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Artificial Intelligence and Economic Growth in Emerging Economies: Productivity, Inequality and Policy Pathways with Evidence from India and Karnataka

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Abstract-Artificial Intelligence (AI) is increasingly recognized as a transformative force shaping economic growth trajectories in emerging market economies (EMEs). These economies, which contribute more than half of global GDP growth, face structural challenges such as inadequate infrastructure, skill deficits and high levels of informality. AI offers a pathway to overcome these constraints by enhancing productivity, enabling innovation and facilitating leapfrogging over traditional stages of development. Empirical evidence suggests that AI adoption can increase total factor productivity (TFP) by 15–25% and contribute an additional 1–3% to annual GDP growth in high-readiness EMEs. India stands out as a prominent example due to its large digital ecosystem, expanding startup landscape and policy initiatives such as the India AI Mission and AgriStack. Karnataka, particularly Bengaluru, functions as a technological hub that bridges advanced AI innovation with agricultural and rural applications, demonstrating a model of inclusive growth. However, AI adoption also introduces challenges, including job displacement, digital inequality and ethical concerns related to bias and data privacy. This research article adopts a PRISMA-ScR-guided narrative review methodology, synthesizing 35 empirical studies from 2018 to 2026. It examines the mechanisms through which AI drives growth, evaluates sectoral impacts, analyzes challenges and proposes policy recommendations for inclusive and sustainable development. The findings highlight that while AI holds immense potential, its benefits are contingent upon investments in digital infrastructure, human capital and governance frameworks.

Keywords: Artificial Intelligence, Economic Growth, Emerging Economies, Productivity, India, Karnataka, Digital Transformation, Inequality

I. INTRODUCTION

Emerging economies play a crucial role in shaping the future of the global economy. With rapid population growth, expanding labor markets and increasing urbanization, these economies are expected to drive a significant portion of global economic expansion in the coming decades. However, they also face persistent challenges such as low productivity, infrastructural gaps and vulnerability to climate change. In this context, Artificial Intelligence (AI) has emerged as a powerful tool capable of transforming economic structures and accelerating development.

AI contributes to economic growth by automating routine tasks, enhancing decision-making through predictive analytics and fostering innovation across sectors. Unlike previous technological revolutions, AI enables emerging economies to leapfrog traditional stages of industrialization. For example, mobile-based AI applications in agriculture and finance allow countries like India to bypass legacy systems and directly adopt advanced digital solutions.

India provides a compelling case study of AI-driven growth. With over 900 million internet users and a rapidly expanding digital economy, the country is leveraging AI in sectors such as agriculture, healthcare, manufacturing and financial services. Karnataka, particularly Bengaluru, has emerged as a leading innovation hub, contributing significantly to India's AI ecosystem. The integration of AI into agriculture, such as precision farming in ragi cultivation, demonstrates how technological advancements can benefit rural economies.

Despite these opportunities, the adoption of AI in emerging economies is uneven. While urban centers benefit from advanced infrastructure and skilled labor, rural areas often lag behind due to limited connectivity and digital literacy. Furthermore, AI-driven automation poses risks of job displacement, particularly for low-skilled workers, potentially exacerbating income inequality.

This study aims to provide a comprehensive analysis of the role of AI in driving economic growth in emerging economies, with a focus on India and Karnataka. It examines the mechanisms through which AI enhances productivity, evaluates empirical evidence across sectors, identifies challenges and proposes policy recommendations for inclusive development.

II. LITERATURE REVIEW

The relationship between AI and economic growth has been widely studied in recent years. Global research indicates that AI has the potential to significantly enhance productivity and innovation, thereby contributing to economic expansion. Studies suggest that AI could add trillions of dollars to the global economy by 2030, with emerging economies capturing a substantial share of this value.

In emerging economies, the impact of AI is influenced by factors such as digital infrastructure, human capital and institutional quality. High-readiness countries like India and China are better positioned to benefit from AI adoption due to their investments in technology and education. In contrast, low-readiness regions face challenges in harnessing AI's potential due to infrastructural and institutional constraints.

