BODHIVRUKSHA JOURNAL OF DIVERSE DISCIPLINE (BJDD)
An Open-Access, Peer-Reviewed, Multidisciplinary Scholarly Journal | Bi-Monthly | Multilingual | Academic Research
Vol 2, Issue 6 (November-December 2026) (Special Issue 2) | ISSN: 3139-1486 (Online) | ISSN: 3139-9819 (Print)

THE DIGITAL FUTURE OF THE INDIAN ECONOMY: A TRANSFORMATION DRIVEN BY TECHNOLOGY, INNOVATION, AND DEVELOPMENT

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ABSTRACT

In the 21st century, India has carved out a distinct identity for itself on the global stage through its digital economy, demonstrating to developed nations what national progress can look like. An analysis of national income reveals that in 2022–23, the Indian economy's share stood at approximately 11.74%; furthermore, the nation has set a target to increase this to one-fifth (1/5th) of its GDP by 2030.

In the course of preparing this research paper, the author has examined India's economic development and posits that the coming era will be defined as a period of digital transformation for the country. While India has achieved a dominant presence across various sectors—driven by a revolution in mobile connectivity—it still faces significant challenges, particularly regarding the level of digital literacy and the prevailing mindset toward new startups. It is hoped that this modest research effort will contribute toward addressing these gaps.

KEYWORDS: GDP, Digital |Economy, Technology, Start-up, Infrastructure,

1. INTRODUCTION

Today, India stands at the global forefront in the adoption of digital public infrastructure and other technologies. This is primarily because the Indian economy has undergone a remarkable digital transformation over the past decade, creating a new identity for both the nation and its people on the global stage. This progress has been driven by a rapidly expanding digital ecosystem, the impact of which is evident across various sectors of India's development, including banking, electronics, and information technology.

Analysis of these sectors reveals that by 2022–23, the digital economy accounted for approximately 11.74% of the total—valued at roughly 400 to 405 billion US dollars. Experts believe that if this trajectory continues, the digital economy will expand significantly by 2030, positioning India favorably on the global map.

Currently, India ranks third globally in terms of digitalization. This research paper examines the future of India's digital economy and explores the qualitative factors that will shape its development.

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2. OBJECTIVES OF THE STUDY

1. To study the contribution of the digital economy to India's national income and employment,

2. To examine the development of digital public infrastructure in India,

3. To evaluate he status of technology-based startups in India,

4. To determine strategic interventions and policy pathways.

3. RESEARCH METHODOLOGY

The researcher has attempted to produce a descriptive research paper, with the entire study based on the collection of secondary data. This data has been gathered from various published sources, including journals, newspaper articles, books, periodicals, working papers, conference research papers, and websites.

3.1 LIMITATIONS

The researcher encountered several limitations while conducting this study, primarily because measuring the digital economy in a systematic manner posed a significant challenge. The estimates derived were dependent on data from available sources; furthermore, the researcher frequently noted a lack of data regarding the digitalization of the informal sector and smaller digital platforms. Nevertheless, given the rapidly evolving nature of technology, the findings presented here offer a snapshot of a dynamic and changing landscape.

4. DATA ANALYSIS

4.1 DIGITAL ECONOMY CONTRIBUTION

An analysis of the available data indicates that India's digital economy is on a path of robust growth. According to a report by the Ministry of Electronics and Information Technology (MeitY) for the year 2022-23, the digital economy accounted for 11.74% of the national income. Within this, digitally-enabled industries—such as ICT services, telecommunications, and electronics manufacturing—contributed 7.83% to the Gross Value Added (GVA).

Furthermore, emerging digital sectors—including platforms, intermediaries, and companies reliant on digital infrastructure—contributed approximately 2% to the GVA, while the digital component within traditional sectors such as banking, trade, and education added another 2%.

Table 1: Composition of India's Digital Economy (2022-23)

Component	Share of GVA
Digital-enabling industries	7.83%
New digital industries	~2%
Digital share of traditional industries	~2%
Total Digital Economy	11.74%

Source: Meit Y, 2025

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Furthermore, as shown in the table above, employment in the digital economy stood at 14.67 million (1 crore 46 lakh 70 thousand), which accounts for 2.55% of India's total workforce. While this figure is significant, it indicates that the employment density within the digital sector is low relative to its contribution to total output—a characteristic consistent with the 'capital-intensive' nature of many digital sectors.

