



# Socio-economic Spillover Effect of Digital Communications Infrastructure (DCI) in India and Big Data Possibilities

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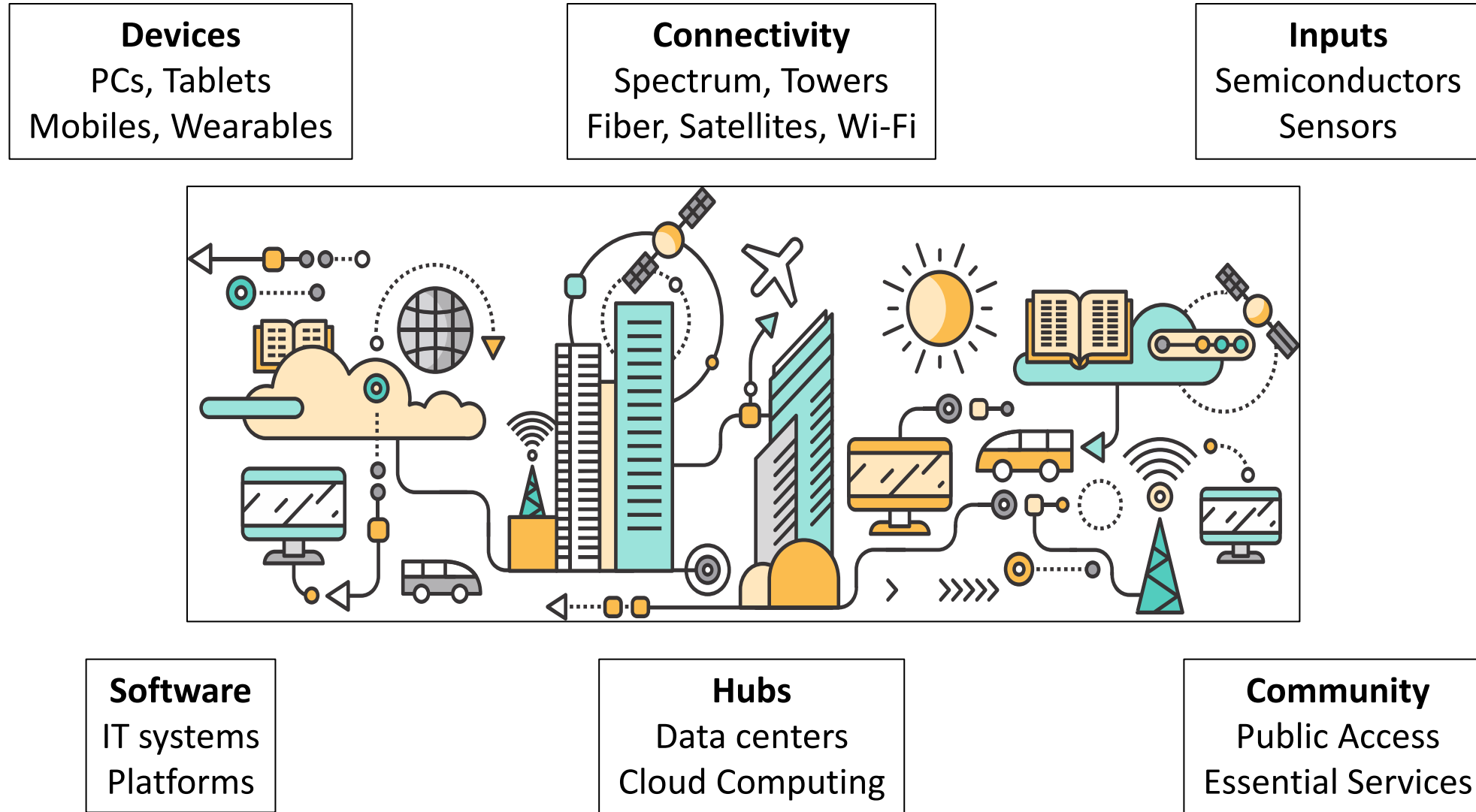
# Digital Infrastructure

“Digital infrastructure is the key to enabling the benefits of the digital economy and society. Digital infrastructure is the physical hardware and associated software that enables end-to-end information and communications system to operate...”