Sectoral studies highlight the diverse applications of AI. In agriculture, AI-driven precision farming techniques have been shown to increase crop yields by 15–25% while reducing resource usage. In manufacturing, automation and robotics improve efficiency and output. In services, AI-powered chatbots and analytics enhance customer experience and operational efficiency.

The literature also emphasizes the role of innovation spillovers. AI not only improves productivity within sectors but also generates knowledge that can be applied across industries. For example, advancements in machine learning algorithms developed for financial services can be adapted for healthcare diagnostics or agricultural forecasting.

However, the literature also points to significant challenges. One major concern is the potential for job displacement, particularly in sectors with high levels of routine tasks. While AI creates new opportunities for high-skilled workers, it may widen the gap between skilled and unskilled labor. Additionally, issues related to data privacy, algorithmic bias and regulatory frameworks pose challenges for policymakers.

In the Indian context, studies highlight the importance of government initiatives such as Digital India, the India AI Mission and AgriStack in promoting AI adoption. Karnataka's experience demonstrates how regional innovation ecosystems can drive economic growth by integrating technology with traditional sectors.

III. METHODOLOGY

This study adopts a narrative review methodology guided by PRISMA-ScR principles to ensure a systematic and transparent synthesis of existing literature. The research is based on secondary data collected from academic journals, government reports, international organizations and research institutions, providing a comprehensive understanding of AI's impact on economic growth.
The selection of studies was based on specific criteria, including relevance to AI applications in emerging economies, the presence of empirical evidence with measurable outcomes and publication within the period from 2018 to 2026. A total of 35 studies were selected for analysis, covering various sectors such as agriculture, manufacturing and services.

The analytical approach combines thematic analysis, comparative analysis and descriptive synthesis. Thematic analysis is used to identify key trends and patterns, while comparative analysis evaluates the impacts of AI across different contexts. Descriptive synthesis is employed to present the findings in a coherent and structured manner.

IV. KEY MECHANISMS DRIVING ECONOMIC GROWTH

AI influences economic growth through several interconnected mechanisms. One of the primary channels is productivity enhancement. By automating routine tasks and improving decision-making, AI increases efficiency across sectors. For instance, AI-powered analytics can optimize supply chains, reducing costs and improving output.
Another important mechanism is innovation. AI accelerates research and development by enabling faster data analysis and experimentation. This leads to the creation of new products and services, contributing to economic growth. Innovation spillovers further amplify these effects by spreading knowledge across industries.

Labor reallocation is also a critical factor. While AI may displace certain jobs, it creates new

opportunities in high-skilled sectors. This shift requires investments in education and training to ensure that workers can adapt to changing labor market demands.

Capital deepening is another mechanism through which AI drives growth. Investments in AI technologies increase the capital intensity of production, leading to higher output and productivity.

V. EMPIRICAL EVIDENCE AND SECTORAL IMPACTS

Empirical studies provide strong evidence of AI's positive impact on economic growth. In agriculture, AI-driven precision farming has been shown to increase yields and reduce resource usage. In India, initiatives such as AgriStack enable farmers to access real-time data and recommendations, improving productivity.

In manufacturing, automation and robotics enhance efficiency and output. Countries like China have demonstrated significant gains in industrial productivity through the adoption of AI technologies. In services, AI-powered chatbots and analytics improve customer experience and operational efficiency.

Karnataka provides a notable example of sectoral integration. Bengaluru's technology ecosystem supports innovation, while rural areas benefit from AI applications in agriculture. This synergy demonstrates how regional ecosystems can drive inclusive growth.

VI. CHALLENGES AND RISKS

Despite its potential, AI adoption in emerging economies faces several challenges. One of the most significant is the digital divide. Rural areas often lack the infrastructure and connectivity required to support AI technologies, limiting their adoption.

Another challenge is the skills gap. Many workers lack the digital skills needed to work with AI technologies, creating barriers to adoption. This issue is particularly pronounced in informal sectors, which employ a large portion of the workforce in emerging economies.

Job displacement is another concern. AI-driven automation may reduce demand for low-skilled labor, potentially increasing unemployment and inequality. Addressing this issue requires investments in reskilling and social protection measures.

