

Transformative Technological Initiatives for Amrit Kaal: A Review of Skill India Digita, India Stack, and the National Logistics Policy

Prof. Smita Garg

Professor & Acting Principal

Digambar P.G. College, Dibai, U.P.

Abstract

This paper undertakes a comprehensive examination of transformative technological initiatives to realize the vision of Amrit Kaal - a vision in the pursuit of fostering a dynamic and inclusive economy. These technologies include the Skill India Digital initiatives, The India Fintech Stack, and the various technology initiatives under the National Logistics Policy. Under the visionary leadership of Prime Minister Narendra Modi, Amrit Kaal envisions an empowered and inclusive economy achieved through the strategic integration of good governance and Digital technologies. A focal point of this vision, the Skill India Digital platform, stands as a groundbreaking initiative aimed at providing accessible digital skills training and fostering employment opportunities. In parallel, the India Stack, a pioneering digital infrastructure, has reshaped financial inclusion by providing secure digital identity and streamlined access to financial services. Integrating into the broader National Logistics Policy, the Gati Shakti program seeks to optimize the logistics sector through the strategic implementation of digital technologies. This paper employs an academic lens to dissect the intricate details of these initiatives, shedding light on their individual and collective impact on India's economic and technological landscape. Through a meticulous analysis of these transformative technological initiatives, this paper aims to contribute to the understanding of their individual and collective impact on India's economic landscape, shedding light on the opportunities and challenges presented by the intersection of technology and governance.

The paper concludes that the total of these parallel technology initiatives collectively contributes to Total factor productivity growth. As India continues to invest in these initiatives, the cumulative impact on TFP is expected to be significant, driving sustained economic growth and development.

Keywords

Amrit Kaal, Skill India, Digital Initiatives, National Logistic Policy.

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Introduction

The Skill India Digital platform stands as a testament to the transformative power of digital infrastructure in revolutionizing the skilling landscape. Through its remote learning approach and a comprehensive array of services, it not only empowers individuals from diverse backgrounds but also aligns with the broader goal of creating a knowledge-based economy. We examine its impact on employment opportunities, industry linkages, digital skills training, remote learning, and the issuance of digitally verifiable credentials.

The digital technologies envisaged in the transformation of Amrit Kaal include a focus on digital talent development with a focus on new-age courses like coding, AI, robotics, mechatronics, IOT, 3D printing, and drones etc., (Hammer, 2021) via the establishment of 30 Skill India International centers and a unified Skill India digital platform is also proposed to enhance skilling development of widespread digital infrastructure and innovation and enhancing electronics manufacturing.

The Skill India Digital platform envisions revolutionizing the skilling landscape in India by providing accessible and affordable digital skills training. It aims to bridge the gap between job seekers and employers by offering industry-relevant knowledge and practical skills, thus ensuring that individuals are equipped with the latest knowledge and skills required by employers. The platform's remote learning approach eliminates geographical limitations, allowing individuals from rural areas or smaller towns to gain valuable digital skills. (Gupta, 2022). It also offers flexibility, enabling learners to progress at their own pace and convenience, furthermore, the platform aims to aggregate skill initiatives of all government stakeholders, build linkages of skilling with counseling, career guidance, job openings, credit, and social security, thus creating a comprehensive digital platform for skill development. (ISR_Report_2023.pdf (do3n1uzkew47z.cloudfront.net)). Skill India Digital (SID) Portal has been launched as a one-stop platform that integrates skilling, education, employment, and entrepreneurship ecosystems to provide a life-long array of services targeting a wide range of stakeholders including Learners, Sector Skill Councils, Knowledge Providers, Content Partners, Training Partners, Skill Centers, Trainers, Assessors, Assessment Agencies, Awarding Bodies and Financial Institutions. (<https://www.skillindiadigital.gov.in/home>). The platform recognizes that only some can access traditional educational institutions or afford expensive training, and therefore provides a solution by leveraging technology to bring learning directly to individuals. (K., 2017)

The opportunities created through the Skill India Digital platform include:

Employment Opportunities: The platform serves as a one-stop solution for all skilling, upskilling, and employment opportunities, aiming to bridge the gap between job seekers and employers. (<https://blog.mygov.in/creating-a-digital-ecosystem-for-skilling-and-livelihood/>)

Industry Linkages: It provides a comprehensive digital infrastructure for the skilling ecosystem, integrating with various government portals and industry initiatives to offer enhanced accessibility and streamlined verification processes. (Kadaba, 2023)

Digital Skills Training: The platform offers multiple courses across sectors aimed at skilling, upskilling, and reskilling citizens for professional advancement and career development. (Gupta P., 2023)

Remote Learning: Its remote learning approach eliminates geographical limitations, allowing individuals from rural areas or smaller towns to gain valuable digital skills, thus enhancing their employability.

Digital Credentials: The platform provides digitally verifiable credentials, ensuring the authenticity of skill certifications and promoting convergence by integrating diverse government initiatives. (Singh A., 2023)

Overall, the Skill India Digital platform has been designed to revolutionize the skilling landscape in India, providing a wide range of employment and livelihood opportunities through its digital infrastructure and industry linkages.

The India Fintech Stack

Parallely, the India Stack, a pioneering digital infrastructure, has redefined access to financial services in the country. Comprising unique layers such as Presence-less, Paperless, Cashless, and Consent, the India Stack facilitates secure digital identity, document verification, digital payments, and private data access. The profound impact of the India Stack on financial inclusion is evident in its ability to increase access to credit, micro-credit, and direct benefit transfers, fostering economic development and reducing corruption.

The India Stack is a digital infrastructure that includes a set of open application programming interfaces (APIs) and digital public goods built by the Indian government. It is designed to provide a comprehensive and secure digital identity, payment, and data-sharing framework, which has revolutionized access to financial services in India. The India Stack is different from equivalent architectures globally in its ability to support not just open banking but open finance as well, with synergies across banking, wealth management, insurance, and other products. (Yan

Carrière-Swallow, 2021) It has also enabled rapid innovation in the financial services sector and has been a key driver of economic development in India. The expansion of digital payments, facilitated by the stack, is an important driver of economic development in India and has helped stabilize incomes in rural areas. (Dermish, 2021) The India Stack is revolutionizing access to finance and is widening access to financial services in an economy where retail transactions are heavily cash-based. (Jain, 2020)

The India Stack is comprised of four layers that perform “basic” functions and operate independently (Derryl D’Silva, 2019):

Presence-less Layer: Provides a unique identification key for individuals through the Aadhaar program.

Paperless Layer: Enables the issuance and verification of digitally signed documents.

Cashless Layer: Facilitates digital payments and settlements.

Consent Layer: Manages the secure and private access to an individual’s personal data.

It is the largest open API in the world. The India Stack’s unique features, such as the Aadhaar digital ID, open networks, and data-sharing framework, set it apart from equivalent architectures globally and have made it a model for other emerging markets and developing economies to learn from.

The impact of India’s stack on financial inclusion can be supported by multiple data points. As recently as 2017, the financial inclusion index compiled by Khera and others (2021a) showed that India’s financial inclusion in payments, both traditional and fintech-based, is lower than that of other economies, leaving ample scope for improvement. However, more recent disaggregated data available until 2021 from the IMF’s Financial Access showed that India’s financial inclusion has improved significantly. This is also visible in day-to-day life in increased usage of digital wallets and mobile money which have contributed to the expansion of financial access. (Maji S. K., 2023). Financial inclusion has a positive significant impact on the GDP. (Pradhan R. P., 2021), (Dahiya, 2020). The World Bank has also praised India’s stack for its transformative impact on the country’s financial inclusion and delivery, which can lead to productivity gains and support economic growth. The IMF has also noted that financial access allows firms to invest and households to smooth their consumption and build capital, fostering the creation of businesses and helping to improve people’s livelihoods, which has positive macroeconomic effects.

