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Artificial Intelligence Adoption and Disclosure Practices in Indian Healthcare Companies

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Introduction

'AI is perhaps the most transformational technology of our time, and healthcare is perhaps AI's most pressing application.' **- Satya Nadella.**

Artificial Intelligence is increasingly recognised as a key component of health information systems and medical informatics, with growing applications across healthcare delivery, pharmaceutical research, and organisational decision-making. Globally, Artificial Intelligence technologies are being used to support clinical decision support systems, improve healthcare efficiency, and expand access to healthcare services. In the Indian context, this technological transition is gradually emerging within the strategic frameworks of listed healthcare and pharmaceutical companies, where Artificial Intelligence is viewed not only as an information technology tool but also as an enabler of innovation, operational efficiency, and organisational resilience.

Corporate disclosures in the annual reports of Indian healthcare companies reflect an awareness of global developments in Artificial Intelligence - enabled healthcare delivery. However, these disclosures are shaped by the specific characteristics of the Indian healthcare system, including affordability constraints, infrastructure limitations, and the need for scalable and cost-effective health technologies. Artificial Intelligence is being applied across multiple domains such as diagnostic services, personalised treatment planning, drug discovery and development, clinical research, and patient engagement systems. These applications indicate a gradual shift towards data-driven healthcare and patient-centred care models, supported by advanced data analytics and digital platforms.

Despite the increasing integration of Artificial Intelligence into healthcare operations, there is limited clarity regarding how extensively these technologies are deployed and how their costs and benefits are reported. This study examines the reporting of Artificial Intelligence adoption by selected listed healthcare companies in India with three specific objectives: to identify major Artificial Intelligence focus domains, to review reported application practices, and to analyse the disclosure of utilisation, costs, and benefits associated with Artificial Intelligence initiatives. Examining these disclosure patterns is important for assessing digital maturity, informing policy development, and supporting more transparent investment and regulatory decision-making in the evolving Indian healthcare sector.

Literature review

The literature shows that Artificial Intelligence (AI) is increasingly viewed as a transformative force in Indian healthcare. Studies consistently highlight AI's ability to improve medical outcomes, streamline hospital operations, and enhance the overall patient experience. Researchers [(Jaiswal et al., 2024; Kapoor et al., 2024; Roy & Roy, 2020) point out that AI can personalize treatments, support early diagnosis, and

help reduce clinical errors. Tools such as chatbots and AI-powered virtual assistants, as noted by Kaushik (2023) and Kumar et al. (2021), are already improving patient engagement and making healthcare delivery more efficient.

AI is being applied across a wide range of domains. Its use is especially prominent in diagnostics and imaging (Mahajan et al., 2019; Pradhan et al., 2021), drug discovery and clinical trials (Gupta & Srivastava, 2024; Chettri et al., 2025), and in predictive analytics to tailor treatments to individual patients (Jaiswal et al., 2024). Hospitals are also using AI for administrative tasks and patient interaction management (Jain et al., 2020; Kaushik, 2023). This shows that AI is not limited to clinical care but is becoming integral across healthcare systems.

Despite this progress, the road to adoption is not without barriers. Many studies cite the lack of digital infrastructure, limited policy support, and a shortage of skilled professionals as major challenges (Gupta & Srivastava, 2024; Jain et al., 2020; Muduli & Tripathy, 2023). Concerns around data privacy, cybersecurity, and regulatory clarity also persist (Chatterjee et al., 2021; Ramaswamy et al., 2022). Resistance to change and the high cost of implementation further slow the pace of AI integration.

Another important theme in the literature is the need for responsible and trustworthy AI. Researchers such as Chettri et al. (2025), Kumar et al. (2021), and Bajwa et al. (2021) emphasize that for AI to be truly effective, it must be deployed ethically, with careful attention to data privacy, bias mitigation, transparency, and clinician oversight. Bajwa et al. (2021) particularly stress the importance of strong human-technology collaboration, concluding that AI has the potential to transform healthcare, but only when implemented with responsibility and clear ethical guidelines.

Finally, the role of policy and leadership is considered vital. Studies argue that strong government support, clear regulations, and collaboration between public and private sectors are essential for successful AI adoption (Chatterjee et al., 2021; Gupta et al., 2022; Mahajan et al., 2019). Ramaswamy et al. (2022) adds that open data policies and better digital infrastructure can further support AI growth, particularly in underserved regions.

