

Digital India to AI India: Analysing the Economic Potential, Structural Risks and Governance Challenges of Artificial Intelligence Adoption

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Abstract

Artificial intelligence (AI) has become one of the most important forces shaping economic growth, productivity and employment. This paper examines the relationship between AI and India's present economic condition. Using secondary data from the Ministry of Statistics and Programme Implementation, the Reserve Bank of India, NITI Aayog, the IndiaAI Mission and industry reports, it analyses India's macroeconomic position, public policy on AI, private investment in AI infrastructure, the AI ecosystem, the potential contribution of AI to GDP, and its likely effects on employment. The analysis shows that India adopts AI from a position of macroeconomic strength: real GDP grew by 7.7 per cent in 2025–26, inflation was low through 2025, and the fiscal deficit is falling. The government's IndiaAI Mission, with an outlay of ₹10,371.92 crore, has provisioned more than 38,000 GPUs, although actual fund releases have been slow. Private commitments have been far larger: Amazon, Microsoft and Google alone have pledged about US\$67.5 billion, and commitments of over US\$200 billion were announced at the India AI Impact Summit of February 2026. NITI Aayog estimates that AI could add up to US\$1.9 trillion to India's GDP by 2035 and help close 30–35 per cent of the gap to an 8 per cent growth path. At the same time, AI threatens jobs in the IT and customer service sectors that have been central to India's services-led growth, with up to 1.5 million tech jobs at risk by 2031 if no action is taken. The paper concludes that AI can strengthen India's growth only if investment in compute and data is matched by large-scale reskilling, wider diffusion of AI to MSMEs and agriculture, and a governance framework that protects workers and citizens.

Keywords: *Artificial intelligence; Indian economy; IndiaAI Mission; productivity; employment; digital public infrastructure; data centres; economic growth*

JEL Classification: O33, O53, J24, E24, L86

1. Introduction

Artificial intelligence refers to computer systems that can perform tasks that normally require human intelligence, such as recognising speech and images, understanding language, making predictions and generating text, code and images. The arrival of generative AI since 2022 has turned AI from a specialised technology into a general-purpose technology, comparable to electricity or the internet in its potential to change every sector of the economy.

For India the question is especially important. The country's growth over the past three decades has relied heavily on services, particularly information technology (IT), business process outsourcing and customer support, which are exactly the activities that AI can automate. At the same time, India has strengths that could make it a major beneficiary of AI: a large pool of engineers, a vast digital user base, digital public infrastructure such as Aadhaar and UPI, and a fast-growing economy. This paper analyses the combination of AI and India's current economic condition. It asks four questions. What is the macroeconomic setting in which India is adopting AI? What has public policy and private investment done to build AI capacity? How large could the economic gains from AI be? And what are the risks, especially for employment? The paper uses the latest available data up to 2026.

2. Review of Literature

Economists have long debated the effect of technology on growth and jobs. Solow's growth model treats technology as the main source of long-run growth in output per worker. Brynjolfsson and McAfee (2014) argued that digital technologies, including AI, would create a 'second machine age' with large productivity gains but also rising inequality. Acemoglu and Restrepo (2019) distinguished between the displacement effect, in which automation replaces workers in existing tasks, and the reinstatement effect, in which new tasks are created for workers; the net effect on employment depends on the balance between the two.

Recent studies of generative AI suggest larger effects than earlier automation. Eloundou et al. (2023) estimated that about 80 per cent of the US workforce could have at least 10 per cent of their tasks affected by large language models. The International Monetary Fund (Dr. Naveen Prasadula et al., 2024) found that about 40 per cent of global employment is exposed to AI, with advanced economies more exposed but also better placed to benefit. For India, the IMF estimates that more than a quarter of the workforce is exposed to generative AI and about 12 per cent faces a high risk of displacement (as reported in Medianama, 2025).

Indian policy studies have focused on AI as an opportunity. NITI Aayog's National Strategy for Artificial Intelligence (2018) proposed the approach of 'AI for All', with priority to health, agriculture, education, smart cities and transport. Its 2025 reports, 'AI for Viksit Bharat: Roadmap for Accelerated Economic Growth' and the roadmap for job creation in the AI economy, provide the most recent official estimates of the economic potential and employment effects of AI (NITI Aayog, 2025a; 2025b). Industry studies by NASSCOM and the Boston Consulting Group highlight the growth of India's AI market and talent pool.

Most of this literature treats either the macroeconomy or AI in isolation. There is little work that places India's AI policy and investment in the context of its current macroeconomic condition. This paper attempts to fill that gap.

