

# An Exploratory Study On The Acceptability of Artificial Intelligence (AI) in Healthcare in India

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**Abstract**—Purpose- Artificial intelligence (AI) is growing at an exponential rate in healthcare, and a variety of applications have been created to help solve some of the biggest challenges facing health organizations. Some of these applications include artificial intelligence in diagnostics and treatment planning, while others are designed to improve communication and collaboration between health professionals. Virtual assistants that are powered by AI in healthcare applications can help people to live healthier lives, learn more about topics they're interested in, and change their behavior if needed. Artificial intelligence (AI) is a software that emulates human psychological development. This is being done through the use of healthcare information and advanced analytics techniques. This is having a major impact on healthcare, as it allows for better care for patients. Artificial intelligence (AI) is used to help doctors make better predictions about the health of patients who are having surgeries. This helps to reduce the amount of time needed for them to make a decision about what to do next. This information is used to improve the quality of care for patients. This includes techniques like natural language processing for unstructured data, current deep learning, and machine learning algorithms for structured data, like support vector machines and neural networks. AI is used for illnesses like cardiology, neurology, and cancer. Health authorities need to be aware of the current state of AI technologies and the potential applications they could be used for in the healthcare industry. This would allow for better value-based care to be achieved.

**Design/Methodology-** For the research work, five cities were chosen, Delhi, Mumbai, Kolkata, Chennai, and Hyderabad. These cities were selected as a study focus primarily because these cities attract both international and local visitors because of their highly qualified doctors and excellent medical facilities that use AI technology. These cities are home to top-notch healthcare facilities, super-specialty hospitals, and research and diagnostic centers, making them the fastest-growing locations for receiving medical care.

In order to conduct this research study, structured questionnaires were used. The data was gathered using the convenience sampling method. The sample size for the data collection was 500, and it included men and women from a range of age groups, economic levels, and occupational backgrounds.

**Findings -** From the study, four factors emerged which have been labelled as “Perceived awareness”, “Perceived accuracy”, “Anonymity”, and “Convenience”. Furthermore, it has been found that factors “Perceived awareness”, “Perceived accuracy” and “Convenience” have a significant influence on Consumer Trust. This study examines the acceptability, potential benefits, and challenges of using artificial intelligence

(AI) in healthcare, as well as the potential implications on the healthcare system as a whole.

**Keywords** — *Artificial Intelligence, Healthcare Service, Chatbot, Convenience*

## I. INTRODUCTION

Artificial intelligence (AI) is described as machine intelligence as opposed to the intelligence of individuals. [14]. Artificial intelligence refers to any agent or piece of technology which can reconstruct human behavior in educating, reasoning, and decision-making by observing and understanding its environment and implementing the measures required to optimize its possibilities of success. AI and associated technologies are becoming more popular in business and society [8]. It is bringing a radical transformation to healthcare because of its ability to harness the power of big data. An AI system extracts relevant information from an extensive clinical setting to assist in the development of real-time inference for potential risk detection and health diagnosis [16]. And enhance evidence-based clinical decision-making [5], and deliver value-based care that can be utilized to enhance the efficiency, safety, and access of health services spurred by increased accessibility of healthcare data and the speedy proliferation of analytics tools [10]. Supporting the digital transformation of healthcare is prompting a public dialogue over why AI will potentially substitute healthcare professionals [15]. We suspect that robots, will not surpass medical professionals in the coming years [11]. AI will enhance the effectiveness of healthcare provision by facilitating the lives of patient practitioners, and nursing personnel by undertaking jobs that would generally be performed by individuals, with less effort and for a significantly lower price [4].

Artificial Intelligence can support practitioners in making optimal clinical judgments and potentially replace verdicts in certain areas of healthcare [6]. That enables healthcare systems to deliver more effective treatment to more patients and helps doctors improve the workflow of healthcare practitioners enabling them to devote greater effort to delivering personal attention to patients and reducing burnout by taking human judgment into account in specific healthcare areas, including radiography, and by making better clinical judgments overall and minimizing the unavoidable diagnostic and treatment blunders that occur in human clinical practice [19].