Overall, the literature offers a balanced view of AI in Indian healthcare, reflecting that while the technology holds great promise, a thoughtful, ethical, and collaborative approach is needed to overcome the challenges and ensure its responsible and impactful implementation.

Objectives:

1. To identify key Artificial Intelligence application domains in Indian healthcare and pharmaceutical companies.
2. To examine Artificial Intelligence-enabled practices reported by selected healthcare companies in India.
3. To assess Artificial Intelligence utilisation and associated disclosure practices in Indian healthcare companies.

Research Methodology

This study employs a qualitative, descriptive research methodology to examine the integration of Artificial Intelligence (AI) in the Indian healthcare sector, drawing on corporate disclosures. The primary focus is to analyse how AI is being applied across different business functions and to evaluate the associated costs or benefits, if disclosed. The research is based entirely on secondary data, particularly the annual reports and integrated reports of publicly listed healthcare and pharmaceutical companies in India. Given the lack

of publicly disaggregated AI investment figures in many cases, this methodology emphasizes narrative analysis, content extraction, and cross-company comparisons to uncover meaningful insights into AI adoption trends.

The study is exploratory in nature and aims to map the current landscape of AI usage in healthcare companies rather than test a predefined hypothesis. The methodology involves careful extraction of AI-related initiatives and performance outcomes reported in corporate disclosures, with special attention to the Management Discussion and Analysis sections, BRSR reports, and Notes to Accounts. By focusing on qualitative patterns in the data, the study aims to capture both the strategic intent and practical implementations of AI technologies in Indian healthcare companies.

Research Design

The research employs a structured secondary data analysis approach, leveraging publicly available annual and integrated reports for the most recent financial years (2023-24 and 2024-2025). A purposive sampling method was adopted to select six healthcare and pharmaceutical companies that represent a diverse mix of innovation maturity, market scale, and digital transformation focus. These companies include Dr. Reddy's Laboratories, Torrent Pharmaceuticals, Glenmark Pharmaceuticals, Alkem Laboratories, Divi's Laboratories, and Abbott India Limited.

The unit of analysis consists of AI-specific applications, narratives, and reported outcomes both qualitative and quantitative. Key themes include the deployment of AI in drug discovery, clinical trials, manufacturing, diagnostics, HR systems, and commercial analytics. Additionally, the study seeks to identify direct or indirect AI-related financial information such as capital expenditure allocations, R&D budgets, productivity gains, and cost savings. Where explicit AI cost figures are absent, proxy indicators such as bundled investments under digital transformation or smart manufacturing are interpreted within context. The comparative nature of the design enables the identification of sector-wide trends, disclosure gaps, and industry best practices.

Data Collection Plan

The data collection for this study relies exclusively on secondary data sources, specifically the annual reports and integrated reports of selected listed healthcare and pharmaceutical companies in India. These corporate disclosures were chosen as they provide systematic information on organisational strategies, health information systems, digital transformation initiatives, and technology-enabled operational practices relevant to Artificial Intelligence adoptionA purposive sampling technique was employed to select companies based on their market presence, relevance to healthcare delivery and pharmaceutical operations, and potential for Artificial Intelligence integration. The sample comprises six listed companies representing varying levels of digital maturity: Dr. Reddy's Laboratories, Torrent Pharmaceuticals, Glenmark Pharmaceuticals, Alkem Laboratories, Divi's Laboratories, and Abbott India Limited. This selection enables a comparative assessment of Artificial Intelligence utilisation and reporting practices across the Indian pharmaceutical sector.

The reports were reviewed to identify organisational functions and operational domains where Artificial Intelligence applications are reported, including drug discovery and development, manufacturing systems, diagnostic services, human resource management, and commercial or marketing analytics. Narrative disclosures, illustrative case examples, and strategic statements relating to Artificial Intelligence - enabled

platforms or initiatives were extracted and thematically classified to capture patterns of health technology adoption.

The analysis further examined disclosures related to operational integration and corporate reporting of Artificial Intelligence, with particular attention to information on research and development expenditure, capital investment in digital technologies, productivity improvements, efficiency gains, and reported value creation. Where direct financial information specific to Artificial Intelligence was not available, related disclosures were interpreted within the broader context of digital transformation and innovation expenditure.

