

Chapter 1


AI in Indian Healthcare Startups: Funding and Ecosystem Dynamics

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ABSTRACT

The rapid evolution of artificial intelligence (AI) is reshaping various sectors, particularly healthcare. This study investigates the role of AI in the Indian healthcare industry, focusing on startups that leverage AI technologies to enhance healthcare delivery. It examines development stages, funding trends, investor involvement, and competitive dynamics of AI healthcare startups in India. Additionally, the research explores the significance of the Tracxn Score and its correlation with market performance and innovation capacity. By evaluating the broader AI ecosystem, including government policies and industry partnerships, the study identifies key success factors, challenges, and strategies for improving startup performance. It highlights collaborative opportunities within the AI ecosystem and how these partnerships can drive innovation and scalability. Ultimately, this research provides valuable insights for stakeholders, offering actionable strategies to navigate the evolving landscape of AI in healthcare and foster growth and innovation in the sector.

INTRODUCTION

India is poised for a transformative shift in healthcare, driven by a dramatic rise in artificial intelligence, with the market expected to exceed \$1.6 billion by 2025 and grow at an annual rate of 40.5% (Source: indiaai.gov.in). This growth reflects India's commitment to integrating advanced technology into healthcare, creating millions of new roles even as AI may replace about 23% of existing jobs by 2028 (Source: CDO Magazine Report from <https://www.cdomagazine.tech>). Major initiatives include the Ayushman Bharat Digital Mission for interoperable health records, the e-Sanjeevani telemedicine platform, and Centers of Excellence for AI innovations. Public-private partnerships, such as those between NITI Aayog, Microsoft, and Forus Health, are advancing early detection tools, while Tata Medical Centre and IIT

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Kharagpur's CHAVI supports cancer research. Private hospitals like Apollo are using AI for personalized health recommendations. Despite these advancements, challenges such as data fragmentation, security risks, and regulatory needs persist, addressed in part by the Digital Personal Data Protection (DPDP) Act 2023 and Confidential Clean Rooms under DEPA 2.0. Ethical and legal issues around AI liability and a significant skill gap in AI and data science—requiring 213,000 more professionals—are critical hurdles. Nevertheless, India's AI-driven healthcare revolution is rapidly evolving, promising enhanced access and improved outcomes, and setting a global precedent for future healthcare innovations.

LITERATURE REVIEW

Artificial Intelligence (AI) is increasingly recognized for its transformative potential in global healthcare systems. The literature explores both opportunities and challenges in AI integration, creating a complex mix. Higgins and Madai (2020) laid the groundwork by introducing a “decision perspective” framework that addresses the complexities of transitioning AI innovations into healthcare solutions. This framework focuses on clinical validation, regulatory affairs, and data strategy, establishing essential milestones for successful AI implementation in clinical practice. Building on this foundation, Iliashenko et al. (2019) conducted a comprehensive review of AI applications in healthcare. They classified various AI systems and mapped leading startups, providing a broader understanding of advancements and obstacles in the field, thereby complementing Higgins and Madai's framework. Zhukovska et al. (2023) further expanded the discussion by focusing on patient outcomes and operational efficiency in developed countries. They emphasized strategic priorities such as institutional support, linking the practical applications of AI to systemic improvements in healthcare. Lalit et al. (2024) shifted the focus to the startup ecosystem, examining the evolution and challenges of MedTech Innovators Inc. This study integrated entrepreneurial aspects with established frameworks, illustrating how startups can drive AI integration in healthcare. Chakraborty et al. (2023) explored telehealth startups, highlighting their contributions and challenges within the digital healthcare market. They connected AI's broader applications to specific telehealth implementations, reinforcing the importance of innovative business models. Earlier, Chen and Decary (2020) emphasized AI technologies like machine learning and natural language processing, offering practical guidance for healthcare leaders to enhance operations. This aligned with Nguyen's (2019) exploration of health-tech startup development, which examined how business opportunities are discovered and scaled within the healthcare sector. Pillai (2023) addressed disparities in AI adoption between high-income and low- and middle-income countries (LMICs), providing a contrast to previous studies. This highlighted unique challenges in LMICs, such as infrastructure gaps, and emphasized the need for inclusive AI growth.

Ciecierski-Holmes et al. (2022) conducted a systematic review of AI applications in LMICs, revealing reliability issues and the need for local adaptation, which connected well with Pillai's findings. Guo and Li (2018) proposed a multilevel AI service network aimed at improving healthcare outcomes by addressing disparities between urban and rural areas in developing countries, aligning with the broader theme of reducing healthcare inequities. Mungoli (2023) reinforced the need for context-specific AI solutions by exploring its potential across various sectors, emphasizing that tailored approaches are crucial for effective implementation. Udegbe et al. (2024) systematically reviewed AI's role in diagnostics and treatment personalization, while Saxena et al. (2024) examined its revolutionary effects on medical imaging and telemedicine, particularly during the COVID-19 pandemic. Reddy et al. (2024) contributed by exploring

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