group of countries. An estimate will suffice.<<

***Table: Percentage Distribution of Active Providers by Countries**

16) Can you indicate with percentages how the providers on your platform are distributed over the following countries?

>>Give a percentage per country or group of countries. An estimate will suffice.<<

17) The providers of your online platform are mainly concerned with:

>>More than one answer possible.<<

1. Business
2. Self-employed persons (incl. self-employed persons)
3. Non-profit organisations
4. Individuals or households (including volunteers)

18) Do the providers have to pay for the use (including transactions) of your online platform in one way or another?

1. Yes
2. No (Free)
3. The basics are free, but access to certain parts or features is paid

19) In what ways do the providers have to pay for the use of your online platform?

>>More than one answer possible.<<

1. One-off payment for access to (parts of) the online platform
2. Recurring payment (including subscription fees) for access to (parts of) the online platform
3. Fixed amount per transaction
4. Percentage per transaction
5. Variable amount per transaction, but no percentage

Block: Buyers

20) How many unique customers have used your online platform in <Reference Period Year>?

>>An estimate is sufficient. If your platform focuses on establishing a match (or transaction), you can limit yourself to the number of unique buyers involved in a match (or transaction).<<

21) Can you explain why there were no takers on your platform?

If there were buyers, you can change the answer to the previous question.<<

22) Can you indicate with percentages how the buyers on your platform are distributed over the following countries?

>>Give a percentage per country or group of countries. An estimate will suffice.<<

23) The customers of your online platform are mainly:

1. Business
2. Self-employed persons (incl. self-employed persons)
3. Non-profit organisations
4. Individuals or households (including volunteers)

24) Do the customers have to pay for the use (including transactions) of your online platform in one way or another?

1. Yes
2. No (Free)
3. The basics are free, but access to certain parts or features is paid

25) In what ways do customers have to pay for the use of your online platform?

>>More than one answer possible.<<

1. One-off payment for access to (parts of) the online platform
2. Recurring payment (including subscription fees) for access to (parts of) the online platform
3. Fixed amount per transaction
4. Percentage per transaction
5. Variable amount per transaction, but no percentage

Block: Revenue/Revenue Model

The following questions relate to financial data about your online platform. This sensitive information, like all other information resulting from this survey, is processed in accordance with the privacy standards applicable within CBS. The results of CBS can never be traced back to individual companies.

26) What was the turnover of your company or organisation in <Reference Period Year>?

27) How many paid transactions have taken place between buyers and providers of your platform in <Reference Period>?

28) How much money was involved in all paid transactions between buyers and providers (not the revenues of your online platform itself) in <Reference Period Year>?

29) What part (as a percentage) of the total turnover of your company or organisation in <Reference Period Year> came from revenues from the online platform?

30) Who sets the price of a transaction through your online platform?

1. This is determined by the provider
2. This is determined jointly by the buyer and supplier through negotiation
3. This is what the online platform determines
4. This is determined by the online platform together with the provider
5. This is determined by the customer (possibly together with the online platform)

31) From which source(s) did you receive income?

>>More than one answer possible.<<

1. Commissions on transactions and user rights
2. Ads on your online platform
3. Sharing or selling data to/with third parties
4. Directing customers to selling websites (affiliate marketing)
5. Other sources
6. From no source

32) In relation to the previous question, what has been the main source of income?

>>Only one answer possible.<<

1. Commissions on transactions and user rights
2. Ads on your online platform
3. Sharing or selling data to/with third parties
4. Directing customers to selling websites (affiliate marketing)
5. Other sources

33) Is your online platform a commercial platform?

>>The goal of a commercial platform is to make a profit.<<

a) Yes
b) No

34) Did your platform make a financial profit or loss in <Reference Period>?

1. Profit
2. Loss
3. Neither profit nor loss

Block: Technology

35) How are algorithms used on your online platform?

>>More than one answer possible.<<

An algorithm is a set of (decision) rules (usually in the form of a computer script) that is used to automate processes (data processing).

1. Linking users of the platform (the matching)
2. Setting the price of transactions based on supply and demand (flexible price)

3. Steering supply (available providers) when demand fluctuates
4. Managing the work of providers on the platform
5. Offering more or less work to well-rated or poorly rated providers
6. To deny access to the platform to poorly rated customers or providers
7. To target ads to certain audiences of your platform
8. For the processing and analysis of data (incl. predictions)
9. Other, namely:
10. No algorithms are used

36) *If answer is 1 in* Q34: You mentioned that an algorithm is used in linking users from the platform. Can you find out on the website of your online platform which decision rules this algorithm consists of?