Key sections of the corporate reports, including the Management Discussion and Analysis, Business Responsibility and Sustainability Reports, and Notes to Financial Statements, served as the primary data sources. All extracted data were manually reviewed and validated to support cross-company comparison of Artificial Intelligence focus domains, utilisation intensity, and outcome reporting practices.

Findings

1. Key Artificial Intelligence application domains for health care companies & its application

COMPANY	AI FOCUS DOMAIN	AI APPLICATION
Dr. Reddy's Laboratories	Drug Discovery & Clinical Trials	AI to simulate molecules, predict trial outcomes, and accelerate research.
Apollo Hospitals	Diagnostics, Predictive Analytics, Personalized Treatment	AI to analyze patient data, forecast risks, and tailor treatments.
Dr. Lal Path Labs	Diagnostic Automation	AI enhances lab efficiency, test accuracy, and workflow optimization.
Fortis Healthcare	Patient Interaction Automation	AI chatbots for pre-consultation queries and appointment management.
Biocon	Biomarker & Drug Design	AI used in protein modeling, efficacy prediction, and molecular discovery.
Narayana Health	NLP-driven Virtual Assistants	AI for real-time query support and improving patient engagement.
Max Healthcare	Robotic Surgery	AI-augmented robotic systems for high-precision surgical operations.
Tata Medical & Diagnostics	AI HealthTech Collaborations	Collaborative AI innovation with academia for faster, smarter diagnostics.
Medanta	Predictive Analytics in Clinical Decision-Making	AI tools integrated into treatment decisions and diagnostics.
Care Hospitals	Chronic Disease Management	AI algorithms for predicting disease progression and personalized care.

Table 1: Computation of AI focus domains and application for healthcare companies

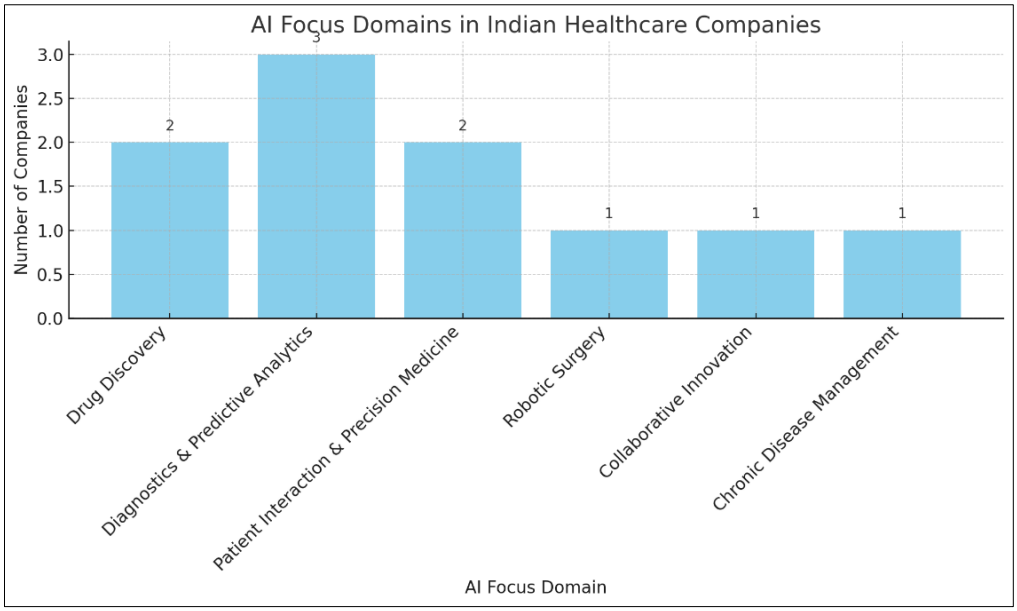

Chart 1: Compiled by researcher

2. Artificial Intelligence utilisation and associated disclosure practices in Indian healthcare and pharmaceutical companies

a. AI utilisation

Companies	Utilisation of AI
Dr. Reddy's Laboratories	• AI/ML in drug discovery, simulation of molecules, prediction of trial outcomes. • 'Digital twin' models for formulation and tech transfer • AI-led initiatives in manufacturing (e.g. smart scheduler, touchless investigation)
Torrent Pharmaceuticals	• Embracing Pharma 4.0 with AI, ML, IoT in predictive maintenance, batch processing. • Digitised Quality Management System. • AI-enabled smart sensors and manufacturing insights
Glenmark Pharmaceuticals	• AI in clinical research, precision medicine and immunology via Ichnos Sciences. • AI explored for personalised oncology therapies. • Focus on data-driven R&D
Alkem Laboratories	• AI used in clinical trials, predictive analytics, and diagnostics. • Focus on biosimilars and CDMO expansion with digital tools
Divi's Laboratories	• Focus on custom synthesis, peptides, and contrast media. • Invests in digital technologies and automation in process R&D