3. Objectives and Methodology

3.1 Objectives

- To describe the current macroeconomic condition of India in which AI is being adopted.
- To analyse public policy on AI, especially the IndiaAI Mission, and private investment in AI infrastructure.
- To examine the state of India's AI ecosystem and the estimated contribution of AI to economic growth.
- To assess the likely effects of AI on employment and suggest policy measures.

3.2 Methodology

The study is descriptive and analytical and is based on secondary data. Sources include national accounts released by MoSPI, RBI policy statements and annual reports, the Union Budget, NITI Aayog reports, official statements on the IndiaAI Mission, announcements made at the India AI Impact Summit 2026, and published industry reports. Data are presented in seven tables and analysed using simple descriptive methods such as comparison, shares and growth. Since many AI figures are projections or company commitments rather than realised outcomes, they are interpreted with caution.

4. India's Current Economic Condition

India adopts AI from a position of relative macroeconomic strength. Table 1 summarises the main indicators.

Table 1: Key macroeconomic indicators of India, 2023–24 to 2026–27

Indicator	2023–24	2024–25	2025–26	2026–27 (outlook)
Real GDP growth (%), 2022–23 series	7.2	7.1	7.7	6.7–6.9 (RBI projection)
Centre's fiscal deficit (% of GDP)	5.6	4.8	4.4 (RE)	4.3 (BE)
CPI inflation	Moderate	Easing	About 2% (record low 0.25% in Oct 2025)	4.6% projected; peak 5.9% in Q3
RBI repo rate (% end of year)	6.50	6.25	5.25	5.25 (August 2026)
Foreign exchange reserves	–	–	≈ US\$691 billion	About 11 months of import cover

Source: MoSPI national accounts (2022–23 base series); RBI Annual Report 2025–26; RBI Monetary Policy Statement, August 2026; Union Budget 2026–27. RE = revised estimate; BE = budget estimate; ≈ = approximate.

Table 1 shows that growth has been close to 7 per cent or above for three years, inflation fell to record lows in 2025, and the fiscal deficit is on a declining path. This gives the government room to invest in AI infrastructure and allows the RBI to support credit for the private sector. The outlook for 2026–27 is somewhat weaker because of higher oil prices from the West Asia conflict and the effects of US tariffs, which increases the importance of new sources of productivity growth such as AI. India's economy is about US\$3.8 trillion in size, and services account for more than half of output, which means that the effect of AI on services will be central to the effect on the economy as a whole.

5. Public Policy on AI: The IndiaAI Mission

In March 2024 the Union Cabinet approved the IndiaAI Mission with an outlay of ₹10,371.92 crore over five years. Its aim is to build a comprehensive AI ecosystem through public compute capacity, indigenous foundation models, datasets, skills and startup financing. Table 2 shows how the outlay is distributed.

Table 2: Pillar-wise allocation of the IndiaAI Mission

Pillar	Allocation (₹ crore)	Share of outlay (%)
Compute capacity	4,563.36	44.0
Foundation models	1,971.37	19.0
Startup financing	1,942.50	18.7
Safe and trusted AI	20.46	0.2
Overheads and contingencies	102.69	1.0
Other pillars (datasets platform, application development, FutureSkills)	1,771.54	17.1
Total	10,371.92	100.0

Source: IndiaAI Mission allocations as reported in Medianama (April 2026). The amount for 'other pillars' is derived as the balance of the total outlay. Shares are calculated by the author.

Table 2 shows that the Mission places most emphasis on compute: 44 per cent of the outlay goes to building a shared GPU facility, reflecting the view that access to computing power is the main bottleneck for Indian AI developers. Foundation models and startup financing together account for another 38 per cent. In contrast, 'safe and trusted AI' receives only 0.2 per cent of the outlay, which is small given the growing concerns about deepfakes, bias and misuse.

Table 3: Progress of the IndiaAI Mission

Indicator	Status (2026)
GPUs onboarded for the common compute facility	More than 38,000, with about 20,000 more planned
AI cloud service providers empanelled	14
Teams shortlisted to build indigenous foundation models	12
AI applications (use cases) approved	30
Students supported (UG / PG / PhD)	8,000+ / 5,000+ / 500
Data and AI Labs	27 established; 543 more identified
Funds released, 2024–25	₹21.79 crore (against RE of ₹173 crore)
Funds released, 2025–26	₹379.15 crore (against RE of ₹800 crore)
Budget estimate, 2026–27	₹1,000 crore

Source: Medianama (April 2026), based on government replies as of 9 February 2026; Adda247 (2026) for GPU figures announced at the India AI Impact Summit.