~ ITU<sup>1</sup>

National Digital Communications Policy (NDCP) is broadly in consonance with ITU definition

# Digital Ecosystem



**Digital Ecosystem – A Powerful Engine of Economic Development**

# India's Significant Role in Growth of DCI Globally

**India is among the top two countries globally on many key dimensions of digital adoption.**

● India No. 1 globally

● India No. 2 globally, behind China



**1.3 bn (Oct 2021)**  
people enrolled  
in the world's  
largest unique-  
digital-identity  
program



**27 bn (2021)**  
app downloads  
in 2018



**1.14 bn (Mar 2022)**  
wireless-phone  
subscribers



**829 mn (Dec 2021)**  
internet  
subscribers



**750 mn (2021)**  
smartphone  
devices



**467 mn (Jan 2022)**  
users engaged  
in social media

Source: Unique Identification authority of India; App Annie's Annual State of Mobile report 2021, Telecom Regulatory Authority of India, Deloitte's 2022 Global TMT (Technology, Media and Entertainment, Telecom) predictions, Data Reportal, McKinsey & Company

# India's Significant Role in Growth of DCI Globally

- Cross-border spillover effect of broadband infrastructure is estimated to be larger than its within-country effect<sup>1</sup>.
- This implies that increased access to the Internet will benefit not only India's economic growth, but also other neighboring economies to a higher extent.
- Positive link between higher Internet access and economic growth<sup>2</sup>.
- As per NDCP, India's Digital Economy has the potential to reach USD 1 Trillion by 2025.
- It would be critical to focus on Digital Communications Infrastructure - this will form the Bedrock of Next Generation Technologies.
- Rapid expansion of Digital Payments to evolve into widespread instruments of Access and Empowerment.

- A study modelling Pune as a 'smart city' estimated that it can unlock an incremental value of 30% GDP valued at USD 10.67 billion over six years.
- This is for an area of 331 sq. km and a population of 3.5 million.
- This study enabled the city to drive numerous digital service initiatives to capture the resulting growth potential of 15% CAGR (Purushottam Kaushik, L&T).
- And this is about just one city—imagine this evaluation across the country.

#### Sources:

<sup>1</sup> Benefits and Spillover Effects of Infrastructure: A Spatial Econometric Approach, Kim.et.al(2020), available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3815504](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3815504)

<sup>2</sup> A. The effect of the Internet on economic growth: Evidence from cross-country panel data, Choi and Hoon Yi (2009), available at <https://www.sciencedirect.com/science/article/abs/pii/S0165176509001773>

B. Benefits and Spillover Effects of Infrastructure: A Spatial Econometric Approach, Pradha.et.al( 2018), available at <https://www.sciencedirect.com/science/article/pii/S0970389618300260#!>



# Spillover Effects of DCI on India

## Impact of Digital Infrastructure on GDP

- Increased revenues from GST, license fee, SUC, spectrum auctions, corporate tax and property taxes

## Impact of Broadband penetration on GDP

### Broadband has a key economic impact:

- 2.5 to 4.0 additional jobs for each new broadband enabled job<sup>1</sup>
- GDP per capita growth is 2.7 to 2.9 percent higher after the introduction of broadband<sup>2</sup>
- Doubling broadband speeds add 0.3 percent to GDP growth<sup>3</sup>

## Impact of Apps on GDP

- Data based services or apps add far more value than just access to the internet. Apps contributed at minimum \$20.4 billion to India's GDP in 2015-16<sup>4</sup>
- As per WIK report-2017, each user of Applications in India receives on average \$249 of consumer surplus annually. Applied to the total population, this number stands at \$74 per capita<sup>5</sup>

### Sources:

<sup>1</sup>Broadband strategies handbook, Kelly & Rossotto, 2012, available at <https://openknowledge.worldbank.org/handle/10986/6009>