4.2 DIGITAL PUBLIC INFRASTRUCTURE

Today, India's 'Digital Public Infrastructure' (DPI) stands out globally as a unique model for digital development. It emphasizes open and interoperable systems that operate under public oversight while simultaneously fostering innovation from the private sector. Key components of this infrastructure include the following:

a) Aadhaar: To date, over 1.43 billion (143 crore) Aadhaar numbers have been issued in India, providing Indian residents with a digital identity. Through the 'e-KYC' (electronic Know Your Customer) system, the cost of verification has been significantly reduced, making it easier for Indian residents to access financial services.

b) Unified Payments Interface (UPI): Following the Aadhaar system, India's UPI has established itself as the world's largest digital payment system. As of April 2025, over 18.67 billion (1,867 crore) transactions have been processed through this system, amounting to a total value of ₹24.77 lakh crore. India accounts for approximately 49% of all real-time digital transactions globally.

c) Direct Benefit Transfer (DBT): Leveraging the 'JAM' (Jan Dhan-Aadhaar-Mobile) trinity, subsidies and benefits totaling ₹49.82 lakh crore have been transferred directly into the accounts of citizens. This has resulted in savings of approximately ₹3.48 lakh crore for the government exchequer.

Table 2: Key Digital Public Infrastructure Metrics

Infrastructure	Scale/Reach
Aadhaar enrollments	**143+ Cr.**
UPI users	**46+ Cr.**
UPI monthly transactions	**1,867+ Cr (April 2025)**
Digi Locker registered users	**67 Cr.**
DBT transfers	**₹49.82 lakh Cr.**

Sources: PIB, Meit Y, NPCI

4.3 Connectivity and Access

Digital connectivity has expanded dramatically. Internet subscribers increased from 25.15 Cr. in 2014 to over 109 Cr. by March 2026 . The cost of data declined from ₹269 per GB in 2014 to approximately ₹7.9 per GB, representing a 97% reduction. Bharat Net has connected over 2.18 lakh Gram Panchayats with high-speed internet, laying nearly 6.92 lakh kilometers of optical fibre .

However, significant access gaps persist. Approximately 35% of Indians remain unable to access the internet, and the digital divide between urban and rural areas, as well as between different states, remains

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substantial. The ICRIER study identifies four tiers of digital progress among Indian states, with Delhi, Kerala, Karnataka, Maharashtra, and Haryana classified as "Advanced Digitalisers" while Odisha, Bihar, Assam, Chhattisgarh, and Jharkhand lag as "Aspirational Digitalisers" .

4.4 Start-up Ecosystem Dynamics

India's technology start-up ecosystem has demonstrated impressive formation rates but faces persistent scaling challenges. In 2025, Indian tech start-ups raised USD 9.1 billion, a 23% increase year-on-year . Deep Tech funding surged 37% to USD 2.3 billion, with AI accounting for 84% of Deep Tech start-ups and 91% of funding.

Table 3: India Tech Start-up Ecosystem Metrics (2025)

Metric	Value
Total tech start-ups	31,000–34,000
Total funding raised	USD 9.1 billion
Deep Tech start-ups	4,200+
Deep Tech funding	USD 2.3 billion
M&A deals	140+

Source: Nasscom-Zinnov, 2026

Despite these strengths, the ecosystem exhibits structural weaknesses in progression. Approximately 85% of seed-stage start-ups do not reach Series A within five years, with many remaining at the same funding stage for extended periods. Three out of four funding deals occur at seed and early stages, while Series B, C, and post-Series C rounds together remain below 15–20% of the funded base in most years. This indicates a "commercialization gap" where start-ups achieve technical readiness before commercial readiness, with customer acquisition proving more challenging than product development.

4.5 Employment Implications

The employment effects of digital transformation are predominantly compositional rather than absolute. Research on OECD countries found that a one standard deviation increase in AI adoption is associated with a 2.3% reduction in employment in routine cognitive occupations and a 1.8% increase in employment requiring complex problem-solving and interpersonal skills . This pattern suggests that while some jobs are displaced, new roles demanding higher-order capabilities are created.

India's Global Capability Centers (GCCs) have emerged as significant employers, with over 1,700 GCCs employing more than 1.9 million professionals as of FY24 . These centers have evolved from support functions to undertaking high-value activities including product development, AI-enabled services, and cyber security.

However, the informal sector—which employs the majority of India's workforce—remains largely outside the digital economy's direct employment effects. Skill development initiatives such as PMGDISHA trained 6.39 Cr. Individuals in digital literacy before its conclusion in 2024 , but the scale of deskilling required for a workforce of over 500 million remains formidable.