Table 3 shows strong progress on compute: more than 38,000 GPUs have been made available to researchers, startups and government users at subsidised rates. However, actual spending has been slow. As per Dr. Naveen Prasadula By

February 2026 only about ₹400 crore, less than 4 per cent of the five-year outlay, had been released, and releases were well below even the revised estimates. Faster implementation will be needed if the Mission is to achieve its goals within the planned period.

6. Private Investment in AI Infrastructure

Private investment in AI infrastructure, especially data centres, has grown far faster than public spending. Table 4 lists the major commitments announced in 2025 and 2026.

Table 4: Major AI and data centre investment commitments in India, 2025–2026

Company / investor	Commitment (US\$ billion)	Period	Purpose
Reliance Industries	110	Seven years	AI infrastructure and services
Adani Enterprises	100	By 2035	AI and data centre infrastructure
Amazon	35+	By 2030	AI, cloud, logistics and small-business digitisation
Microsoft	17.5	2026–2029	Cloud and AI infrastructure, skilling
Google	15	Not stated	AI hub and data centre campus in Visakhapatnam
Lightspeed Venture Partners	10	Not stated	Investment in AI startups
General Catalyst	5	Five years	Investment in AI and technology companies

Source: IANS (December 2025) for Amazon, Microsoft and Google; Adda247 (2026) for commitments announced at the India AI Impact Summit, February 2026. Figures are announced commitments, not realised investment.

Table 4 shows that announced private commitments are of a very different order from the public outlay. Amazon, Microsoft and Google alone have pledged about US\$67.5 billion, and the total announced at the India AI Impact Summit exceeded US\$200 billion. If even part of this is realised, AI infrastructure will become one of the largest sources of private investment in India, supporting construction, power and equipment demand. The concentration of commitments among a few large firms, however, raises questions about competition and the access of smaller firms to computing power.

7. India's AI Ecosystem

Table 5: Selected indicators of India's AI ecosystem

Indicator	Value	Source
Size of India's AI market by 2027	≈ US\$17 billion (about three times the 2024 level)	BCG (2025)
AI professionals in India	About 6 lakh in 2025; 12.5 lakh expected by 2027	BCG (2025)
India's share of the global AI talent pool	16% (second after the US)	BCG (2025)

Indicator	Value	Source
AI startups launched in the past three years	About 2,000	BCG (2025)
Internet users	More than 700 million	BCG (2025)
Data centre capacity	≈ 2.1 GW (June 2026); 2.6 GW expected by end-2026	NewsBytes (2026)
Share of global data centre capacity / global data generated	≈ 3% / ≈ 20%	NewsBytes (2026)

Source: as shown in the table. ≈ = approximate. Market size and talent figures are industry estimates.

Table 5 shows both strength and imbalance. India's talent pool is among the largest in the world and is expected to double by 2027, and its huge base of internet users generates around a fifth of the world's data. Yet India has only about 3 per cent of global data centre capacity. This gap between data generated and capacity to process it explains the rush of data centre investment shown in Table 4, and is a major opportunity for the construction, power and equipment industries.

8. Potential Contribution of AI to Economic Growth

NITI Aayog's 2025 report 'AI for Viksit Bharat: Roadmap for Accelerated Economic Growth' provides the most detailed official estimate of the economic potential of AI. Table 6 summarises its main findings.

Table 6: Estimated economic potential of AI for India by 2035

Item	Estimate or measure
India's GDP in 2035 at the current growth pace	≈ US\$6.6 trillion
India's GDP in 2035 with full AI adoption	≈ US\$8.3 trillion
Additional GDP from AI by 2035	Up to US\$1.9 trillion (headline estimate)
Gain from faster AI adoption in key industries	US\$500–600 billion by 2035
Share of the gap to 8% growth that AI adoption can close	30–35%
Manufacturing	Smart factory corridors, national manufacturing data grid, AI-ready industrial parks
Financial services	Fraud detection, credit scoring with alternative data, regulatory sandboxes
Pharmaceuticals	AI-enabled drug discovery and genome sequencing
Automotive	Software-assisted vehicles with Level 3 autonomy by 2035

Source: NITI Aayog (2025a), as reported by IANS (September 2025) and Medianama (September 2025). The US\$1.9 trillion figure is NITI Aayog's headline estimate; the difference between the two GDP scenarios is about US\$1.7 trillion.

