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Study of AI Ecosystem: A Comparison Between FinTech and Healthcare Sector

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Abstract:
AI is playing a pivotal role in present dynamic business scenario. The study of AI Ecosystem: A comparison between FinTech and Healthcare Sector reflect that the Artificial Intelligence (AI) in FinTech demonstrates higher current adoption by acquiring digital payments, automated credit scoring, fraud detection, and entrepreneurial growth, etc. has impacted on Financial Inclusion and risk management. In contrast, Healthcare sector, relatively is in earlier stage of adoption, includes early diagnostics, personalized treatments, drug discovery and robotics surgery, etc.
The comparative study highlights AI as an effective driver of innovation and sustainable development in both sectors.

Key Words: Artificial Intelligence (AI), Financial Technology (FinTech), Healthcare, Regulatory Framework, Machine Learning (ML), AI Ethics, Telemedicine.

Study of AI Ecosystem: A Comparison Between FinTech and Healthcare Sector

Introduction: "The success in creating effective AI could be the greatest
event in the history of our civilization, or the worst."
- Stephen Hawking

In developing economies, financial inclusion and entrepreneurial growth are booming due to the integration of Artificial Intelligence (AI) into Financial Technology (FinTech). AI-Driven FinTech fosters the global financial landscape to undergo radical transformation. These innovations have redefined traditional models of banking, credit access, savings and investments, particularly in the regions where financial inclusion have been remained untouched.
AI enabled technology can provide mobile based services delivering financial inclusion, often at a fraction of the cost of traditional banking. For instance, Digital Payment platforms like M-Pesa in Kenya and Paytm in India.
It tries to imitate the human intelligence by creating computer programs with added advancement. In the last decade, these technological advancements have led to create AI applications globally across sectors like education, entertainment, banking, healthcare, agriculture, Insurance, etc.

"The soul of India lives in its villages" as said by Mahatma Gandhiji, i.e. seventy percent of the Indian population lives in rural areas yet the reach of professional healthcare access is less than thirty percent.
Thus, for achieving sustainable development, AI plays a massive role; in improving data analysis and prediction accuracy helps in reducing human error. On the other hand, it is equally important to have advanced infrastructural development, regulatory cooperation, and ethical AI governance.

Summary of Literature Review

This research highlights that adoption of automation and personalized services of AI in India is need based.

➢ **FinTech:** It mainly focuses on AI credit scoring algorithms, customer service automation, financial inclusion, operational efficiency, and fraud mitigation in financial sector.

1] Hussain M. & Shaziya Zahid: - AI in India's Fintech Industry: Opportunities, Challenges, and Future Outlook (Published in International Journal for Multidisciplinary Research-IJFMR): -

This paper examines the role of AI in India's FinTech industry, analyzing its impacts on market growth, operational efficiency, and financial inclusion, while addressing the regulatory and ethical challenges that need to overcome for sustainable growth.

Presently AI adoption trend in India's FinTech sector is rapidly accelerating. As of 2024: BSFI Sector (Banking, Financial Services, Insurance) leads AI adoption with 68%. This reflect for improving operational efficiency, fraud detection and risk management; the sector's significant reliance is on AI technologies.

Overall, AI adoption in FinTech is at 48%, which suggest there will be steady increase within upcoming few years. This indicates that FinTech companies are recognizing strategic importance of AI specially to enhance their data-driven decision making, predictive analytics and automation.