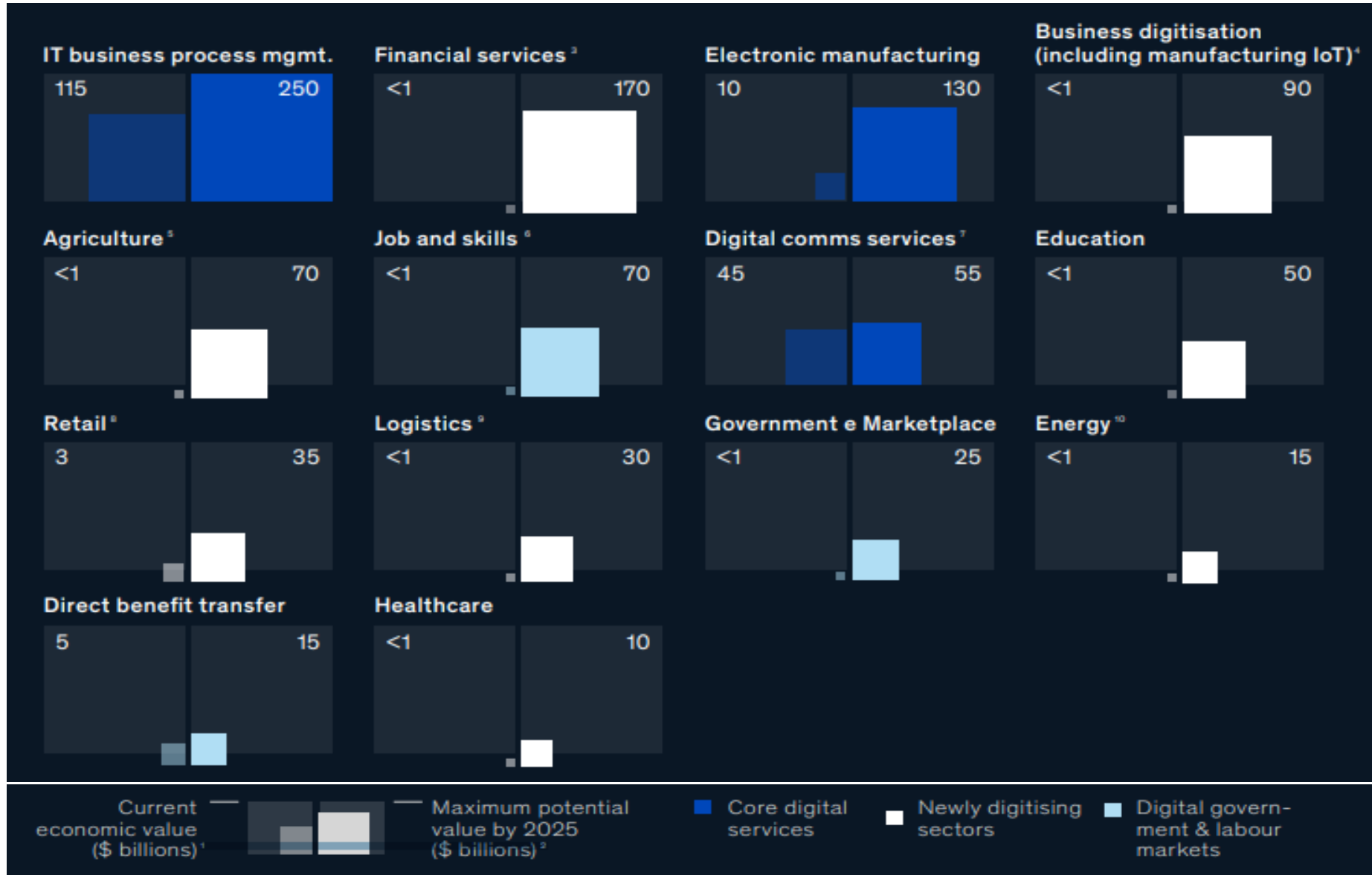
<sup>2</sup>Broadband Infrastructure and Economic Growth, Czernich et al, 2009, available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1516232](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1516232)