Table 6 suggests that AI could raise India's GDP in 2035 by about a quarter compared with the current trend. The largest gains are expected from adoption in manufacturing and financial services, from the use of generative AI in research and development, and from the expansion of technology services exports. These gains are not automatic: NITI Aayog makes them conditional on consent-based data sharing, reskilling, better access to data and infrastructure for MSMEs, and close cooperation between government, industry and academia.

The estimates should be treated with caution. They depend on assumptions about the speed of adoption and on India's ability to retain its share of global technology services as AI changes the nature of that work.

9. AI and Employment

The employment effect of AI is the most important concern for India, where the tech sector has been a major source of well-paid formal jobs. Table 7 summarises the main estimates.

Table 7: Estimated effects of AI on employment in India

Indicator	Estimate
Share of India's white-collar talent employed in the tech sector	Over 30%
Tech services employment	7.5–8 million in 2023; about 6 million by 2031 under business as usual
Customer service employment	2–2.5 million in 2023; about 1.8 million within six years under business as usual
Tech jobs already lost to AI (by mid-2025)	About 78,000
Tech jobs at risk by 2031 without action	Up to 1.5 million
New AI-related jobs possible by 2031 with timely action	Up to 4 million
Share of India's workforce exposed to generative AI (IMF)	More than 25%; about 12% at high risk of displacement

Source: NITI Aayog (2025b), roadmap for job creation in the AI economy, as reported by Outlook Money (October 2025); IMF estimate as reported by Medianama (September 2025).

Table 7 shows that the effect of AI on jobs depends heavily on policy. Under business as usual, employment in tech services and customer support could fall, with up to 1.5 million jobs at risk by 2031. With timely action on education and skills, AI could instead create up to 4 million new jobs. The jobs most at risk are routine, entry-level roles in coding, testing, data processing and customer support, which have traditionally been the entry point for young graduates. The new jobs require higher skills, such as AI engineering, data science and domain expertise combined with AI. Without large-scale reskilling, the result could be a mismatch in which jobs are lost in one group of workers and created for another. NITI Aayog therefore recommends an India AI Talent Mission covering AI fluency in education, attracting global talent, and a large-scale skilling programme.

10. Discussion

10.1 Opportunities

- **Productivity:** AI can raise productivity in services, manufacturing and agriculture at a time when India needs to sustain growth of about 7 per cent or more.
- **Investment:** data centre and AI infrastructure investment adds directly to capital formation and supports power, construction and equipment industries.
- **Inclusion:** combined with digital public infrastructure and Indian-language tools such as BHASHINI, AI can deliver health, education, credit and agricultural advice to people outside the formal economy.
- **Exports:** India can move up the value chain from IT services to AI services and products for the global market.
- **Governance:** AI can improve tax administration, fraud detection, welfare targeting and public service delivery.

10.2 Risks and challenges

- Job displacement in IT and business services, the pillar of India's services-led growth.
- Uneven distribution of gains between large firms and MSMEs, between urban and rural areas, and between skilled and unskilled workers.
- Dependence on imported chips, GPUs and foreign AI models.
- Heavy demand for electricity and water from data centres.
- Slow implementation of public programmes, as seen in the low release of IndiaAI Mission funds.
- Risks of misuse, including deepfakes, misinformation, privacy violations and bias, for which regulatory capacity is still developing.

11. Policy Suggestions

- Speed up implementation of the IndiaAI Mission and link fund releases to clear milestones.
- Launch a national AI skilling and reskilling programme, with priority for IT and customer service workers and for fresh graduates.
- Extend affordable compute, data and AI tools to MSMEs, farmers and state governments, not only to large firms.
- Build domestic capacity in semiconductors and encourage open-source Indian-language models to reduce dependence on imports.
- Plan renewable power and water supply for data centres in advance.
- Strengthen the legal framework for data protection, AI safety and accountability, and increase the allocation for safe and trusted AI.
- Expand social protection and unemployment insurance for workers displaced by automation.

12. Conclusion

India is adopting artificial intelligence at a favourable moment. Its economy is growing at about 7 per cent, inflation has been low, the fiscal position is improving, and both public policy and private investment are building AI capacity at an unprecedented pace. Official estimates suggest that AI could add up to US\$1.9 trillion to India's GDP by 2035.

However, the gains are not guaranteed. AI threatens the very services jobs that have powered India's growth, and the benefits could be concentrated among large firms and skilled workers. The analysis of this paper suggests that India's AI strategy must give as much attention to people as to computing power: to skills, to diffusion of AI among small

enterprises and rural citizens, and to rules that make AI safe and fair. If it does, AI can become a powerful engine for India's goal of becoming a developed nation by 2047.

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