The feasibility, possible advantages, and difficulties of using artificial intelligence (AI) in healthcare are examined in this paper, along with any potential effects on the healthcare system as a whole. The goal of healthcare is to become more interactive, anticipatory, customized, and proactive.

## II. REVIEW OF LITERATURE

Recently, there have been a lot of advances in data science and artificial intelligence. There's a new phase of AI that's different from earlier ones, but research in artificial intelligence for a variety of applications has been ongoing for a few decades. This is because recent AI applications and technologies, like healthcare, are more efficient because of the way they use computers, have a lot of data, and are populated by a large number of skilled people [12].

There is general agreement that artificial intelligence (AI) tools will help to improve human labor in healthcare settings, rather than replacing healthcare professionals. Healthcare workers may benefit from AI's ability to assist with a range of activities, from operational processes to hospital records and patient contact. Specialized services like image processing, medical equipment management, and patient monitoring may be especially well-suited to AI [2]. There are many different opinions about the best ways to use artificial intelligence (AI) in the healthcare industry. The most crucial sectors, according to Forbes, would be administrative processes, image processing, telerobotics, chatbots, and making decisions about patient care [13].

AI is desperately needed in the medical field to diagnose diseases. A number of fascinating advancements in this area have made it possible for medical professionals to detect a variety of ailments earlier and with greater accuracy [18].

There are many potentials uses for artificial intelligence (AI) in diagnostics. AI can help doctors diagnose colorectal cancer more quickly and with better accuracy. This can help improve a patient's chances of surviving the disease. Additionally, various limits of ML in diagnostics have been discovered by scientists and they've made recommendations on how to lessen the impact of these downsides [7]. As a result, AI still has a lot of potential in diagnostics.

Natural language processing (NLP) is the study of how computers can understand and respond to human language. This can involve things like chatbots, which are computer programs that can talk to people like a human [9]. Healthcare chatbots may help make doctor-patient and clinic-patient interactions more accessible, help people keep track of their medication adherence, or help people have teleconsultations with doctors. This technology is still in its early stages of development, but there are many potential benefits to be had [3]. The chatbot technology helps you do things like surveys about your health, create reminders for you, communicate with healthcare teams, schedule appointments, access and analyze health data, or translate diagnostic patterns based

on what you know about your health [1]. In spite of the fact that the majority of doctors in a US survey of 100 doctors thought chatbots might help with making doctor's appointments, finding medical centers, and delivering information about medications, more than 70percent also said they couldn't cater to all patients' requirements, displayed emotion and may put patients at risk owing to improper self-diagnosis [17].

## III. OBJECTIVE OF THE STUDY

To identify the factors influencing Consumer Trust toward Artificial Intelligence in healthcare.

## IV. FIGURES AND TABLES

### *KMO and Bartlett's Test*

Kaiser-Meyer-Olkin (KMO) measurements of sample adequacy have a scale from 0 to 1, with values closer to 1.0 being considered ideal and values less than 0.5 being considered inadequate. A Kaiser – Meyer – Olkin value of 0.887 was obtained from our findings. This indicates that there is a substantial quantity of data overlapping or that the variables have a high coefficient of determination. As a result, factor analysis is possible. The results of Bartlett's Test of Sphericity is substantial since the significant value is less than 0.05. (0.000). These tests provide the minimum conditions that must be met before doing factor analysis when taken into consideration.

### *Total Variance Explained*

Each component represents a quality score, known as an eigenvalue underneath the title 'Total' of 'Initial Eigenvalues.' Parameters having an eigenvalue higher than one are selected for deeper examination as they solely reflect actual value.

Factor 1 which has been classified as **“Perceived awareness”** reports 38.748% of the total variances.

Factor 2 which has been classified as **“Anonymity”** reports 16.031% of the total variances.

