

India Stack: Promising digital inclusion

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Public 'platformisation' allows govt and industry to tackle socio-economic challenges together



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Digital transformation is creating unprecedented opportunities for innovation across industries, with the total reinvention of products, services, and experiences. History shows when a new technology comes forth, a developing country with the relevant capabilities can leap forward. Japan did this with automobiles and consumer electronics. Undoubtedly, India has an advantage this time, being on the cusp of digital transformation in all spheres of the economy.

Development of indigenous digital platforms and cutting-edge technologies, and its equitable access are imperative for robust socio-economic development. India has followed a unique path of creating public digital infrastructure to drive digital inclusion. With the launch of the Unique Identification Authority of India in 2009, the Indian government put in motion the world's largest identification system – Aadhaar. This set the foundation for a more comprehensive digital public goods framework that went on to become what we know as 'India Stack' to help solve population-scale problems through the creation of a set of open Application Programming Interface (APIs). The project has made presence-less (Aadhaar), paperless (eKYC, eSign, Digilocker), and cashless (UPI) services available to everyone. With this, India Stack has democratised

the process of digital development and access, and created a virtuous cycle of sustainable digitalisation.

The rise of public platformisation also facilitates productive engagement between the government and Indian industry to work together to tackle socio-economic challenges. This *jugalbandi* between digital public infrastructure and private innovation is bound to create ripples of positive change across sectors. The process of co-creation has successfully been spearheaded by iSPIRT, a not-for-profit technology think-tank that evangelised the concept of India Stack and helped developers build capabilities to implement the systems. iSPIRT has enabled active collaboration among multiple stakeholders bringing their respective strengths into play, thereby unlocking the economic primitives of identity, data, and payments at population-scale.

Impact of India Stack

The impact has been impressive so far. Nearly INR 6.18 lakh crore was transferred directly to the bank accounts of people across the country using the DBT-Aadhaar platform; and payments worth \$1.09 trillion (~INR 83.45 lakh crore) were processed through the Unified Payments Interface (UPI) in FY22. It is estimated that the shift to open digital systems could unlock opportunities worth \$700 billion, in the areas of health, education, logistics, agriculture, governance, MSMEs and so on, and could generate more than \$200 billion in savings for the country by 2030.

India's leadership in digital public goods offers unique lessons and solution templates, especially for lower middle-income countries that face similar challenges, including barriers to access, connectivity, and digital literacy. We have received global interest for our public platforms, the most recent one being for CoWIN—the tech backbone of India's vaccination drive—that has received interest from more than 76 countries. Similarly, MOSIP (Modular Open-Source Identity Project), an Aadhaar-like digital ID platform developed by Bengaluru's International Institute of Information Technology (IIIT) is being used in Morocco and the Philippines.

Design philosophy of India Stack

The magnitude of this digital transformation has been enabled through underlying technology rails that provide a strong foundation for public platformisation. The technology rails are very similar to rail tracks that in the context of physical infrastructure. The ownership of the rails or technology infrastructure in India, however, lies with the public.

India is the only country to have built public digital platforms to render services, while the rest of the world is still heavily dependent on private digital platforms. This guards against the risks of monopolistic commercial use that can widen the existing digital divide in the society. The idea is not to replace what the private sector does, but to

empower the private sector innovators to use these building blocks to create new value, driving affordability and accessibility of products and services in the market, while ensuring personal data protection and privacy. The Indian entrepreneurs have leveraged these platforms to promote their ideas and capabilities.

Possibilities, challenges and scope

It is imperative to replicate Aadhaar and UPI success in sectors such as healthcare, education, agriculture, logistics, governance, etc. However, the success of digital public goods in one sector does not guarantee its success elsewhere. Experience tells us that a confluence of many small but related innovations need to be stitched together to make it work. For example, a number of connected innovations that happened progressively over a period of time, such as the banking regulations, digital core-banking systems and the openness of regulators to embrace new ideas along with rapid mobile penetration and cheap data plans played an important role in the success of payments in India. A similar approach is called for in other sectors to reap the benefits of digital public goods in those sectors.

Health Stack

Hobbled by COVID-19, healthcare is on the verge of a digital transformation into a platform powered by APIs, real-time data exchange, advanced analytics and privacy safeguards. There is a shift towards self-management of health and wellness by empowered consumers, in partnership with providers who enable data-driven personalised treatments and reimbursements based on outcomes. However, end-to-end digitalisation of public health is mired in several challenges. Doctors are traditionally more intuitive than formulaic, risk-averse and distrustful of technology. Having semantic interoperability (through standards like FHIR, or Fast Healthcare Interoperability Resources), ensuring patients' data privacy and security, and having suitable reimbursement models are other challenges. Only when we create an environment for multiple stakeholders to participate—for instance, through the creation of a health claims exchange for insurers, digitised personal health records for patients, health professional and facility registries for medical practitioners, drug registries and finally, a framework for providers, hospitals and regulators to consume and process data from varied sources and institute actions based on data driven insights—can we truly achieve complete platformisation of healthcare services.

Agri Stack

Similarly, underlying factors of agriculture, such as soil quality, land records, crop yields, are far from standardised. However, a paper on the India Digital Ecosystem Architecture (IDEA), provides details about implementing an agriculture stack (Agri Stack).

An Agri Stack must entail core features such as a unique farmer identification number for each farmer, and building blocks such as data on weather, state of the art agri R&D, agricultural commodity prices in India, information and access to government schemes, and agricultural regulations and permissions. A full-fledged Agri Stack can help farmers decide what crops to grow and when, adopt measures to maximise yield, receive updates on weather, gain access to agricultural credit and insurance, and plan production and logistics better.

Learning Stack

In the education sector, efforts are ongoing to build an India Learning Stack that can supplement capacities of current stakeholders (institutions, teachers, learners, content creators, assessors, etc.) and catalyse collaboration at scale to realize shared objectives. For example, content delivery players plugging into this stack to disseminate content, even in the remotest part of the country, could improve learning outcomes significantly.

Conclusion

For India to reap the benefits of digitisation, business leaders, government officials, and individual citizens will need to play distinct roles while also working together. The opportunities ahead of us are massive and as the digital platforms grow and mature, they will help India achieve technology competitiveness and digital equity like never before. The economic value thus created, will be palpable to millions of businesses and more than a billion of its citizens.

Respectively, former vice-chairman, [TCS](#), and co-founder, iSPIRT Foundation

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