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5. FINDINGS

While preparing the aforementioned research paper, six key findings regarding India's digital economy have emerged, as follows:

1. The digital economy is contributing an increasingly significant share to India's overall national income. In 2022–23, it accounted for approximately 11.74% of the Gross Value Added (GVA), and it is projected to reach 20% by 2030. Its growth rate is nearly double that of the broader economy, underscoring its role as a primary engine of economic expansion.

2. India's 'Digital Public Infrastructure' (DPI) model has achieved remarkable scale and demonstrated global leadership. The 'JAM' trinity (Jan Dhan, Aadhaar, and Mobile), along with UPI and Aadhaar, has laid a foundation for financial inclusion, efficient governance, and private-sector innovation that is unique within the developing world. By emphasizing open and interoperable systems, this model has facilitated rapid proliferation and widespread adoption.

3. Although a large number of startups are emerging across various sectors in India, they often fail to reach their full potential. While we are adept at launching technology-based ventures, we fall short in guiding them toward commercial maturity. This is primarily due to structural gaps in commercialization, demand generation, and the availability of capital required for this transitional phase.

4. The impact of the digital economy on employment within Indian industries is not destructive in nature; rather, it is structural. Due to digital transformation, the demand for labor is shifting toward skills that require non-routine cognitive and interpersonal abilities, while the demand for routine, repetitive tasks is declining. The overall impact on employment will depend on the pace of skill development and the creation of new types of jobs.

5. India is recognized globally for its diverse culture and unique geographical identity; however, a 'digital divide' remains evident across demographic segments. The benefits of this transformation have not reached everyone equitably; populations in rural areas, less developed states, and individuals with lower educational qualifications continue to face significant challenges in participating in the digital transformation. Approximately 35% to 40% of the Indian population remains offline, and there is a substantial disparity in digital readiness across various states.

6. Recently, Artificial Intelligence (AI) has emerged as a key technology driving the next phase of innovation—enabling both existing and entirely new types of ventures. With 84% of deep-tech startups focusing on AI and 91% of deep-tech funding directed toward AI-based initiatives, Artificial Intelligence is becoming a foundational pillar for India's innovation ecosystem.

SUGGESTION

Based on these findings, several recommendations are proposed, as follows:

1. The commercialization gap—spanning from the early (seed) stage through to Series A funding—must be bridged. To this end, structured "pilot-to-revenue" pathways should be established, connecting early-stage ventures with key clients such as government institutions and large enterprises. Furthermore, specialized transition-stage capital instruments—including revenue-based financing, venture debt, and blended

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finance—should be developed to help startups bridge the "valley of death" between initial momentum and scalable growth.

2. Post-incubation support mechanisms must be strengthened. Dedicated post-incubation management programs should provide continuous mentorship, market access, and operational assistance during critical expansion phases.

3. Most importantly, focus must be placed on accelerating digital literacy and skill development. A successor initiative to PMGDISHA should target rural and semi-urban populations, emphasizing employable digital skills such as AI literacy, data analytics, and digital entrepreneurship.

4. State-level digital disparities should be addressed through targeted interventions. "Aspirational digitizers" require foundational investments in connectivity, digital literacy, and institutional capacity, while "advanced digitizers" can focus on strengthening their innovation ecosystems and integrating into global markets.

5. Expand Digital Public Infrastructure (DPI) into new sectors to boost productivity, prioritize the aggregation of demand at the district level, and leverage AI to ensure equitable access to productivity-enhancing tools for all.

6. Developing a comprehensive digital economy measurement framework to enable more effective policy targeting and resource allocation.

7. CONCLUSION

The digital transformation of India in the twenty-first century stands as one of the most significant economic developments. The nation has successfully built a Digital Public Infrastructure (DPI) capable of serving its vast population; mobile connectivity has now reached nearly every corner of the country, fostering a vibrant ecosystem for technology startups. Consequently, the digital economy now contributes over 11 percent to the national income—a figure projected to reach one-fifth of the GDP by 2030. Achieving this will require addressing challenges related to the scaling of startups, digital literacy, and equitable opportunity. Furthermore, as the nature of employment shifts—moving away from routine tasks toward the resolution of complex problems—it becomes imperative to fundamentally overhaul education and skill-development systems.

Ultimately, this analysis suggests that India’s digital future does not depend solely on the adoption of technology; rather, it hinges entirely on the institutional and policy frameworks that govern how available technology is utilized and who stands to benefit from it.

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