1. Yes
2. No

37) *If answer is 7 in* Q34: You mentioned that an algorithm is used to target ads to certain audiences of the platform. Can you find out on the website of your online platform which decision rules this algorithm consists of?

1. Yes
2. No

38) How is 'quality' judged on your platform?

On the platform, the following are assessed:

>>More than one answer possible.<<

1. The users, with rating (stars or rating)
2. The users, with review (written text)
3. The provider, with rating (stars or rating)
4. The provider, with review (written text)
5. The buyer, with rating (stars or number)
6. The customer, with review (written text)
7. Quality aspects of the product, service and/or information
8. The functioning of the platform
9. Other, namely:
10. Your platform does not have a grading system

39) How is the authenticity of reviews or ratings checked?

1. Control by the platform
2. Third-party verification
3. Users can only post a review or rating after being invited by the platform (e.g., after purchasing a product)
4. No control

40) Who is responsible for handling complaints about products mediated by the platform?

>>More than one answer possible.<<

1. Your online platform
2. The providers on your platform
3. A third party (other than the platform or providers)

41) How is the quality of the products brokered by your platform controlled?

1. Products are randomly checked by the platform
2. Products must comply with certain quality marks
3. Quality is the responsibility of the providers on the platform
4. In another way, namely:
5. There is no control

42) Is it possible for providers on the platform to rank higher in the search results shown to customers for a fee?

1. Yes
2. No
3. The platform does not work with search results

43) Is it visible in the search results shown to customers when the provider has paid to rank higher in the search results?

1. Yes
2. No

44) What data does your platform collect about the providers and/or customers of your online platform?

>>More than one answer possible.<<

1. Data entered by providers when registering on the platform
2. Data from providers that are released when using the website (user data)
3. Data entered by customers when registering on the platform
4. Customer data that is released when using the website (user data)
5. No data is collected

45) Is it possible to find out what data is collected from users on your platform's website?

1. Yes
2. Partial
3. No

Block: Employment

(If platform mediates work)
You have previously indicated that your online platform mediates in a certain type of work. The following questions relate to this.

46) What is the employment relationship between your online platform and the performers of the work, the jobs, or the services?

1. The performers are employed by our online platform
2. The performers work as self-employed persons (including self-employed persons) via our online platform
3. The performers work through the 'home service scheme'
4. The performers work through a temporary employment structure
5. The executives work through a payroll construction

47) What facilities are arranged by your platform for the performers of the work, the odd jobs or the services?

>>More than one answer possible.<<

1. Insurance (e.g., in case of accidents or liability)
2. Pension contribution
3. Handling tax returns
4. Assistance with the drafting of contracts
5. Materials/goods to be able to carry out the work
6. A guarantee of a minimum of income
7. A guarantee of a minimum number of transactions
8. A minimum or fixed amount per transaction
9. (Facilitating) the handling of the payment of the work
10. Information about the costs of working for your platform
11. Training, course, or education
12. Assistance with drawing up curriculum vitae or the possibility to share it via the platform
13. None of the above provisions

48) What specific requirements apply to the performers of the work, the jobs, or the services?

>>More than one answer possible.<<

1. Participation in intake interview
2. Minimum number of available hours
3. Minimum age
4. Valid proof of identity
5. Third-party insurance
6. Registration with the Chamber of Commerce
7. Certificate of good conduct
8. Residence permit for the Netherlands
9. Work permit in the Netherlands
10. Driver's licence
11. Own car, scooter, or bicycle
12. Diplomas/Certificates
13. (Demonstrable) work experience
14. Permanent residential address
15. The maximum number of transactions that can be rejected consecutively
16. Minimum customer rating/Rating
17. None of the above requirements

Block: Other Questions

49) How many online platforms are there that you face significant competition from?

50) Where are these competing platforms primarily located?

1. The Netherlands

2. Other European countries
3. United States
4. China
5. Other countries

United Kingdom: 2022 Digital Economy Survey questions

https://www.ons.gov.uk/surveysinformationforbusinesses/businesssurveys/2021digitaleconomysurveysurveyquestions#digital-intermediary-platforms

Access to and use of the internet

1) What percentage of people in this business use computers with internet access for their work?

2) Does your business have any of the following platforms?
   - App
   - Own website
   - Social media pages
   - Website placed via third party
   - None of the above

E-commerce sales

3) During 2022, what was your business's turnover from e-commerce sales?