<sup>3</sup>Socioeconomic effects of broadband speed, Ericsson, 2013, available at <https://www.ericsson.com/res/thecompany/docs/corporate-responsibility/2013/ericsson-broadband-final-071013.pdf>

<sup>4</sup> Estimating the value of new generation internet based applications in India, Kathuria et al, 2017 available at [http://icrier.org/pdf/Estimating\\_eValue\\_of\\_Internet%20Based%20Applications.pdf](http://icrier.org/pdf/Estimating_eValue_of_Internet%20Based%20Applications.pdf)

<sup>5</sup>The economic and societal value of Rich Internet Applications in India, Arnold et al, 2017

# DCI can Improve Education, Health, Employment & Other Socio-economic Factors



Source: McKinsey Global Institute Analysis; Current Economic Value as of 2018, Maximum Potential Value by 2025



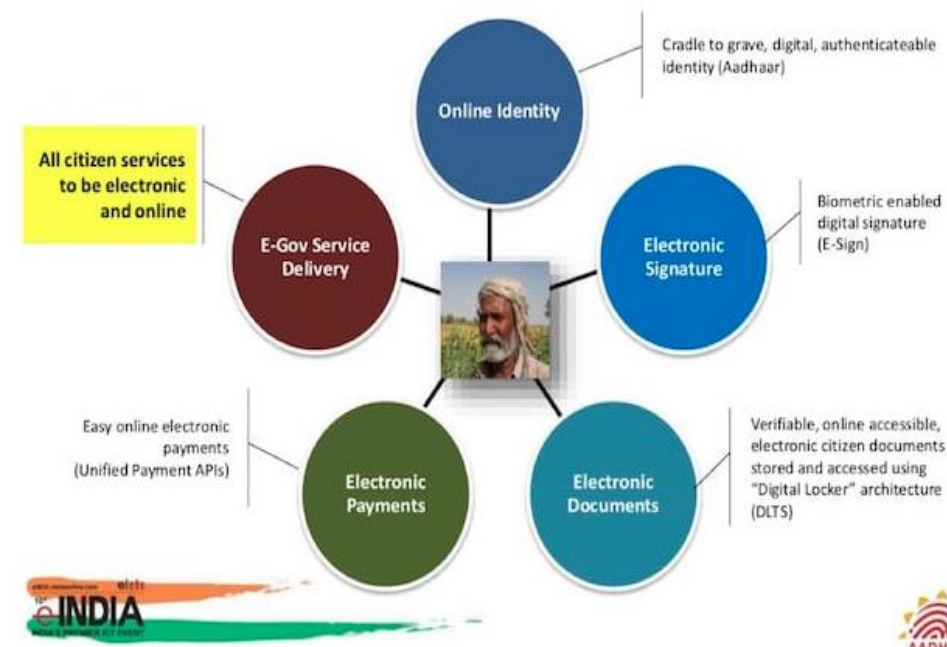
# Case Studies related to India – Aadhaar

- Aadhaar had been provided to 1.3 billion individuals above 18 years, giving 99% of the eligible population coverage.
- This is a singular achievement, especially considering India's status as a developing economy. Having a digital identity at this scale allows the government to roll out several programs.
- For example, by linking Aadhaar to bank accounts, direct benefit schemes that are seeded on Aadhaar can be used to make payments directly in beneficiaries' account.
- The government's GST program covers 13 million businesses, both large and small. This gives a fillip to digitization of payments, especially for MSMEs. Passport, vehicle registration, toll booth collection are other examples of national digitized services.