Key findings of the Literature Review: -

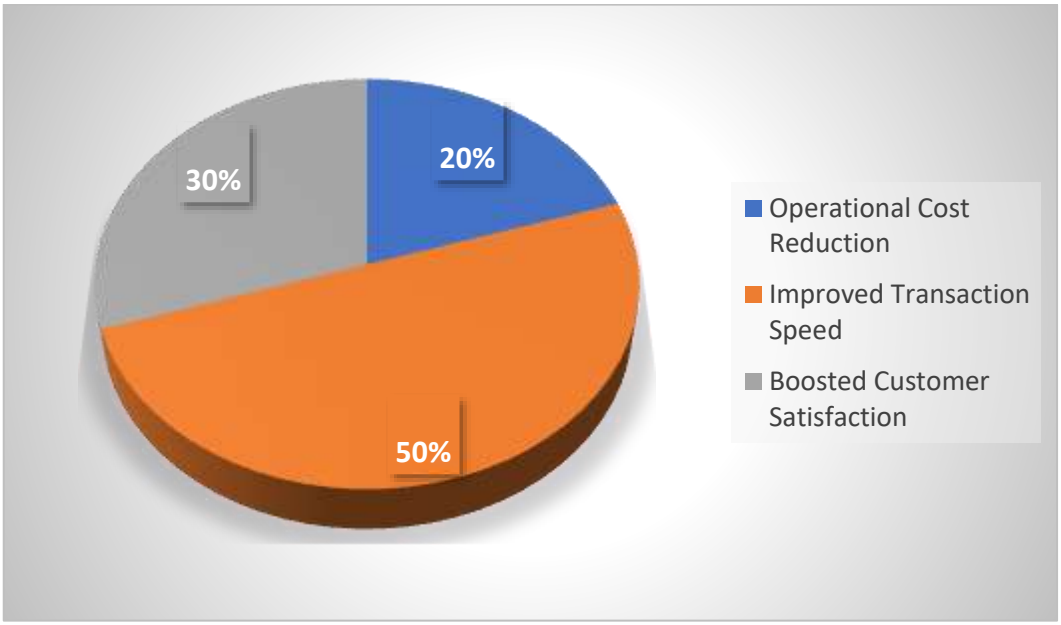
I.**AI's Role in India's FinTech Landscape:** India's FinTech sector is rapidly growing**,** with the support of favorable policies like Digital India and the Pradhan Mantri Jan Dhan Yojana (PMJDY), which have driven financial inclusion especially in rural areas, where access to traditional banking services remains limited.

II.Operational Efficiency and Customer Experience: According to Tracxn, AI's impact on customer service is profound, with 70% of queries now being handled by AI-powered chatbots; whereas, this automation improves response times, cost reduction and enhances customer satisfaction by 30% (Accenture, 2023).

III.AI's Role in Market Growth: India's fintech sector is projected to reach $150 billion by 2025, whereas 50% of FinTech firms using AI, significantly contributing to efficiency and innovation.

Figure 1

AI's Contribution in Efficiency and Innovation



(Source: Accenture, 2023. IJFMR- journal of AI in India's Fintech Industry: Opportunities, Challenges, and Future Outlook**)**

IV.Ethical and regulatory Considerations: Ethical concerns, such as algorithmic bias in credit scoring systems and AI's role in job displacement, need to be addressed to ensure equitable growth. India's regulatory framework for AI is still evolving, and more comprehensive guidelines are needed to ensure responsible AI use in FinTech sector.

Impact on Financial Services: -

i.Digital Payments: AI is playing crucial role in enabling faster and secure digital payment solutions. By detecting real time fraud patterns and financial crimes through Machine Learning Algorithms, which is much faster than traditional methods.

ii.Lending: AI enables quicker loan approval process, helping FinTech firms to reach underserved segments of society.

iii.Fraud Detection and Security: According to McKinsey (2023) AI has revolutionized fraud detection, with a 20-30% reduction in fraud cases.

Challenges: Despite its benefits, there are challenges like data privacy, uncertainty in regulation frameworks, transparency, ethical challenges and AI biases remain key concerns.

The author concludes that though AI offers vast opportunities, its responsible deployment is required to balance between innovation, and consumer trust to ensure fairness and long-term growth.

2] Article: - "Analyzing how recent AI development impact FinTech" by Anjali Raja (Published in INDIAai): -

The author highlights that through Artificial Intelligence (AI), Machine Learning (ML), Big Data, Robo-advisors, Internet of Thing, and Blockchain Technology; FinTech startups are engaged in "disintermediation via innovation".