4) During 2022, which areas did your business make e-commerce sales to?

5) How much of the value in turnover from e-commerce sales, came from the following areas?
   - UK
   - European Union countries
   - Other European countries
   - Africa
   - Australasia and Oceanic
   - Asia
   - The Americas and Caribbean

6) During 2022, what type of e-commerce sales did your business make to customers located outside the UK?
   - Sales of goods
   - Sales of services

7) During 2022, what platforms did your business use to make e-commerce sales to customers located outside the UK, came from services which were digitally delivered?

E-commerce purchases

(similar questions to sales E-commerce sales section)

Sales and purchases of digitally delivered services

8) During 2022, what was your business's turnover from the sale of services that were ordered non-digitally but were digitally delivered?

9) Turnover from the sale of services ordered non-digitally but digitally delivered to customers located in the UK

10) Turnover from the sale of services ordered non-digitally but digitally delivered to customers located outside the UK

Digital Intermediary Platforms

11. During 2022, did your business charge fees to users of your digital intermediary platform?

12. During 2022, what was your business's income fees to users of your digital intermediary platform?
    - Income from fees charged to users located in the UK
    - Income from fees charged to users located outside the UK

13) During 2022, did users of your digital intermediary platform use your platform to sell their goods?

14) During 2022, did your business pay a digital intermediary platform to sell your goods and services?

15) During 2022, how much did your business pay to a digital intermediary platform to sell your goods and services?

Use of business software and cloud computing

Access to and use of the internet:

16) What percentage of people in this business use computers with internet access for their work?

17) Does this business use a fixed broadband connection to the internet for business purposes?

18) What is the maximum contracted download speed of the fastest fixed internet connection used by your business?

19) Is the speed of your fixed line connection(s) to the internet sufficient for the needs of the business?

20) Does your business have any of the following platforms?
    - App
    - Own website
    - Social media pages
    - Website placed via third party
    - None of the above

21. During 2022, did your business use any digital marketing strategies to improve traffic to its website or app?

E-commerce sales:

22. During 2022, did this business make any e-commerce sales?

23) During 2022, what was your business's turnover from e-commerce sales?

24) During 2022, which areas did your business make e-commerce sales to?
    - UK
    - European Union countries
    - Other European countries
    - Africa
    - Australasia and Oceanic
    - Asia
    - The Americas and Caribbean

25. How much of the value in turnover from e-commerce sales, came from the following areas?
    - UK
    - European Union countries
    - Other European countries
    - Africa
    - Australasia and Oceanic
    - Asia
    - The Americas and Caribbean

26. During 2022, which customers located outside the UK did your business make e-commerce sales to?
    - Private consumers
    - Public authorities
    - Other business

27. How much of the turnover from e-commerce sales to customers located outside the UK came from the following type of sale?
    - Turnover from e-commerce sales to private consumers
    - Turnover from e-commerce sales to public authorities
    - Turnover from e-commerce sales to other businesses

28. During 2022, what type of e-commerce sales did your business make to customers located outside the UK?
    - Sales of goods
    - Sales of services

29. How much of the turnover from e-commerce sales to customers located outside the UK, came from the following type of sale?
    - Turnover from e-commerce sales of goods
    - Turnover from e-commerce sales of services

30 During 2022, what platforms did your business use to make e-commerce sales to customers located outside the UK, came from services which were digitally delivered?

31. During 2022, what platforms did your business use to make e-commerce sales to customers located outside the UK?

    - Sales via your own website or app
    - Sales via an online marketplace
    - Sales via EDI
    - Other

32. How much of the turnover from e-commerce sales to customers located outside the UK came from each platform?

    - Turnover from e-commerce sales via your own website or app
    - Turnover from e-commerce sales via your own social media
    - Turnover from e-commerce sales via EDI
    - Turnover from e-commerce sales via other platforms

33. During 2022, did your business experience any of the following difficulties when selling to customers located in European Union countries via a website or app?

    - Adapting produce labelling for sales
    - Difficulties resolving complaints and disputes
    - Language barriers when communicating with customers
    - High costs of delivering or returning products
    - Restrictions from business partners to sell to certain EU countries
    - We did not have any of these difficulties

34. During 2022, did your business experience any of the following difficulties when selling via an online marketplace?

    - Changes to your account or product listings by the platform
    - Communication difficulties
    - Difficulties with information exchange
    - Fees and commission charged by the platform
    - Issues relating to the terms and conditions between the platform and the business
    - Pricing of products on the platform
    - The processing of payments and refunds
    - The sale of similar products by the platform itself
    - We did not have of these difficulties

E-commerce purchases

35. During 2022, did this business make any e-commerce purchases?

36) During 2022, what was your business's expenditure on e-commerce purchases?