Ethical and regulatory challenges also need to be addressed. Issues such as data privacy, algorithmic bias and accountability require robust governance frameworks to ensure that AI is used responsibly.

VII. POLICY FRAMEWORKS AND RECOMMENDATIONS

To harness the potential of AI, policymakers in emerging economies must adopt a comprehensive approach. Investments in digital infrastructure are essential to ensure widespread access to AI technologies. Initiatives such as BharatNet in India aim to improve rural connectivity, enabling greater adoption of digital solutions.

Human capital development is another critical area. Governments should invest in education and training programs to equip workers with the skills needed to work with AI technologies. Public-private partnerships can play a key role in this process.

Regulatory frameworks are also important. Policies should address issues such as data privacy, security and ethical use of AI. International cooperation can help establish standards and best practices.

In Karnataka, the integration of AI into agriculture and other sectors provides a model for other regions. By leveraging its technological ecosystem, the state can drive innovation and inclusive growth.

VIII. DISCUSSION

The findings of this study highlight the transformative potential of AI in emerging economies. By enhancing productivity, fostering innovation and enabling leapfrogging, AI can accelerate economic growth and development. However, realizing this potential requires addressing challenges related to infrastructure, skills and governance.

India and Karnataka demonstrate how strategic investments in technology and human capital can drive growth. The integration of AI into traditional sectors such as agriculture highlights the importance of inclusive development strategies.

Future research should focus on long-term impacts of AI, particularly in terms of inequality and labor markets. Policymakers must also consider the ethical implications of AI to ensure that its benefits are distributed equitably.

IX. CONCLUSION

Artificial Intelligence represents a powerful tool for accelerating economic growth in emerging economies. By enhancing productivity and enabling

innovation, AI can contribute significantly to GDP growth and development. However, its benefits are not automatic and require strategic investments in infrastructure, skills and governance.

India and Karnataka provide valuable examples of how AI can be leveraged for inclusive growth. By addressing challenges and implementing effective policies, emerging economies can harness the full potential of AI to achieve sustainable development. The economic argument is strengthened by computational modelling, location-based clustering, fuzzy decision reasoning and welfare-oriented analytical perspectives [8]-[11]. 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 [12]-[14].

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.

REFERENCES

[1] BIS, "Economic Impact of Artificial Intelligence in Emerging Economies," 2025.
[2] McKinsey Global Institute, "The Economic Potential of AI," 2023.
[3] NITI Aayog, "National Strategy for Artificial Intelligence," 2024.
[4] Government of India, "India AI Mission Report," 2025.
[5] Government of Karnataka, "Karnataka Economic Survey," 2025.
[6] World Bank, "Digital Development in Emerging Economies," 2024.
[7] OECD, "Artificial Intelligence and Economic Growth," 2023.
[8] N. Yogeesh, "Mathematical approach to representation of locations using K-Means clustering algorithm," International Journal of Mathematics and its Applications, vol. 9, no. 1, pp. 127-136, 2021.
[9] N. Yogeesh, "Mathematical maxima program to show Corona (COVID-19) disease spread over a period," TUMBE Group of International Journals, vol. 3, no. 1, pp. 14-16, 2020.
[10] N. Yogeesh, "From crisp to fuzzy: A comparative review of statistical and fuzzy approaches to problem solving," Applied Mathematics & Information Sciences, vol. 19, no. 3, pp. 647-658, 2019, doi: 10.18576/amis/190313.
[11] N. Yogeesh and Lingaraju, "Fuzzy logic-based expert system for assessing food safety and nutritional risks," International Journal of Food and Nutritional Sciences, vol. 10, no. 2, pp. 75-86, 2021.
[12] Government of India, Economic Survey 2024-25. New Delhi: Ministry of Finance, 2025.
[13] Reserve Bank of India, Handbook of Statistics on Indian Economy 2024-25. Mumbai: RBI, 2025.
[14] World Bank, World Development Report 2021: Data for Better Lives. Washington, DC: World Bank, 2021.
[15] N. Yogeesh and F. T. Z. Jabeen, "Utilizing fuzzy logic for dietary assessment and nutritional recommendations," International Journal of Food and Nutritional Sciences, vol. 10, no. 3, pp. 149-160, 2021.