

Digital Economy, Startups and Innovation By 2047

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ABSTRACT:

The journey towards 2047 marking centenary of India's Independence will be strongly shaped by the risk of the digital economy, startup and innovations.

The digital economy is expected to become backbone of National growth contributing a significant share to GDP through E-Commerce, AI, Green Hydrogen and digital governance. As the nation aspire to become a developed country by 2047 the digital economy supported by innovative startup and Breakthrough technologies will serve as simultaneously, startup will fuel employment, inclusive growth and global competitiveness by solving pressing challenges in sectors like healthcare, Agriculture, Education and energy more ever continuous innovation in areas in such as robotics, biotechnology, space technology and green energy will ensure sustainable development.

KEYWORDS:

Viksit Bharat, digital economy, innovation, startups, Artificial intelligence.

INTRODUCTION

Digital economy refers to all economic activities that is driven by digital technologies such as the internet, cloud computing ,big data and digital payments.

India is on the threshold of a historic transformation as it moves towards the century of its independence in 2047

Three major forces

1. Digital economy
2. Startups
3. Innovation

The digital economy has already become a growth engine through platforms like UPI, AADHAR, and E-GOVERNANCE, BY2047 .

Indias envisions becoming a \$10 trillion digital powerhouse.

India's digital economy by 2047

- AI driven economy–Artificial intelligence will automate industries, commerce, and governance.
- Cashless society, wider spread use of digital currency (CBDC'S, CRYPTO, UPI, –like system)
- Cross–border digital trade –Micro services, E–commerce exports, and free landing across borders.
- Inclusive growth –Digital infrastructure in rural areas, bridging the urban – rural divide.
- Green digital transformation–Low carbon, energy, efficient digital services.
- Global connectivity–6G\7G and satellite internet enabling universal access.
- Greentech Integration energy efficient computation, smart grids Universal connectivity, skill ecosystem digital tools for climate resilience.
- The National Green Hydrogen Machine was launched in India on January 4, 2023 which was initially announced by Prime Minister in 2021 to make India global hub for the production, usage, and export of green hydrogen and its derivatives.
- Vision and Target: By 2047 the century of independence, India aims to transform into a developed nation \$30 trillion economy with per capita income ~\$18000–20000 compared to ~\$2700 in 2024.

INDIAS DIGITAL ECONOMY BY 2047

- AI driven economy
- Cross border digital trade
- Inclusive growth
- Global connectivity

STARTUPS

Startups are new business built on innovation technology, and saleable models on 2047. AI native startups: products and services built around AI from day one. Climate sustainability startups: businesses solving, energy, waste, and water issues. Health tech and biotech startups: affordable precision healthcare and drug discovery. Agri–tech startups: digital banking, microfinance, and digital identity–linked services.

Decentralized startups: (web3 block chain) community owned platforms and transparent governance.

Startups are second pillar of this journey with India already the world's third largest startup ecosystem ,the vision for 2047 is to create millions of jobs ,nurture global leaders in entrepreneurship and address the challenges such as climate change sustainable energy and digital inclusion.

Historical Progress of Unicorn Startups in India

This document presents the historical progress of unicorn startups in India, showing the number of new unicorns created each year and the cumulative total by the end of each year.

Year	New Unicorns in that Year	Cumulative Total Unicorns (approx.)	Notes / Sources
2010–2013	1 per year	1–3	Few startups reached USD 1B valuation
2014	1–3	5	Growing steadily (Startup India Report)
2015	3	8	Acceleration begins
2016	2	10	Slight rise
2017	1	11	Growth modest
2018	10	21	Big jump
2019	7–9	28–30	Continued growth
2020	11–12	39–42	Growth despite pandemic
2021	44	80–90	Peak year (Diacron Group)
2022	21–22	100	Slowed growth
2023	Few net additions	110–115	Stable growth
Early 2025	11 (till Jan 2025)	119	As per Startup Guru Lab

INNOVATIONS

Innovation means new ideas, methods, or technologies that transform society and business into transforming and creative concepts into tangible outcomes that improves efficiency and effectiveness or address unmet needs.

