Customer Perceptions Of Ai-Driven Health Insurance Services And Their Impact On Insurance Purchase Intentions

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Abstract

This paper examines the integration of Artificial Intelligence in health insurance services, focusing on how customer perception and legal/ethical gaps influence insurance buying intent. The study find that while AI offers substantial benefits in operations, risk assessment, and customer service, its widespread adoption is hampered by significant doctrinal and regulatory shortcomings. Specifically, obscurity and explainability in AI formula and techniques creates a "black box" effect that erodes consumer trust. Existing legal frameworks such as India's IT Act & U.S.'s FCRA, were not designed to tackle the unique problems posed by AI, particularly concerning algorithmic bias, data privacy, and liability for errors. These issues create a legal and ethical void that directly impacts customer trust and the willingness to engage with AI-driven services.

The analysis reveals that beyond technical performance, the success of AI in this sector in contingent upon building a trustbased relationship with customers. In order to mitigate perceived risks, insurers must establish strong data governance, guarantee transparency, and keep a person in loop when making critical decisions. The paper concludes that for AI to realize its transformative potential, the industry must proactively develop a new regulatory framework that mandates accountability and fairness. This will not only bridge the existing doctrinal gaps but also build the essential foundation of trust required for the moral and successful blending of AI into the Health insurance industry. **Keywords:** *Artificial Intelligence, IT Act, 2000, GDPR, Health Insurance, Customer*

INTRODUCTION: The AI revolution in Health Insurance and doctrinal gaps

The growing impact of AI and its utilization in the administration of medical coverage by insurance industry space is causing the industry to undergo a seismic shift, pushing the sector away from its labor-intensive origins toward a more streamlined, data-oriented future.[1] This technological transformation is revolutionizing business operations, from underwriting and claims to customer interfaces. AI-powered applications and virtual assistants are automating simple processes while paving the way for deeply personalized consumer experiences.[2]

For example, AI rules and formulas can use extensive wealth of information, such as patient dossier, lifestyle readings, and biometric data from wearables, to generate more precise risk analysis and tailored health plans.[3] This capability not only allows for premium adjustments but also supports a forward-thinking to reducing health risks. In addition, AI-based 'automated responder' & 'digital assistants' are enhancing customer experiences by offering immediate, around the clock support for inquiries, policy selection, and claims.[4] In

[1] Rajeev Dutt, "Chapter-11 The impact of artificial intelligence on healthcare insurances" *Artificial Intelligence in Healthcare* 271-293 (2020)

[2] IBM, "From underwriting to claims management, artificial intelligence will transform the insurance industry" (Sep. 13, 2021)

[3] Seema Yelne, Minakshi Chaudhary et.al., "Harnessing the Power of AI: A Comprehensive Preview of its Impact and Challenges in Nursing Science and Healthcare" 15(11) *Cureus* (2023)

[4] Prathap Gokul, Dynamic Pricing Gives Insurers A Competitive Edge (2024) *available at*: Dynamic Pricing Gives Insurers a Competitive Edge | Insurance Thought Leadership

claims processing, AI's quick validation of documents and ability to flag possible scam is one of the major benefits, helping to reduce administrative friction and wait times.

However, despite the apparent potential and market impetus of 'artificial intelligence' in Health insurance, its widespread use is limited by substantial doctrinal and regulatory gaps. These legal and ethical voids create an enormous amount of uncertainty that could erode consumer trust.[1]

One of the most pressing issues is the deficiency in existing data privacy and security laws and regulations. Current regulations, like GDPR or HIPPA, were not designed to keep up with the huge amount of data and its complexities that the system handles.[2] The risks of de-anonymization of de-identified data and data misuse prompt challenging questions about responsibility for breaches and the very nature of informed consent, particularly during a period when users themselves could not fully comprehend the range of ways in which the system uses data.[3]

A related and important gap is the one concerning algorithmic bias and fairness. AI models are conditioned on old chronological data, which may inadvertently perpetuate and exacerbate existing disparities in healthcare. For instance, an algorithm may mirror previous biased actions, which in turn leads to unfair risk assessments and premium calculations.[4] Because traditional anti-discrimination laws only apply in instances of purposeful discrimination, they are not equipped to process the more insidious (and yet very real) indirect harm caused by AI. This presents a legal Catch-22 where liability is concerned: Who is liable for such disparate impacts – the developer, the insurer, or both?[5]

Finally, there is a scarcity of settled legal principles regarding liability and responsibility in the event that an AI system was to malfunction. It is still unclear who is legally liable when harm is caused due to an AIgenerated decision, such as a diagnostic recommendation or a treatment plan. In light of the vast majority of well-trained and high-performing 'artificial intelligence systems' are "black boxes", making it difficult for anyone to understand why they made a particular decision, further complicates the attribution of blame. [6]

Without a strong legal foundation to tackle these problems, there is a very real chance that insurers could be deterred from providing coverage for these innovations. This also gives rise to general distrust, which could stymie this game-changing technology.[7] Therefore, for a success and harmonious amalgamation of AI into the health insurance industry, these critical doctrinal and regulatory shortcomings must be managed proactively and purposefully.