The Unique Identification Authority of India (UIDAI) has enabled lower-cost servicing of very low-balance bank accounts. Facilitation of the e-KYC process has significantly reduced the cost of conducting e-KYC from \$12 to 6 cents, which laid the foundation for the opening of more than 450 million new zero-balance bank accounts under the Pradhan Mantri Jan Dhan Yojana (PMJDY). These bank accounts in turn enabled direct benefit transfer and reduced corruption in government services access for the poor. As of now, the cumulative total of Direct Benefit Transfer stands at ¹ 33,87,770 crore. (<https://dbtbharat.gov.in/>). The DBT and other governance reforms have led to the removal of duplicate, fake, and non-existent beneficiaries, resulting in substantial savings. For instance, the Ministry of Rural Development has estimated a 10% savings on wages due to the deletion of duplicate, fake, or non-existent beneficiaries under the Mahatma Gandhi National Rural Employment Guarantee Scheme. Similar savings have been estimated in other schemes as well. (<https://dbtbharat.gov.in/static-page-content/spagecont?id=18>).

The adoption of UIDAI and India Stack has significantly increased access to credit and micro-credit in rural India. The rich data set provided by India Stack enables lenders to assess creditworthiness more accurately, making it significantly easier for borrowers to access loans. The Account Aggregator architecture has the potential to transform the lending landscape for the 92% of small businesses by alleviating the challenges faced by lenders in underwriting small amounts of unorthodox loan packages. The Open Credit Enablement Network (OCEN) built on the AA Framework principles, digitizes the lending process end-to-end. Using India Stack, rural fintech companies are creating digital platforms allowing farmers, merchants, and citizens in rural areas to access financial products and services, including loans, insurance, and investment products easily.

The National Logistics Policy

Growth of human capital through the Digital Skill India Initiatives and the financial inclusion through the India stack is complemented by The National Logistics Policy, which is a comprehensive policy that strives to reduce the time, cost, and wastage in the movement of goods. The policy aims to optimize the logistics sector by leveraging digital technologies such as Geographic Information Systems (GIS), Remote Sensing, Artificial Intelligence (AI), Mobile Applications and Satellite Imagery. These technologies, integrated into the Gati Shakti program, are poised to create a seamless multi-modal transport network, optimize logistics operations, and spur economic growth.

The National Logistics Policy (NLP) of India is a comprehensive effort aimed at addressing the excessive cost and inefficiency in the country's logistics sector. It provides a roadmap for enhancing the transportation of goods and services, developing infrastructure, reducing logistics expenses, and increasing the effectiveness of supply chains. The policy aims to reduce logistics costs, streamline the transportation of goods, and create a more efficient supply chain, to make Indian products more competitive in the global market. The NLP was approved by the Union Cabinet on July 22, 2020, and was subsequently released for implementation. It aims to lower the cost of logistics from the existing 13-14% (Pradhan, 2013) and lead it to par with global standards, thereby increasing the competitiveness of Indian products both in the domestic and international markets.

The policy aims to create a robust digital infrastructure to support seamless multi-modal connectivity and efficient data sharing among various stakeholders in the logistics ecosystem - across various sectors, including transportation, warehousing, and supply chain management, to improve efficiency and reduce costs. The policy aims to create a data-driven decision support mechanism that will help in identifying bottlenecks and gaps in the systems and promote standardization of physical assets and benchmarking of service quality standards to ensure consistency and reliability in the logistics sector. It also focuses on the need for skilled manpower and capacity building and focuses on improving the quality of logistics services by implementing a services improvement framework that will help in identifying areas for improvement and implementing necessary changes. Budget 2023 saw the capital investment outlay rise to ₹ 10 lakh crore, which is a 33% increase from the previous year. While the capex budget may not be enough to create an immediate impact, here again the use of Open APIs can foster greater private-public and inter-agency collaboration for extracting the maximum productivity from a limited budget.

The Unified Logistics Interface Platform (ULIP) is a digital platform to connect various ministries and establish a single point of contact in the logistics sector, to enhance efficiency and reduce time constraints, improve transparency, and provide visibility for optimal usage of various modes of transport. ULIP comprises a three-tier structure, including a governance layer for data mergers with government ministries, a logistics layer for tracking cargo movement, and a services layer for identifying cost-effective logistics modes. The platform enables cargo movement to be tracked in real-time on a single platform, identifies cost-effective logistics modes, and reduces truck empty movement. ULIP standardizes data and processes across different logistics systems, making it easier for companies to track and manage their logistics operations.