Table 3: Compilation of AI usage from Annual reports

b. AI associated costs or benefits

Healthcare companies are focusing on improving patient engagement through AI-powered chatbots, virtual assistants, and telemedicine solutions. These tools help in providing faster consultations and impr-

oving patient access to healthcare services.

Companies	AI associated costs or benefits
Dr. Reddy's Laboratories	a. R&D: Rs. 27.4 bn (not disaggregated, partially funds for AI work) b. Capex: Rs. 27 bn (includes AI, robotics, sensors) c. US$ 1.75 mn value generated from AI platforms across 40 molecules in FY 2025 d. AI-led recruitment cut vendor cost by approx. 80% annually
Torrent Pharmaceuticals	a. No specific figure for AI costs. b. AI grouped under digital transformation and smart factory upgrades
Glenmark Pharmaceuticals	a. AI costs not disclosed. b. Investment visible in innovation pipeline and biopharma platforms
Alkem Laboratories	a. No AI cost disclosure b. R&D spend of Rs. 5,229 million includes digital enablement but not itemised
Divi's Laboratories	a. No direct mention of AI or machine learning b. Advanced manufacturing included in capex plans

Table 3: Compilation of AI-associated costs or benefits from Annual reports

c. AI application depth v/s disclosure transparency chart.

Company	AI Application Depth	Disclosure Transparency	Impact
Dr. Reddy's Laboratories	High widespread AI in R&D, manufacturing, HR, and commercial operations	Highly quantified benefits (US$1.75M), qualitative use cases, partial cost mapping	Industry leader in AI integration; only company with quantified AI benefits
Torrent Pharmaceuticals	Moderate AI/ML in smart manufacturing and quality control	Moderate Strategic mentions, no cost or value figures	Strong use of Pharma 4.0 tech; lacks financial breakdown
Glenmark Pharmaceuticals	Moderate AI in biopharma innovation, clinical research	Low Strategic focus only; no cost or benefit data	AI mentioned under innovation narrative, not financials
Alkem Laboratories	Moderate AI in diagnostics, biosimilars, CDMO support	Low R&D costs disclosed but not linked to AI	References to AI in R&D and strategy, but no clear use-case detail
Divi's Laboratories	Low Focus on automation and process optimisation	Very Low-No mention of AI or digital platforms	Technology-driven but no evidence of AI use in report
Abbott India	Very Low -No reference to AI technologies	Very Low-No mention in narrative or financials	No visible AI strategy or implementation details

Table 4: Compiled from Annual reports of companies.

The comparative chart of AI maturity versus disclosure transparency reveals notable disparities in how Indian healthcare companies are adopting and reporting Artificial Intelligence (AI). Dr. Reddy's

Laboratories leads with high AI maturity and transparent disclosures, applying AI across R&D, manufacturing, and HR, and quantifying benefits such as US$1.75 million in value creation and 80% cost savings in recruitment. Torrent Pharmaceuticals and Glenmark show moderate AI adoption, primarily in Pharma 4.0 and clinical innovation, but lack detailed financial or outcome-based disclosures. Alkem also reports strategic use of AI, though without specific metrics. In contrast, Divi's Laboratories and Abbott India show minimal AI engagement or disclosure, placing them in the low-maturity, low-transparency quadrant. This variation highlights the uneven pace of digital transformation across the sector. The lack of standardized AI reporting underscores the need for consistent disclosure frameworks, especially as AI becomes a critical factor in healthcare innovation, performance measurement, and ESG integration for listed companies.

Observations

An examination of annual corporate disclosures from selected Indian pharmaceutical companies reveals marked variation in both the extent of Artificial Intelligence adoption and the transparency of related reporting practices. The analysis indicates differences not only in the deployment of Artificial Intelligence across organisational functions but also in how these initiatives are communicated within corporate reports.