Conceptualizing Customer Perception and Buying intents in the Environment Of AI-Driven Services The implementation of AI in medi-care insurance is critically dependent on customer perception, which directly influences their purchase intentions. While the 'Technology Acceptance Model' (TAM) provides a foundational understanding through 'perceived usefulness' (PU) & 'perceived ease of use' (PEOU), a more comprehensive analysis requires acknowledging additional factors like trust and perceived risk.[8] These are

[1] Brajesh Singh, "How artificial intelligence redefining the future of diagnosis" *The Hindustan Times* Aug. 28, 2025

[2] Sari Nur Indahty Purnamaningsih, Joko Ismono, et.al., "The Challenges of Data Privacy Laws in the Age of Big Data Balancing Secuirty, Privacy, and Innovation" *Journal of Social Science* (2024)

[3] Raphael Chevrier, Vasiliki Foufi et.al., "Use and Understanding of Anonymization and De-Identification in the Biomedical Literature: Scoping Review" 21(5) *J Med Internet Res.* (2019)

[4] Tommy Fred, "Bias and fairness in AI Algorithms" *ResearchGate* (2025)

[5] Admin, "The anti-discrimination law the drawbacks of traditional jurisdiction" *Legal Vidhiya* (2023)

[6] Rohit Chaudhary, "AI and accountability in India: Constitutional concerns, legal liability and the impact of autonomous technologies on fundamental rights" 13(4) *International Journal of Creative Research Thoughts* (2025)

[7] Awneesh Kumar, "Legal Reforms and Access to Justice: Addressing Judiciary" *LiveLaw* (2025)

[8] Qingxiong Ma & Liping Liu, "The Technology Acceptance Model" *ResearchGate* (2005)

especially significant in a sector that handles sensitive personal health data. The success of AI hinges on its ability to not only be efficient but also should be transparent, secure, and trustworthy.[9]

Beyond the basic framework of TAM, trust plays a crucial part in influencing customer acceptance. Here, trust consists of two components: first in the AI systems and second in the insurers as a service provider. For the system, customers need to trust that its reliability, security, and accuracy in all its functions, from generating quotes to processing claims.[10] Any sign of bias or data exposure can seriously threaten this trust. Meanwhile, the customers must also be confident that the insurers who has employed AI in a morally responsible and ethical manner, guaranteeing data privacy. The absence of explain-ability in many AI algorithms, which means the reasons for a decision cannot be understood, can be major stumbling block to establishing trust.[11] This opacity can affect the feelings of helplessness, especially when a system's decision affects a customer's bottom line.

The link between a customer's perception and their buying intention is not a simple cause and effect relationship; it's strongly moderated by perceived risk. While a customer might embrace an AI service that is both useful and simple to use, their willingness to adopt more AI-driven services can be reduced by heightened concerns about data breaches, inaccurate information, and algorithmic discrimination.[12] It's a cognitive tradeoff: the benefits of convenience and efficiency are weighed against the risk of what might go wrong. Therefore, insurers must actively work to lower this perceived risk by providing strong assurances, explaining relevant policies, and offering transparent mechanisms for human interventions when a customer disagrees with an AI's decision.[13]

Another crucial factor is the emotional and relational repercussion of AI. While AI can handle menial tasks in seconds, it can also dehumanize customer service. Health insurance is an incredibly personal subject that frequently deals with challenging and private health conditions. A client who has just received devastating news may not want to talk to a chatbot. The challenge for insurers is to find the ideal balance: leveraging AI to make operations more efficient while retaining an empathetic, human touch is essential during vulnerable times. A blended model, in which AI deals with basic questions and seamlessly transfers more complex or sensitive matters to a person, may hold the crucial point to maintaining positive customer perceptions.[14]

