The Role of Artificial Intelligence in Transforming the Indian Pharmaceutical Industry

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ABSTRACT:

India's pharmaceutical industry, known as the "pharmacy of the world," plays a crucial role in global healthcare by producing cost-effective and high-quality generic medicines. Despite its achievements, the sector faces challenges such as high costs and long timelines associated with drug discovery and manufacturing. This article explores the transformative potential of artificial intelligence (AI) in addressing these challenges, focusing on its applications across the pharmaceutical lifecycle, including research and development, drug discovery, manufacturing, quality assurance, and market management. AI's ability to analyze large datasets, predict outcomes, and optimize processes offers opportunities to reduce costs, enhance efficiency, and drive innovation. However, successful AI integration requires overcoming barriers such as financial constraints, workforce skill gaps, regulatory complexities, and ethical concerns. By investing in infrastructure, education, and collaborative initiatives, India's pharmaceutical sector can leverage AI to sustain its global leadership and competitiveness.

Keywords- Artificial Intelligence, Pharmaceutical Industry, Drug Discovery, Quality Assurance