In addition to the Unified Logistics Interface Platform (ULIP), the Gati Shakti program will adopt various digital technologies to drive its objectives. (Some of these technologies include:

1. Geographic Information System (GIS): GIS is a central component of the Gati Shakti program, providing spatial planning tools and leveraging imagery from the Indian Space Research Organisation (ISRO)
2. Remote Sensing and Image Processing: These technologies help in monitoring and analyzing the progress of infrastructure projects and identifying potential issues.
3. Artificial Intelligence (AI): AI will be used to optimize routes and reduce travel time for goods and services, as well as to prioritize projects through cross-sectoral interactions.
4. Mobile Applications: Mobile applications will be developed to facilitate seamless communication and collaboration among various stakeholders involved in the Gati Shakti program.
5. Direct-to-Consumer (D2C) Brands: The emergence of D2C brands is another sector where agile supply chain and tech-based logistics will play a significant role in bridging the gap between supply and demand.
6. Satellite Imagery: Satellite imagery will be used for monitoring and ensuring timely clearances, as well as in project monitoring.

These digital technologies will be integrated into the Gati Shakti program to create a seamless multi-modal transport network, optimize logistics operations, and drive economic growth in India.

While the paper provides a comprehensive analysis of several transformative technology initiatives in India, there are additional technological endeavors that, if examined in depth, could further enrich the understanding of India's evolving digital landscape. The following technology initiatives are notable in their impact and could be considered for inclusion in future analyses.

Smart Cities Mission

In-depth analysis could explore how these smart cities leverage digital technologies for efficient resource management, sustainable infrastructure, and improved quality of life. (Pradhan R. P., 2021)

Aatmanirbhar Bharat (Self-Reliant India) Initiatives

Aatmanirbhar Bharat encompasses various initiatives promoting self-reliance, including the push for indigenous manufacturing, research, and development. A detailed examination could assess how these initiatives,

contribute to decoupling of the Indian economy from global shocks and eventually lay the groundwork for moving up the value chain in manufactured and engineering goods exports. (Mukherjee, 2022).

Digital Health Initiatives

With the increasing importance of healthcare, various digital health initiatives, such as the National Digital Health Mission (NDHM), can be analyzed to understand their impact on healthcare accessibility and overall public health. (Sharma, 2023), (Bajpai, 2020)

E-Governance Initiatives

Beyond India Stack, there are ongoing e-governance initiatives at various levels of government, seeking to enhance service delivery and transparency. A detailed analysis could delve into the successes and challenges of these initiatives, exploring their implications for citizen engagement, administrative efficiency, and digital inclusivity.

Incorporating these technology initiatives into future analyses would broaden the scope of understanding the technological landscape in India, providing a more holistic view of the ongoing digital transformation and its implications for economic and societal development.

Conclusions

In conclusion, the multifaceted analysis presented in this paper illuminates the transformative potential embedded within the technological initiatives of Amrit Kaal, Skill India Digital, India Stack, and the National Logistics Policy. The Skill India Digital platform emerges as a beacon of empowerment, democratizing access to digital skills and reshaping the employment landscape. Concurrently, the India Stack's influence on financial inclusion underscores its role in fostering economic development and reducing systemic inefficiencies. The Gati Shakti program, integrated with cutting-edge digital technologies, is poised to revolutionize the logistics sector, thereby enhancing supply chain efficiency and bolstering India's global competitiveness. Collectively, these initiatives embody the nation's commitment to harnessing technology for inclusive growth and sustainable development. As we traverse the intricate interplay of policy, technology, and governance, this analysis contributes to a nuanced understanding of the challenges and opportunities inherent in India's technological trajectory, underscoring the imperative for continued research and strategic policy considerations in navigating the evolving landscape of the digital era.

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