Explainability and openness in AI systems are also crucial for gaining and retaining customer trust. When an artificial intelligence is presented with making a major decision, such as rejecting a claim or increasing a premium, both the customer and the company need to understand why the AI made that decision. Simply saying "the AI decided this" is not a sufficient explanation.[15] Developing systems which can offer a straightforward explanation for the AI's output will be challenge for insurers. This honesty reduces perceived risk and also builds trust and aligns with evolving regulations that are beginning to require the explainability of 'artificial intelligence systems' in high-stakes industries.[16]

[9] Nan Liu & Shiyong Chen, "The Protection Mechanism of Personal Health Information in the Digital Economy Environment" *J Environ Public Health* (2022)

[10] Kewen Wu, Yuxiang Zhao, et.al., "A meta-analysis of the impact of trust on technology acceptance model: Investigation of moderating influence of subject and context type" 31(6) *International Journal of Information Management* 527-581 (2011)

[11] Joel Paul, "Privacy and data security concerns in AI" *ResearchGate* (2024)

[12] Amit Dangi, Chand P. Saini et.al., "Customer perception, purchase intention and buying decision for branded products: measuring the role of price discounts" 20(1) *Journal of Revenue and Pricing Management* 194-203 (2021)

[13] Nicolas Spatola, "The efficiency-accountability tradeoff in AI integration: Effects on human performance and over-reliance" 2(2) *Computers in Human Behavior: Artificial Humans* (2024)

[14] Marc Jacobs, "AI Revolution in Insurance: Opportunities and Legal Pitfalls" *Insurance Journal* (2024)

[15] McKinsey & Company, "When can AI make good decisions? The rise of AI corporate citizens" (2025)

[16] Nagadivya Balasubramaniam, Marja Kauppinen, et.al., "Transparency and explainability of AI systems: From ethical guidelines to requirements" 159 *Information and Software Technology* (2023)

In summary, for AI to be successful in health insurance, a holistic approach is needed that goes far beyond just its technical feasibility. Insurers must focus on creating a favorable perception in the minds of customers by analyzing their needs and concerns from multiple perspectives. This includes not only demonstrating the AI's value and usability but also building but also building trust by ensuring data protection & transparency, addressing perceived risks, and emphasizing the human aspect of the service model. By proactively considering these factors, insurers can realize the transformation promise of AI while gaining customer buy-in and trust.
Legal & Ethical Considerations: The Doctrinal Challenge of Algorithms Transparency and Fairness The absence of honesty and fairness in AI algorithms presents a significant legal & moral hurdle to AI adoption in health insurance. This issue directly affects buyer's trust and purchase intentions. Customers are

unlikely to buy a policy from a service where key decisions, like premium pricing or claim denials, are made by an opaque "black box" system without a clear, understandable rationale. This undermines fundamental legal principles of due process and fairness, creating a perception of arbitrariness that erodes consumer confidence.[17]

The legal framework in both India and other countries are struggling to keep place with AI's rapid advancements. In our country, the 'Information Technology Act, 2000', along with its amendments and rules, focuses primarily on data protection and cybersecurity. Section 43A of the IT Act[18] makes a company liable for compensation if it's negligent in securing "sensitive personal data". However, the law does not address the specific problems of algorithmic honesty or accountability for AI decisions. The newer 'Digital Personal Data Protection Act, 2023' is a step forward, but it also lacks specific that mandate algorithmic explainability. While it establishes rights for data subjects, it doesn't explicitly grant a 'right to an explanation' for an automated decision itself.

Internationally, the legal landscape is more developed but still evolving. The 'European Union's General Data Protection Regulation' (GDPR) gives a "right to explanation" through Article 22,[19] which states that any person has the right not to be subject to a decision based solely on automated processing. It also requires data controllers to provide "meaningful information about the logic involved" in such automated decisions under Article 13[20], 14[21], and 15[22]. In the United States, existing laws like the 'Fair Credit Reporting Act (FCRA)', under Section 609[23][24], require consumer reporting agencies to provide consumers with all information in their file. While the FCRA has been used to challenge biased credit-scoring algorithms, it was not written with systems in mind, and its application to complex health risk assessments remains legally uncertain.