Unlike traditional financial services, FinTech companies can offer innovative and flexibility strengths to their clients through efficient and responsive processes. Due to increase in suppliers, the Financial Sector has shown potential in implementing technology, mainly AI and ML. Overall, the business models of these financial institutions are soon to be completely digitized due to the pressure rising from FinTech startups and customer demands.

3] Harnessing FinTech and Artificial Intelligence for Financial Inclusion and Entrepreneurial Growth: An Empirical Review by Godwin Emmanuel Oyedokum, Iheanyi Odinakachi Anyahara, Phillip Oyesola Oyedokun

The study reviews the insights, how integration of Artificial Intelligence (AI) into Financial Technology (FinTech) emerged particularly in developing economies as key factor for financial inclusion and entrepreneurial growth.

AI driven FinTech in developing countries, emphasizing the importance of digital literacy, and ethical AI governance.

Key Findings of the Literature Review:

I.Financial Inclusion via AI and FinTech: Integrated AI-FinTech Platforms enabled millions of previously unbanked individuals to access financial system and microloans. Unlike traditional banking services are inaccessible in number of developing areas to the low-income populations due to physical distance, complex documentation process and high transaction costs.

According to GSMA (2020) in India, AI-enabled chatbots and digital KYC (Know Your Customer) technologies are streamlining onboarding processes for rural and semi-literate populations, making formal banking more inclusive.

II.Entrepreneurial Growth through AI-Driven FinTech: AI and FinTech are playing crucial role in supporting entrepreneurial ecosystems. However, AI-Driven FinTech platforms can enhance business efficiency and decision making by offering solutions such as personalized financial planning, predictive financial modelling and automated bookkeeping.

For safeguarding entrepreneurial activity in the digital space AI plays a critical role in fraud detection and regulations.

III.Gender Inclusion: A study by Suri and Jack (2016), M-Pesa increased financial inclusion as well as women's financial independence and household consumption in Kenya.

Ethical, Infrastructural and Regulatory Challenges:

Although AI and FinTech hold transformative potential but their actual impact remains uneven in developing regions. The several challenges are as follows, digital illiteracy, gaps in infrastructure, regulatory inconsistencies, and male dominated credit

scoring algorithms or urban centric datasets are highly disadvantageous for vulnerable section (women, rural residents or informal workers) of the society.

Way Forward: Equitable inclusive FinTech: -

I.Data Governance Frameworks: Policymakers should promote transparent and accountable AI systems. Regulatory authorities should collaborate with institutions to develop ethical AI principles particularly designed for financial services.

II.Foster Regulatory Sandboxes and Innovation Hubs: Countries should adopt regulatory sandboxes under controlled environments for responsible experimentation which helps to balance financial innovation along with risk mitigation.

III.Broadening Entrepreneurship through FinTech: Using FinTech tools in support programs, including e-commerce enablement, digital credit lines and AI powered market intelligence platforms through National Development Plans which directly helps in job creation and sustainable livelihood.

IV.Public Policy: According to UN Women (2021), public policy should incentivize innovation that targets excluded groups, such as women led enterprises, informal workers, and rural businesses.

4] Legal and Regulatory Problems for AI in FinTech in India by Danish Hussain, Mishbah Masood, Sonali Singh (IJFMR-International Journal for Multidisciplinary Research): -

The study of this paper examines the accelerated extend of AI-Driven FinTech sector and delayed in AI regulatory frameworks in India poses hindrance in significant legal, regulatory and ethical abidance.

Therefore, it is need of the hour to address legal regulatory framework in achieving compliance to overcome threats as AI continues to transform India's FinTech sector.

Legal Regulatory Challenges:

I.**Data privacy and Protection:** The practices which violates the users' privacy by customer transaction records and social media profiles, used unauthorized way without the consent of users.

II.**Algorithmic Transparency:** Decision making mechanisms are irrational as AI powered algorithms operates with hidden operational process. During 2022 a large Indian FinTech faced the huge criticism as its AI system rejected number of loan requests to the people having low income. Explanation of the algorithm provided by the company were unclear this proved that there is need of transparency in the process.

