



Artificial Intelligence and Karnataka's Economy: Catalysing Growth, Innovation and Transformation

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Abstract- Artificial Intelligence (AI) is rapidly transforming regional economies across the world and Karnataka stands at the forefront of this transformation in India. With a Gross State Domestic Product (GSDP) of approximately ₹25 lakh crore in 2026 and contributing nearly 8.5% to the national economy, Karnataka has evolved from being India's "Silicon Valley" to aspiring to become the country's "AI Capital." The state, led by Bengaluru's globally recognized technology ecosystem, hosts nearly 39% of India's generative AI startups and employs over 600,000 AI professionals, making it one of the largest AI talent hubs globally.

Keywords: Artificial Intelligence, Economic Development, Digital Economy, Inclusive Growth, Data Analytics, Policy Planning.

Recent policy initiatives, including the Karnataka IT Policy 2025–30 and the State Budget 2026–27, emphasize AI-driven development through Centres of Excellence, robotics parks and skill development programs such as NIPUNA. AI is already influencing key sectors such as agriculture, healthcare, governance and creative industries (AVGC), with the potential to increase Karnataka's GSDP by 2–3% in the coming decade.

However, this transformation is accompanied by challenges such as job displacement, skill gaps, infrastructural disparities and ethical concerns. This research paper critically examines AI's economic contributions, sectoral impacts, employment dynamics, policy frameworks and future projections in Karnataka. It also provides strategic recommendations to ensure inclusive, sustainable and ethical AI-driven growth.

I. INTRODUCTION

Karnataka has long been recognized as the technological backbone of India. With a strong digital economy contributing nearly 40% of the state's GSDP and employing over 30 lakh professionals, the state has consistently led innovation and entrepreneurship. Bengaluru, often referred to as the "Silicon Valley of India," hosts more than 19,000 startups and has secured its position among the top global startup ecosystems.

In recent years, the focus has shifted towards Artificial Intelligence as the next frontier of economic growth. According to global ecosystem rankings, Bengaluru is now among the top five AI cities in the world, reflecting its strong infrastructure, talent pool and investment ecosystem. The state government has actively promoted AI adoption through progressive policies, infrastructure investments and skill development initiatives.

The Karnataka government's vision, as articulated in the IT Policy 2025–30, aims to decentralize growth by expanding AI capabilities to tier-2 cities such as Mysuru, Mangaluru and Hubballi-Dharwad. This strategic shift is expected to reduce regional disparities and promote balanced economic development.

This paper seeks to analyze how AI is reshaping Karnataka's economy by examining its contributions to GSDP, sectoral transformation, employment patterns, policy initiatives and future prospects.

II. AI'S CONTRIBUTION TO GSDP AND ECONOMIC ECOSYSTEM

a. Startup Ecosystem and Investment Trends

Karnataka's startup ecosystem is a major driver of AI-led economic growth. The state accounts for nearly 47% of India's startup funding, with a significant portion directed towards AI and deep technology ventures. Bengaluru alone hosts over 1,800 AI startups, attracting investments exceeding \$2 billion.

The presence of a robust venture capital ecosystem, combined with strong institutional support, has enabled startups to scale rapidly. AI-driven startups are particularly prominent in sectors such as fintech, healthtech, edtech and logistics.

The state's ecosystem value, estimated at \$136 billion, reflects the growing importance of AI in driving innovation and economic expansion. Karnataka's rise in global startup rankings further underscores its competitiveness on the international stage.



b. Global Capability Centres (GCCs) and Exports

Karnataka has witnessed significant growth in Global Capability Centres (GCCs), with over 435 new centres established between 2024 and 2026. These centres play a crucial role in AI research, development and deployment, particularly in sectors such as biotechnology, finance and healthcare.

The expansion of GCCs has contributed to the growth of software exports, which are projected to reach ₹11.5 lakh crore by 2030. AI-driven automation and analytics are enhancing productivity and enabling companies to deliver high-value services globally.

III. SECTORAL IMPACTS OF AI

a. Agriculture and Rural Development

AI is transforming agriculture through precision farming, predictive analytics and smart irrigation systems. Pilot projects in districts such as Tumakuru and Pavagada have demonstrated yield improvements of 20–30%.