Landmark cases, though few, highlight the legal & moral dilemmas posed by AI. In United States, Loomis vs. Wisconsin[28] saw a defendant challenge the application of a proprietary AI algorithm (COMPAS[25]) for sentencing, arguing its opacity violated his right to due process. The Wisconsin Apex Court upheld the tool's use but emphasized that it should only be an aid for human decision-making, not a final determinant. This case shows the judiciary's struggle to balance technological efficiency with the constitutional right to a fair trial.[26]

[17] Bharath N., Ravichandran S., "An Examination of Influencing Factors In Insurance Policy Purchase Decisions: A Literature Review" 12(11) *International Journal of Creative Research Thoughts* (2024)
[18] The Information Technology Act, 2000, s. 43A
[19] General Data Protection Regulation, art. 22
[20] Ibid. art. 13
[21] Ibid. art. 14
[22] Ibid. art. 15
[23] Fair Credit Reporting Act, 2025 s. 609
[24] N.W. 2d 749
[25] Correctional Offender Management Profiling for Alternative Sanctions
[26] State v. Loomis 881 N.W. 2d 749 wis. 2016

In India, while there is no direct AI-related landmark case, the Supreme Court's verdict in Justice K.S. Puttaswamy case[27] provides a strong constitutional basis for future challenges. The judiciary declared the right established a three-part test for any government action that intrude upon privacy: it must be legal, serve a legitimate state aim, and be proportional. This principle could also question the AI systems that is ambiguous and obscure, as their use of personal information could violate a person's privacy without meeting the proportionality test. The case also emphasized informational privacy, which is directly applicable to the use of personal data by algorithmic intelligence in health insurance.[28]

The ethical challenges are just as daunting. A key concern is algorithmic bias, where AI models trained on old and past data inadvertently perpetuate societal inequities. For example, an AI might use demographic data to infer higher health risks, unfairly penalizing marginalized communities that leads to prejudiced

conclusions in premium pricing or policy coverage.[29] This not only creates an ethical dilemma but also directly impacts consumer behavior. When customers perceive that an AI system, is unfair and biased, their trust is broken, making them unlikely to buy a policy from that insurer.[30] Consequently, addressing these doctrinal gaps through specific legislation and judicial interpretation is important for building the trust required for moral & successful blending of system intelligence into the health insurance industry.

Recommendations for a robust Legal & Regulatory regime

1. **Establish a specific legal regime for AI**: Laws currently on books such as India's IT Act, 2000 or the U.S.'s FCRA were not written to cover the intricacies of AI in meaningful ways, creating large holes in regulation as it pertains to both algorithmic fairness & accountability. Laws should made that are clear, honest and accountable for AI systems in the most high-stakes domains like health insurance.[31]
2. **Mandate algorithms honest, clear and explainable**: Regulatory standards should mandate that insurers disclose in "meaningful information about the logic involved" in automated decisions who, like Europe's GDPR, are entitled to know how or why their premium or claim was influenced by an AI. This builds trust with consumers and respects due process.[32]
3. **Enforce independent audits for bias**: Algorithms should be audited on a regular basis by a third party for bias against marginalized communities or other protected groups. This could help to make sure AI models do not reproduce the existing societal injustices in health risk calculations and pricing.[33]
4. **Implement a human-in-the-loop system**: Decisions of a financial or legal consequences to a customer made automatically, must be monitored by a person. AI is a tool to assist humans in making the final outcome, not to make the outcome, as in cases such as Loomis v. Wisconsin.[34]
5. **Strengthen data privacy and governance**: Because AI is built on enormous amounts of information of patient, it is obvious that regulations require robust privacy and cybersecurity protections, like those found in HIPPA and GDPR, from the outset in the programming of the system.[39]

[27] (2017) 10 SCC 1

[28] K.S. Puttaswamy v. Union of India (2017) 10 SCC 1

[29] Mattew G. Hanna, Liron Pantanowitz, et.al., " Ethical and Bias Consideration in Artificial Intelligence/Machine Learning" 38(3) *Modern Pathology* (2025)

[30] Lubna Luxmi Dhirani, Noorain Mukhtiar et.al., "Ethical Dilemmas and Privacy Issues in Emerging Technologies: A Review" 23(3) *Sensors* (2023)

[31] Carrie Stetler, "Al algorithms used in healthcare can perpetuate bias" *Rutgers Newark* Nov. 14, 2024

[32] General Data Protection Regulation, art. 22

[33] Vusumzi Funda, "A systematic review of algorithms auditing processes to assess bias and risks in AI systems" 9(2) *Journal of Infrastructure Policy and Development* (2025)

[34] Rebecca Andrew & Rakan Abdullah Alwabel, "Accountability in AI: Who takes responsibility for AI decisions? *ResearchGate* (2024)

[39] John Olusegun & Godwin Olaoye, "Ensuring Data Privacy and Security in Ai-Driven Healthcare Systems" *ResearchGate* (2025)