37) During 2022, which areas did your business make e-commerce purchases from?

    - UK
    - European Union countries
    - Other European countries
    - Africa
    - Australasia and Oceanic
    - Asia
    - The Americas and Caribbean

38. How much of the value in turnover on e-commerce purchases was spent in the following areas?

    - UK
    - European Union countries
    - Other European countries
    - Africa
    - Australasia and Oceanic
    - Asia
    - The Americas and Caribbean

39. During 2022, which customers located outside the UK did your business make e-commerce purchases from?

    - Private individuals
    - Public Authorities
    - Other businesses

40. How much expenditure on e-commerce purchases from suppliers located outside the UK was on the following type of sale?

    - Expenditure on e-commerce purchases from private

- Expenditure on e-commerce purchases from public authorities
- Expenditure on e-commerce purchases from other businesses

41. During 2022, what type of e-commerce purchases did your business make from suppliers located outside the UK?
    - Purchases of goods
    - Purchases of services

42. How much of the expenditure on e-commerce purchases from suppliers located outside the UK was on the following?
    - Expenditure on purchases of goods
    - Expenditure on purchases of services

43. How much of the expenditure on e-commerce purchases from suppliers located outside of the UK came from services that were digitally delivered?

44. During 2022, What platforms did your business use to make e-commerce purchases from suppliers located outside the UK?
    - Purchases through an app or website owned by another business
    - Other

45. How much of the expenditure on e-commerce purchases from suppliers located outside the UK was spent on each platform?
    - Expenditure on e-commerce purchases via an app or website owned by another business
    - Expenditure on e-commerce purchases via other platforms

Sales and purchases of digitally delivered services

46. During 2022, what was your business's turnover from the sale of services that were ordered non-digitally but were digitally delivered?
    - Turnover from the sale of services ordered non-digitally but digitally delivered to customers located in the UK
    - Turnover from the sale of services ordered non-digitally but digitally delivered to customers located outside the UK

47. During 2022, what was your business's expenditure on the purchase of services that were ordered non digitally but were digitally delivered?
    - Expenditure on purchases ordered non-digitally but digitally delivered from suppliers located in the UK
    - Expenditure on purchases ordered non-digitally but digitally delivered from suppliers located outside the UK

Digital intermediary platforms

48. During 2022, did your business provide a digital intermediary platform service?

49. During 2022, did your business charge fees to users of your digital intermediary platform?

50. During 2022, did your business charge fees to users of your digital intermediary platform?

51. During 2022, what was your business's income fees to users of your digital intermediary platform?
    - Income from fees charged to users located in the UK
    - Income from fees charged to users located outside the UK

52. During 2022, did users of your digital intermediary platform use your platform to sell their goods?

53. During 2022, what was the value of goods sold through your digital intermediary platform to each of the following customers?
    - Value of goods sold to customers located in the UK
    - Value of goods sold to customers located outside the UK

54. During 2022, did users of your digital intermediary platform use your platform to sell their services?

55. During 2022, what was the value of services sold through your digital intermediary platform to each of the following?
    - Value of services sold to customers in the UK
    - Value of services sold to customers located outside the UK

56. How much of the value of services sold to customers located outside the UK, came from services which were digitally delivered?

57. During 2022, did your business pay a digital intermediary platform to sell your goods and services?

58. During 2022, how much did your business pay to a digital intermediary platform to sell your goods and services?

Use of business software and cloud computing

59. Does your business use any of the following software?
    - Accountancy software
    - Customer Relationship Management (CRM) software
    - Enterprise Resource Planning (ERP) software
    - None of the business software specified in this list

60. During 2022, what was your business's expenditure on any software?

Digital Activities

61. When engaging in digital activities, did your business need to take any of the following actions to ensure compliance to regulations?
    - Adapted business plans or activities
    - Engaged with government
    - Engaged with regulators
    - Used legal resources
    - Other

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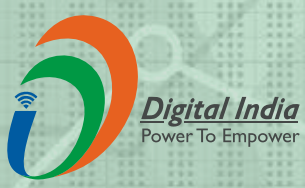

सत्यमेव जयते