AI-powered advisory systems provide farmers with real-time information on weather conditions, crop health and market prices, enabling better decision-making. These innovations are particularly important in addressing challenges such as climate change and resource scarcity.

b. Healthcare and Biotechnology

The integration of AI in healthcare has improved diagnostics, patient care and resource management. Karnataka's focus on AI-biotech convergence is evident in the establishment of Centres of Excellence and the expansion of GCCs in the healthcare sector.

AI applications such as disease prediction, personalized medicine and telemedicine are enhancing healthcare accessibility and efficiency.

c. AVGC and Creative Industries

The Animation, Visual Effects, Gaming and Comics (AVGC) sector is emerging as a key beneficiary of AI adoption. Government initiatives such as Elevate grants are supporting startups in developing innovative content and intellectual property.

AI tools are enabling creators to produce high-quality content more efficiently, contributing to the growth of the creative economy.

d. Governance and Smart Cities

AI is playing a crucial role in improving governance and urban management. Smart city initiatives

leverage AI for traffic management, waste management and public safety.

The integration of AI in education, particularly through digital learning platforms, is benefiting millions of students across the state.

IV. EMPLOYMENT DYNAMICS: OPPORTUNITIES AND CHALLENGES

a. Job Creation

The integration of Artificial Intelligence (AI) into Karnataka's economic framework is significantly reshaping the employment landscape by generating new and specialized job opportunities. The emergence of AI-driven industries has led to increased demand for highly skilled professionals in domains such as data science, machine learning, artificial intelligence engineering, robotics, cybersecurity and AI ethics. These fields require advanced technical knowledge, analytical skills and interdisciplinary understanding, thereby creating a shift toward a knowledge-based workforce.

Moreover, the growth of Global Capability Centers (GCCs) and multinational corporations in Karnataka further strengthens the employment ecosystem. These centers not only create high-value jobs but also facilitate knowledge transfer, innovation and global collaboration. The expansion of startups, particularly in the deep-tech and AI domains, contributes to entrepreneurial employment, encouraging youth participation in innovation-driven ventures. Thus, AI acts as a catalyst for both formal and informal employment generation, enhancing the overall economic productivity of the state.

b. Job Displacement and Skill Gaps

While AI creates new employment opportunities, it simultaneously poses significant challenges in the form of job displacement and widening skill gaps. Automation technologies are increasingly replacing routine, repetitive and low-skill jobs, particularly in sectors such as manufacturing, customer service, data entry and administrative functions. This transition leads to workforce restructuring, where traditional roles become obsolete and new roles demand higher levels of expertise.

To address these challenges, the Karnataka government has introduced the NIPUNA (Nurturing Industry-Ready Professionals through Upskilling and Networking in AI) program, which aims to train over 2 million individuals in emerging technologies. This initiative focuses on equipping students, professionals and job seekers with industry-relevant skills, including AI, machine learning, cloud



computing and data analytics. Despite such efforts, bridging the skill gap remains a critical priority, as the pace of technological advancement often outstrips the rate of skill development.

Therefore, a comprehensive strategy involving continuous learning, industry-academia collaboration and inclusive training programs is essential to ensure that the workforce adapts effectively to the evolving demands of the AI-driven economy.

V. POLICY FRAMEWORK AND GOVERNMENT INITIATIVES

The Government of Karnataka has adopted a proactive approach in promoting AI adoption and fostering an innovation-driven economy through strategic policy interventions. The Karnataka IT Policy 2025–30 serves as a cornerstone for the state's digital transformation, emphasizing the development of AI infrastructure, skill enhancement, startup support and regional expansion beyond Bengaluru.

The policy prioritizes the establishment of Centres of Excellence (CoEs) in artificial intelligence, machine learning, robotics and emerging technologies. These centers aim to facilitate research, innovation and collaboration between academic institutions, industry stakeholders and government bodies. Additionally, the policy encourages the development of AI ecosystems in tier-2 cities such as Mysuru, Mangaluru and Hubballi-Dharwad, thereby promoting balanced regional growth and reducing the concentration of economic activities in Bengaluru.

Programs such as Elevate and LEAP (Local Economy Accelerator Program) play a crucial role in supporting startups and small enterprises. By providing financial assistance, mentorship and incubation support, these programs enable entrepreneurs to develop innovative AI solutions and scale their operations. Collectively, these policy measures create a conducive environment for sustainable economic growth driven by technological innovation.