III.**Cybersecurity:** Cybercriminals use AI to target financial system through phishing, malware and ransomware. Which bypasses the security protocols as Information Technology Act 2000, fails to provide sufficient protection measures.

IV.**Corporate Liability:** Legal uncertainties resulting in regulatory framework under the Companies Act 2013, which contains no explicit provisions related to AI.

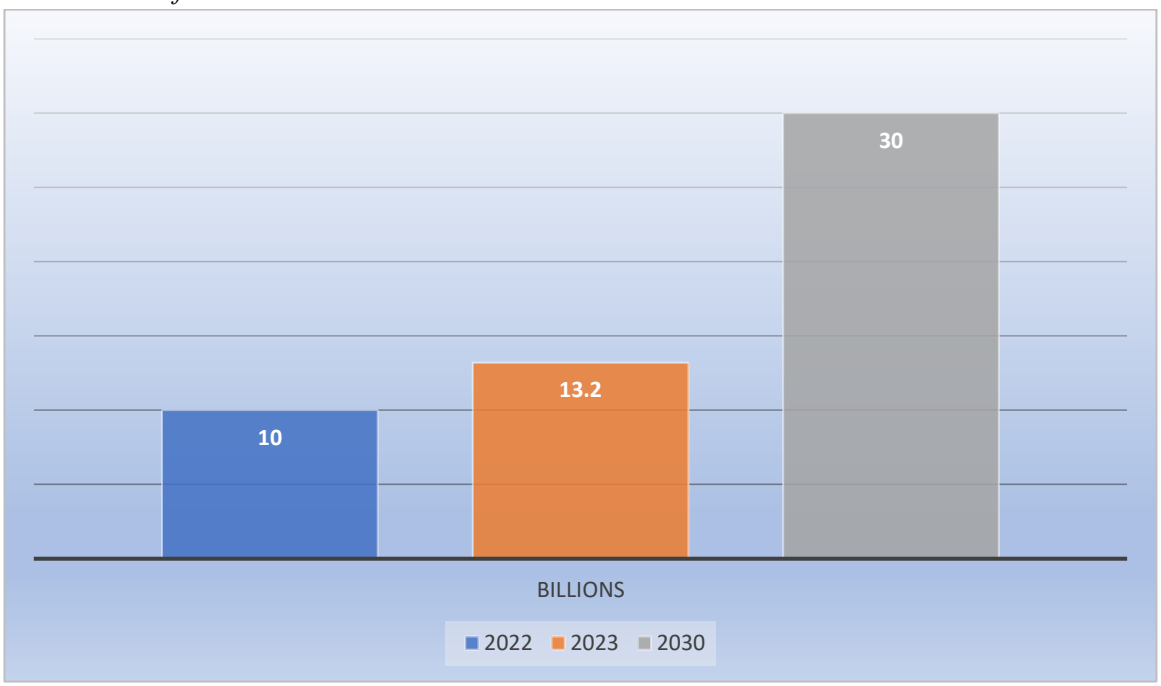
Legal Reforms and Recommendations:

India should incorporate EU AI Act principles in Digital Personal Data Protection Act 2023, to create an AI regulatory framework. To fight against data intrusion and AI based security threats, India requires advanced cybersecurity system, which will build customer trust along with safeguarding financial systems. India should also become an active member of International Platforms which works for ethical AI governance and establishing AI regulatory standards.

- **Healthcare Sector:** The study focuses on key benefits of AI-Driven healthcare sector which include accurate diagnosis, genetic biomarkers, improved clinical trials and data security. While balancing the challenges such as sensitive data privacy and security, interoperability, resource constraints, etc.
- As per India Artificial Intelligence in Healthcare Market Size, Share, Trends and Forecast by Offering, Technology, Application, End User, and Region, 2025-2033 Report of IMARC Group Transforming Ideas into Impact: - The Indian AI-Driven healthcare market size was valued at USD 333.16 Million in 2024, estimated market size will be USD 4,165.26 Million (2033), and exhibiting CAGR of 30.78% (2025-2033).