6. **Require continuous monitoring of AI models**: AI models should be monitored for new bias and unequal performance across demographics once they are deployed. There should be the possibility for feedback to insure appropriate adjustments and clarifications.[35]

7. **Promote interdisciplinary collaboration**: Patrolling against AI's ethical risk ensures all sides play fair policymakers, lawyers, data scientists, medical practitioners, and patient advocates should all collaborate on establishing comprehensive guidelines, criteria & benchmark for the ethical application of AI. So that regulations that are implemented are possible both scientifically & is ethically valid.[36]

8. **Increase patient knowledge and informed consent**: Customers need clear, simple explanations of how their data is being employed by systems and how that could influence the final outcome about their policy. This gives them the right to decide and sometimes involve the possibility of opting-out of AI-driven operations.

9. **Define clear liability and accountability frameworks**: There needs to be a legal architecture which elucidates the responsibilities and duties of AI developers, insurers and other actors in cases of AI-conducted harm or error.[37]

10. **Adopt a risk-based regulatory approach**: Like within the EU's AI Act, a regulatory system should categorize AI systems founded on risk grade, subjecting more stringent requirements to computer applications that are of high-risk, such as premium pricing and claim denials.[43]

CONCLUSION: Towards a trust-based future for AI In Health Insurance

Incorporation of Artificial Intelligence in Health insurance, is difficult but promising undertaking. As transformative as Artificial Intelligence is in everything from operations and custom risk assessment to customer service the fruitfulness of the technology will not depend solely on its power of implementation. Rather, its success relies on how the industry can maintain a careful balancing act amidst deeply rooted legal & moral doctrinal gaps. What the examination of customer perception shows us is a fundamental truth: when trust is lost, the perceived advantages of AI are outweighed by the hazards of data misuse, algorithmic bias, and an absence of transparent outcome. The "black box" character of AI, which erodes fundamental tenets of due process and fairness, is the single most important impediment to consumer adoption at scale.

This non-transparency and non-explainability is the issue that leads to the losing of confidence and the making of a legal no-man's land. Existing legal structures, both in India and all-around the globe, were not designed to regulate an application of scientific knowledge that has the ability to make life-altering decisions without a valid, human-explicable reason. Groundbreaking cases such as Loomis v. Wisconsin and legal principles like the 'right to privacy', as recognized by the Supreme Court of our country in Justice K.S. Puttaswamy v. UOI, lend a constitutional base for questioning existing practices, but do not present an obvious, perspective roadmap. The ethical dimension, including but not limited to algorithmic bias, adds an additional layer. When AI systems unintentionally perpetuate historical disparities in medicine, that does not just pose an ethical dilemma; it drives away customers who believe they have been unfairly singled out or discriminated against.

[35] Rajiv Rajkumar Bathija, "AI Bias: Understanding, Detecting, and Reducing Bias in Machine Learning Models" *Medium* Nov. 27, 2024

[36] Israel Creleanor Mulaudzi, "Ensuring Ethical Integrity in Artificial Intelligence Challlenges, Strategies, and Recommendations for Transparent, Accountable, and Fair AI Systems" 9(11) *International Journal of Novel Research in Engineering & Pharmaceutical Sciences* (2024)

[37] Thanush S., "An analysis of the liability of artificial intelligence and its legislation" 2(2) *Indian Journal of Integrated Research in Law*

[43] The Artificial Intelligence Act, art. 6

Progress can only be made through an integrated, proactive approach. We require new legal & regulatory regime that are specifically designed for AI, that demand transparent, explainable, & accountable system. These would include mandates for independent audits to prevent bias, the need of clear accountability for harms caused by AI, and the codification of a "human-in-the-loop" approach, in which human oversight is a primary check on high-stakes decision-making. Insurers also have work to do to repair the emotional and relationship-oriented part of their service. While AI can handle the everyday, customers still need humans when they face difficult aspects of their journey towards medical well-being. A hybrid model that capitalizes on AI's efficiency, but is not insulated from human interaction or empathy, will probably work best. In the end, the future of AI in Health insurance is a trust-based future. For this revolutionary system to reach its maximum potential, it has to be seen not as a cold, opaque, and arbitrary system, but as a fair, transparent, secure partner. By intentionally filling in these intellectual voids in law and ethics, the industry will find a tether it can use to anchor the trust that can catalyze consumer buy-in and usher in effectively, fair, and consumer-focused environment for health insurance. This is a formidable challenge, but the opportunity to form a fairer and more humane system is even greater.