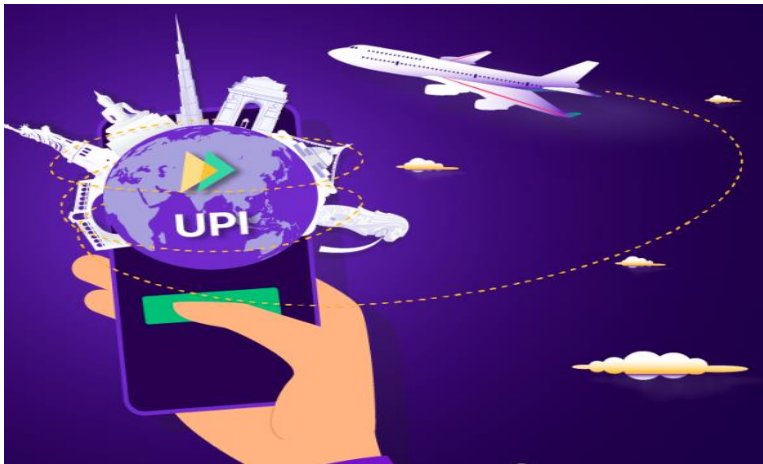
elets

## Aadhaar in Digital India



# Case Studies related to India – UPI

- Launched in 2016, UPI can be termed as the **“WhatsApp moment”** in **Indian banking**
- UPI is a unified platform that enables users to merge and manage multiple bank accounts on one single platform and conduct various banking activities.
- **As of March 2022**, the total value of UPI transactions reached USD 130.44 billion
- Digital transactions worth USD 2.60 billion are now taking place daily in India.
- Financial Inclusion across all segments.



## UPI goes global:

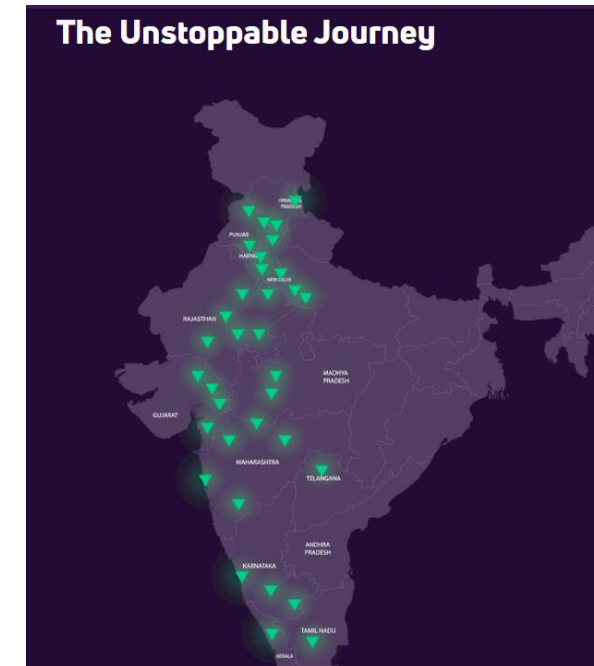
- The Reserve Bank of India (RBI) and National Payments Corporation of India (NPCI), are working together to expand the reach of Unified Payments Interface (UPI) globally.
- Nepal has already adopted, Bhutan, Singapore and UAE will be partners soon.



# Case Studies related to India – UPI

**PhonePe pulse data points– shows the socio economic spill over effect of having robust DCI**

- A PhonePe user transacted at a whopping 75 petrol pumps, across 13 states in 2020!
- Small towns save big – USD 400 is the average Mutual Funds investment of Patiala users, which is 2.5x of Mumbai! – all via digital.
- 25 million merchants digitized across 15,700 towns and villages in India covering 99% pin codes of the country digitally.
- Farthest state Mizoram resident spent on an average over USD 40 via PhonePe in Q3 2021 - the highest ATV (Average transaction value) in the country!
- More than 37% of all transactions that happen post 6 pm on the PhonePe app are from food & beverage stores.
- The tourist season was visibly booming in the cool climes of Himachal in Q4 2021 with merchant payments (online+offline) seeing a record 46% jump from the previous quarter.