Figure 2

Growth Rate of India AI in Healthcare



(**Source:** CMI)

1] "Progress of Healthcare Artificial Intelligence in India" by Avik Sarkar and Poorva Singh (The ISB Institute of Data Science-IIDS): -

This research paper gives insights on the application of AI in Indian healthcare sector which mainly focuses on access to quality healthcare, challenges, and insufficient digital infrastructure.

The author identifies six primary areas for AI applications are as follows:

I.**Diagnosis and Detection of Diseases:** It is found that the use of AI in healthcare is beneficial for early detection and preventive measures of the non-communicable diseases.

II.**Effective Treatment of Diseases:** The assistance of AI in surgical advancement and targeted drug delivery provides the enhanced healthcare support to the patient.

III.**Geriatric and Palliative Care:** These are old age and terminal illness issues which cannot be cured entirely but can be assisted by AI tools and nursing robots with monitoring household chores.

IV.**Drug Discovery, Pharmaceutical Research & Development:** It is a continuous process of identifying new compounds that can be develop into effective drugs to treat diseases.

V.**Hospital and Healthcare Ecosystem Management:** With the help of AI equipped infrastructure the detailed history of patient can be stored for fast and effective treatment of the patients, efficient use of resources, and management of the hospital.

VI.**Public Health and Pandemic:** India specific large scale patient datasets are used to check the disease trends and symptoms periodically in the population across different ages and social groups to improve the overall public health.

The use of AI in healthcare promotes and transforms traditional tedious methods to efficient and effective diagnosis which helps in reducing the future burden on the healthcare system and improving the quality of life of citizens.

2] AI Horizons in Indian Healthcare: A Vision for Transformation and Equity by Neelesh Kapoor, S N Sanjana, Shubha B. Davalagi, P S Balu, Soumitra Sethia

This paper quotes the reports of NITI Aayog, AI in healthcare can lead to a threefold increase in the gross domestic product (GDP) of the country by 2035. The report also emphasizes the key role of AI in enhancing preventive care, diagnostics, and treatment outcomes, thereby contributing to the overall health and wellbeing of the population.

Key Application Areas:

I.Diagnostics: The Ayushman Bharat Digital Mission is laying the foundation for the very future of a healthcare revolution. The advent of wearable technologies and virtual care are undergoing a huge transformation.

II.Patient Care: This will not only ensure interoperability across various health systems but also enhance reach to doctors via telemedicine.

III.Administrative: Digi-locker provides secure repository to patients which streamlines the operational aspects and a step towards modernized healthcare management in the digital age.

Challenges:

I.**Data privacy and security**: Maintaining the data with privacy and security of the sensitive patients while complying the laws is a critical concern.

II.**Interoperability:** The integration of AI solutions with complex healthcare systems is complicated for effective adoption.

III.**Resource Constraints:** Insufficient infrastructure expertise and financial resources for the implementation and maintaining AI systems in healthcare is a significant challenge.

The authors suggest, there is need to invest in research to explore potential of AI to build a healthier and more prosperous India.

3] AI-Driven Innovations in the Indian Healthcare System: An Update (2025) by Srivarshan M., and Gokila S.: -

The authors examine AI-Driven innovations which changing the landscape of the Indian healthcare systems by incorporating disease diagnosis, precision treatment and operational efficiency.

The diseases such as Tuberculosis, Diabetic Retinopathy and Cancer can be treated if diagnosed at early stage by AI enabled tools. Even in Rural areas, low-cost AI tools will be helpful to monitor and fight against malnutrition and anemia. The use of Aarogya Setu App during COVID-19 helped in pandemic management and maintaining public health. Likewise, AI can be used for screening the mental health of the underserved youth as well as population. Deep learning algorithms uses can enhance medical image modalities improving speed and accuracy in diagnosis. Furthermore, mobile based AI platforms provide affordable diagnostics without specialist intervention.

Despite various applications, the significant challenges hinder the wide spread adoption due to infrastructure privacy concerns, and absences of regulatory frameworks. Even there is lack of standardized datasets. There is also concern about Ethical principles and practices.