Among the companies reviewed, Dr. Reddy's Laboratories demonstrates comparatively advanced integration of Artificial Intelligence across multiple operational domains, including drug discovery and development, manufacturing systems, human resource management, and commercial analytics. The company is notable for reporting measurable outcomes associated with Artificial Intelligence use, including quantified value generation and operational cost reductions. Although explicit expenditure on Artificial Intelligence is not separately disclosed, these initiatives appear to be embedded within broader research and development expenditure and capital investment in digital technologies, reflecting a relatively mature approach to health technology adoption and performance reporting.

In contrast, other pharmaceutical companies such as Torrent Pharmaceuticals, Glenmark Pharmaceuticals, and Alkem Laboratories report selective use of Artificial Intelligence in areas including smart manufacturing, clinical research, and diagnostic support systems. However, these disclosures are largely descriptive and lack detailed information on utilisation levels, cost allocation, or performance outcomes. Artificial Intelligence initiatives in these firms are commonly subsumed under general digital transformation or innovation narratives, limiting their visibility for systematic assessment.

Further, the analysis identifies minimal or absent reporting of Artificial Intelligence adoption in certain companies. Divi's Laboratories, despite its emphasis on advanced manufacturing and process optimisation, does not explicitly reference Artificial Intelligence within its corporate disclosures. Abbott India similarly provides no identifiable information on Artificial Intelligence initiatives. This absence of disclosure suggests either limited adoption or a lack of reporting specificity regarding health information systems and digital technologies.

Overall, the observations highlight a significant gap between the growing strategic importance of Artificial Intelligence in the pharmaceutical sector and the consistency of corporate disclosure practices. From a health technology assessment and corporate governance perspective, the lack of standardised reporting on Artificial Intelligence utilisation, investment, and outcomes constrains meaningful comparison across firms. As Artificial Intelligence continues to influence pharmaceutical innovation and operational efficiency, the development of clearer disclosure guidelines will be critical to improve transparency,

support stakeholder evaluation, and enable a more accurate understanding of the value generated through digital transformation

4. Conclusion

This study examined the adoption of Artificial Intelligence within the Indian healthcare sector by analysing corporate disclosures of selected listed healthcare and pharmaceutical companies. Guided by the objectives of identifying Artificial Intelligence focus domains, reviewing reported application practices, and analysing the utilisation of Artificial Intelligence, the study provides evidence on how digital technologies are being integrated into healthcare delivery and pharmaceutical operations in India.

The findings indicate that Artificial Intelligence is being applied across a wide range of healthcare functions. Healthcare providers are primarily using Artificial Intelligence in diagnostic services, predictive analytics, patient interaction systems, and clinical decision support, reflecting a broader shift towards data-driven and patient-centred care. Pharmaceutical companies, in contrast, are deploying Artificial Intelligence mainly in drug discovery, clinical research, manufacturing processes, and operational efficiency initiatives. These patterns demonstrate that Artificial Intelligence has become an important component of health technology adoption across the healthcare value chain, supporting digital transformation in both clinical and operational contexts.

A key outcome of the analysis is the uneven depth of Artificial Intelligence utilisation and the limited transparency in corporate reporting. Among the companies studied, Dr. Reddy's Laboratories demonstrates relatively advanced Artificial Intelligence integration across research and development, manufacturing, human resource management, and commercial analytics, and is the only firm to disclose quantifiable benefits associated with Artificial Intelligence use. Other companies report selective or moderate Artificial Intelligence adoption but provide minimal information on associated costs, performance outcomes, or value creation. In several cases, Artificial Intelligence initiatives are grouped under broader digital transformation or innovation narratives, limiting their visibility for assessment and comparison.

From a health technology assessment and corporate disclosure perspective, the study highlights a clear gap between the growing use of Artificial Intelligence and the quality of information reported to stakeholders. The absence of consistent and standardised disclosure practices constrains the ability of investors, regulators, and policymakers to evaluate the effectiveness, efficiency, and strategic value of Artificial Intelligence in healthcare. As Artificial Intelligence continues to influence healthcare delivery, pharmaceutical innovation, and organisational performance, improved reporting frameworks will be essential to enhance transparency, support informed decision-making, and strengthen accountability in the context of digital transformation within the Indian healthcare sector.

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