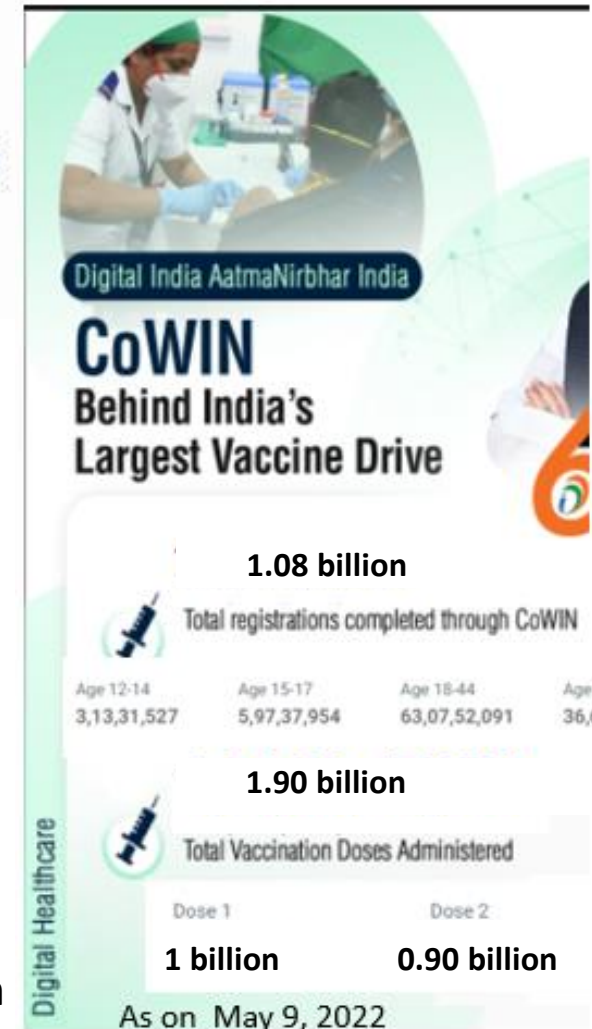




# Case Studies related to India – Co-WIN

## CO+WIN

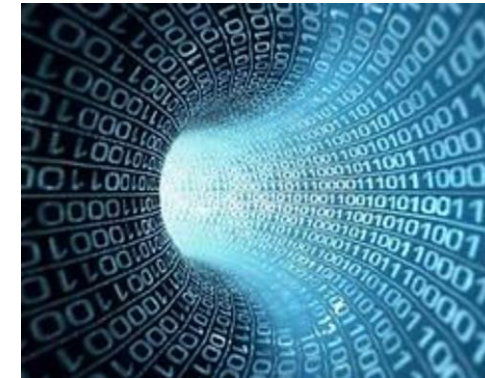
Winning Over COVID - 19



- Co-WIN is a powerful example of how digital technology can expand public health stride that India continues to make in digital technology for public services.
- Government of India has offered the Co-WIN system as a public good. As its an open platform, it can be customized for different locations. The transfer of knowledge to other countries is being supported by the UNDP.

# Role of Big Data in Gauging Spillover Effects of DCI Growth

- “Digital India” is the flagship programme of Government of India which drives all the digitization, digitalization and other initiatives to have a positive impact on India’s economy. Robust DCI is the backbone for these initiatives.
- Big Data (Data sets with high variety and velocity) is generated owing to these digitisation initiatives in India and all primarily linked with Aadhar Card of Citizens.
- Using the data footprints generated under Digital India Programme, DCI spill over effect in Education, Health, Finance, Agriculture and Manufacturing sector can be gauged effectively.
- For instance - a farmer having Aadhar card linked Mobile payment facility reaps the benefit of buying remotely agricultural products, inputs purchases and subsidies from the Government. In turn, the farmer gets precise and relevant data on mobile regarding crop production trends and incentives. This atomic level benefits can then be analyzed in aggregated mode with the help of Big data and translated into informed policy making decisions.
- Another case in point is India’s Covid Vaccination Drive to vaccinate 1.3 billion citizens of India through extensive usage of Co-WIN app supported through Big Data. India also set an example for the entire world by setting up world’s biggest vaccine factory that is supplying the vaccine around the world.



# Thank You



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