Research Methodology Based on Secondary Data

This study is resultant of Comprehensive Systematic Literature Review. It is based on Secondary data. Through this secondary data analyses, the researcher has identified the important variables, drivers of AI in FinTech & Healthcare.

Limitations: This research paper is based on only secondary data analysis. Study is restricted to only two sectors i.e. FinTech and Healthcare.

Table 1

Comparison between AI Ecosystems

Factors	AI-Driven FinTech	AI-Driven Healthcare
Market Size (2024)	USD 575.30 Million	USD 333.16 Million

Growth Rate	Compound Annual Growth Rate-CAGR (2025-2033) is 20.00%	Exhibiting a CAGR of 30.78% (2025-2033)
Objectives	Privacy & Protection, Safe and Secure Transaction, Risk Management, Cybersecurity, etc.	Diagnosis and Detection, Telemedicine, Targeted Drug Delivery, Patient Data Privacy, etc.
Regulatory Framework: National Level	By RBI, SEBI, IRDAI, DPDPA-2023, IT ACT-2000	By ICMR- Ethical Guidelines, DPDP ACT-2023
Regulatory Framework: Global Level	EU AI Act principles	The EU
Impact on Inclusion	By using alternative data scoring, it enabled credit for "Unbanked", which helped with Financial Inclusion.	Healthcare AI portable devices have helped bring specialist-level diagnostics to rural areas for healthcare inclusion.
Data Type	Structural Data & Transactional Data	Unstructured Data, Clinical Trials Data, Patients History

Note. India Artificial Intelligence in Healthcare Market Size, Share, Trends, and Forecast by Offering, Technology, Application, End User, and Region, 2025-2033, India AI in FinTech Market Size, Share, Trends, and Forecast by Type, Deployment Model, Application, and Region, 2025-2033, PIB-India AI Governance Guidelines [https://static.pib.gov.in /WriteReadData/specificdocs/documents/2025/nov/doc2025115685601.pdf]

Indian AI Startup Scenario:

- **FinTech:** Startups are more inclined towards financial inclusion, Trusted banking Services example UPI, AI Credit Models are opening new Micro-Markets intern it helps in broad based financial inclusion.
- **Healthcare: Healthcare startups are focusing on innovation in incorporation of AI for** Automated Diagnosis, Drug Design and Discovery, Patients Prioritization, Surgical Robotics.

Government Schemes for AI Startups:

I.GENESIS program by MeitY: Gen-Next Support for Innovative Startup Schemes to discover, support, grow, and make successful startups in Tier-II and Tier-III cities.

II.IndiaAI Mission: The mission will help India to be a global leader in AI, consisting seven pillars.

III.Ayushman Bharat Digital Mission by Ministry of Health and Family Welfare: Develop to support the integrated digital health infrastructure of the country.

Suggestions:

I.Standardization: Ensures interoperability across complex AI platforms by developing data formats. Example- Electronic Health Record (HER).

II.Transparent Regulatory Framework: Building public trust by establishing clear legal framework of data privacy and AI ethics.

III.Enhancing Digital Infrastructure: Reduce digital divide and investment should be done in development of advance AI infrastructure.
IV.Development of Skills: To bridge the talent gap promote specialized AI training healthcare professionals and data analysts.

Conclusion:

In the present era, the FinTech sector has achieved substantial integration of AI by overcoming numerous technological and regulatory challenges. This advancement serves as a guiding framework and added advantage for the Healthcare sector, facilitating smoother adoption and accelerating its AI-driven transformation as healthcare holds greater long term transformative potential due to its direct impact on human life and societal wellbeing.
FinTech and Healthcare AI startups are key drivers in nations growth and achieving Sustainable Goals- particularly **SDG 3**- Good Health and Wellbeing, **SDG 8**- Decent Work and Economic Growth, **SDG 11**- Sustainable Cities and Communities, and **SDG 16**- Strong Institutions. Thus, it helps to grow the GDP of India by fostering a progressive future.

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