VI. CASE STUDIES

a. Bengaluru AI Ecosystem

Bengaluru stands as the epicenter of AI innovation in Karnataka, with a vibrant ecosystem comprising over 1,800 AI startups and investments exceeding \$2 billion. The city's strong infrastructure, skilled workforce and global connectivity make it a preferred destination for technology companies and investors. Bengaluru's AI ecosystem exemplifies

how a well-developed innovation environment can drive economic growth, attract global talent and foster entrepreneurship.

b. Elevate Program

The Elevate program is a flagship initiative by the Karnataka government aimed at supporting startups through grants and incubation facilities. By providing financial assistance and mentorship, the program enables startups to develop cutting-edge AI technologies and bring innovative solutions to market. This initiative has significantly contributed to the growth of the startup ecosystem and the commercialization of AI innovations.

c. NIPUNA Skilling Initiative

The NIPUNA program focuses on bridging the skill gap by providing training in emerging technologies. It targets students, professionals and unemployed youth, equipping them with the skills required to thrive in an AI-driven economy. The program's emphasis on practical training and industry collaboration enhances employability and supports workforce transformation.

d. CC Expansion

The rapid expansion of Global Capability Centers (GCCs) in Karnataka highlights the state's attractiveness as a global investment hub. These centers contribute to economic growth by creating high-value jobs, promoting innovation and strengthening international business linkages. Their presence reinforces Karnataka's position as a leader in the global technology landscape.

VII. CHALLENGES AND RISKS

Despite its significant potential, AI adoption in Karnataka faces several challenges. Job displacement and workforce restructuring remain key concerns, particularly for low-skilled workers. Skill gaps and limited access to training programs hinder the ability of individuals to adapt to technological changes.

Infrastructure disparities between urban and rural areas, as well as between tier-1 and tier-2 cities, pose additional challenges. Limited access to digital infrastructure, computing resources and connectivity restricts the spread of AI technologies beyond major urban centers.

Addressing these challenges necessitates a collaborative approach involving government, industry, academic institutions and civil society. Inclusive policies, investment in infrastructure and ethical governance are essential for sustainable AI-driven development.



VIII. FUTURE PROJECTIONS AND ECONOMIC IMPACT

Artificial Intelligence is expected to play a transformative role in Karnataka's economic growth over the next decade. Projections indicate that AI could contribute an additional 2–3% to the state's Gross State Domestic Product (GSDP) by 2030. This growth will be driven by increased productivity, innovation and the expansion of AI-driven industries.

The development of tier-2 cities as AI hubs is likely to promote balanced regional development, reduce urban congestion and create new economic opportunities. The integration of AI across sectors such as agriculture, healthcare, manufacturing and governance will enhance efficiency and improve service delivery.

Furthermore, Karnataka's strategic focus on AI positions it as a global leader in technology and innovation, attracting investments and strengthening its competitive advantage in the global economy.

IX. RECOMMENDATIONS

To maximize the benefits of AI, the following recommendations are proposed:

- ❖ Expand AI skill development programs to reach a wider population
- ❖ Invest in digital and technological infrastructure in tier-2 and rural areas
- ❖ Promote ethical AI practices through regulatory frameworks and guidelines
- ❖ Strengthen public-private partnerships to foster innovation and collaboration
- ❖ Enhance research and development initiatives in AI and related fields

X. CONCLUSION

Artificial Intelligence is fundamentally transforming Karnataka's economy by driving innovation, enhancing productivity and creating new opportunities across multiple sectors. While the benefits of AI are substantial, challenges such as job displacement, skill gaps and ethical concerns must be addressed to ensure inclusive and sustainable development.

The proactive policies and initiatives undertaken by the Karnataka government, combined with a strong technological ecosystem, position the state as a leader in AI-driven growth. By adopting a balanced approach that integrates technological advancement with ethical considerations, Karnataka can successfully achieve its vision of becoming India's "AI Capital" and serve as a model for other regions.

The economic argument is strengthened by computational modelling, location-based clustering, fuzzy decision reasoning and welfare-oriented analytical perspectives [11]-[14]. These sources support the use of evidence-based and data-oriented economic interpretation. Recent policy and institutional sources further support the discussion on economic change, digital transformation and inclusive development [15]-[17].

The study highlights that economic transformation must be assessed through inclusive growth, access, welfare impact and institutional effectiveness. Data-based and computational approaches can strengthen economic interpretation, but policy conclusions should remain sensitive to local realities and beneficiary-level differences.

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