KEY COMPONENTS OF INNOVATIONS

- Creativity and ideas
- Culture of innovations
- Resource and infrastructure
- Readership and vision
- Feedback and adaptation

AREAS OF INNOVATIONS BY 2047

Artificial intelligence (AI+X)– AI combined with healthcare ,education, climate, industry. Quantum computing–solving complex problems in seconds (drug discovery and cryptography). Meta–verse and immersive tech–AR/VR for learning, shopping and remote work. Green innovations: smart grids, clean energy and carbon capture technologies. Biotech breakthroughs: genetic therapies, personalized medicines and organ regeneration. Robotics and automation: self operating factories, drive less transport, smart logistics. Cyber security and privacy tech.: innovations ensuring safe digital transactions and identities.

CHALLENGES

- High risk and uncertainty
- Financial constraints
- Regulatory and legal barriers
- Market acceptance
- Technologies and limitations
- Competition and limitation
- Cultural and social barriers
- Cyber security and data privacy risks

REMEDIES

1. Financial support
2. Policy and regulatory reforms
3. Infrastructure Development
4. Skill development and education
5. Market and consumer Acceptance
6. Cyber security and data protection

7. Ethical and environmental safeguards
8. Scalability Solutions

KEY CHANGES BY 2047 IN DIGITAL ECONOMY, STARTUPS AND INNOVATIONS:

- Ai native ventures –AI embedded in every workflow and products
- AI+X Startups –AI fused with health, climate ,industry ,and education
- New infrastructure– Edge, 6G, quantum computing, immersive services.
- Climate tech growth –circular economy and carbon management startups
- Web3 and Virtual worlds –sector specific ,not one global specific
- Digital trade and fin tech.–programmable money ,cross border digital services
- Funding diversification–Regional VC ,impact capital, DAOs, revenue finance
- Workforce shifts –human plus AI hybrid rolled , lifelong re skilling
- Regulation matters– Governance, inclusion, infrastructure leads to success.

Innovations in India from 1947 to 2047

1947–1960: Foundation for Innovation

- Establishment of IITs & Research Institutions (IIT Kharagpur, 1951; CSIR expansion).
- Atomic Energy Programmed (1948): Formation of the Atomic Energy Commission.
- Green Revolution seeds: Agricultural universities and research stations established.
- Space vision initiated: INCOSPAR planning began.

1960–1970: Self-Reliance & Technological Foundations

- Thumba Equatorial Rocket Launching Station established (1963).
- Development of indigenous fertilizers & seeds.
- Defense Research expanded with DRDO projects.

1970–1980: Green Revolution & Scientific Breakthroughs

- Green Revolution made India food-secure.
- White Revolution (Operation Flood, 1970) transformed dairy.
- Smiling Buddha (1974): First nuclear test.
- Early computing innovations.

1980–1990: Technology Liberalization & IT Foundations

- Development of indigenous computers like PARAM.
- C-DOT (1984) transformed rural telephony.
- INSAT communication satellites launched.
- Agricultural mechanization expanded.

1990–2000: Economic Reforms & IT Boom

- Liberalization (1991) spurred private sector innovation.
- IT & software revolution (Infosys, TCS, Wipro).
- Early renewable energy research.
- Tata Indica (1998) showcased automotive innovation.

2000–2010: Global Recognition & Space Excellence

- Chandrayaan-1 (2008) discovered water on the Moon.
- India became a global pharmaceutical leader.
- Mobile revolution expanded internet access.
- Biotech and vaccine research accelerated.

2010–2020: Digital Transformation & Frugal Innovation

- Aadhar & Digital India enabled e-governance.
- UPI (2016) revolutionized payments.
- Mangalyaan (2013) : Successful Mars mission.
- Startup ecosystem flourished in edu-tech, health-tech, e-commerce.
- Push for electric mobility and clean energy.

2020–2030: AI, Green Tech & Global Leadership (Projected)

- 5G rollout, indigenous semiconductors, Bharat Net.
- National AI Mission & quantum research.
- Chandrayaan-3 (2023) and Gaganyaan human spaceflight.
- Green Hydrogen Mission launched.

- Atmanirbhar Bharat boosted indigenous tech.

2030–2047: Viksit Bharat & Innovation Leadership (Vision)

- India as global AI and robotics leader.
- Lunar mining, space tourism, reusable launch vehicles.
- Green & circular economy transition.
- Universal digital infrastructure for education & health.
- Predictive governance & global research leadership.

CONCLUSION

By 2047 , India’s digital economy is poised to become a cornerstone of its transformation into a high income ,developed nation .This vision is underpinned by robust startup ecosystem, technological innovation, and inclusive digital infrastructure .strategic investments, inclusive policies ,and regional collaborations will be key to achieving this ambitious goal.

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