Factor 3 which has been classified as **“Convenience”** reports 6.515% of the total variances.

Factor 4 which has been classified as **“Perceived accuracy”** reports 5.400% of the total variances.

### Rotated Component Matrix<sup>a</sup>

From Rotated Component Matrix, we have labeled factors:

### *Factor 1: Perceived Awareness*

The Variables associated with the factors are as followed.

**V1:** AI is being used in healthcare in the development of predictive models- (.785), **V2:** AI has the potential to enhance patient outcomes while lowering costs and boosting productivity- (.769), **V3:** Healthcare professionals make better decisions about patient care by using artificial intelligence to develop personalized treatment plans- (.753), **V4:** AI is being used in healthcare is in medical imaging- (.721), **V5:** An artificial intelligence algorithm can analyze medical images to detect potential health issues- (.713), **V6:** The complexity of AI technology and the jargon used to describe it can be

a barrier to its widespread adoption in healthcare- (.690), **V7**: Many people don't know what AI terms mean, and it can be difficult to understand how they're being used in healthcare-(.644), **V8**: There is a potential for AI to reinforce existing biases in healthcare, which could lead to increased inequality-(.641), **V9**: AI algorithms are merely as good as the training data they are given, and if the training data is prejudiced or uneven, the algorithms may end up confirming those prejudices- (.637).

*Factor 2: Anonymity*

The Variables associated with the factors are as followed.

**V10**: AI can be used in healthcare while protecting the privacy of patients by anonymizing data-(.872), **V11**: The researchers and healthcare professionals are working together to use AI without compromising the privacy of patients-(.816), **V12**: One way to protect patient anonymity is by using secure data transmission and storage practices- (.814), **V13**: Healthcare providers and researchers can use secure data transfer protocols and encrypted storage to protect patient data from unauthorized access-(.813), **V14**: AI is used in healthcare to help patients, but it is important to make sure that their privacy is protected-(.728), **V15**: Healthcare providers can use artificial intelligence (AI) to help them diagnose and treat patients while maintaining their privacy-(.699).

*Factor 3: Convenience*

The Variables associated with the factors are as followed.

**V16**: The automation of repetitive tasks, faster medical diagnosis and treatment, and more individualized care are all possible with AI-(.795), **V17**: Chatbots and virtual assistants can provide access to medical advice and support, such as symptom checking and medication reminders, 24/7-(.726), **V18**: AI can be used to monitor patients remotely and provide real-time updates to healthcare professionals-(.672), **V19**: AI can be used to analyze patient data and predict potential health risks or complications-(.666).

*Factor 4: Perceived Accuracy*

The Variables associated with the factors are as followed.

**V20**: AI algorithms can often perform at a level comparable to, or even better than, human experts-(.833), **V21**: AI algorithms are properly developed and trained to avoid biases or inaccuracies-(.784), **V22**: AI has the potential to improve the accuracy of healthcare diagnosis and treatment by providing training and oversight-(.665).

H0: There is no relationship between Consumer Trust and the factors, “Perceived Awareness”, “Anonymity”, “Convenience”, and “Perceived Accuracy”.

H1: There is a relationship between Consumer Trust and the factors, “Perceived Awareness”, “Anonymity”, “Convenience”, and “Perceived Accuracy”.

TABLE 1: MODEL SUMMARY

Model	R	R Square	Adjusted R	Std. Error of
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			Square	the Estimate
1	.82 <sup>a</sup>	.66	.659	.6910

Predictors: (Constant), Perceived Accuracy, Convenience, Anonymity, Perceived Awareness

The above Table 1 shows that the R-square value is 0.66 indicating 66% of the total variation in Consumer Trust which can throw light by the factors, “Perceived Awareness”, “Anonymity”, “Convenience”, and “Perceived Accuracy”.

TABLE 2. ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	199.148	4	49.787	104.275	.000 <sup>b</sup>
1	Residual	400.266	495	.477		
	Total	599.414	499			

Dependent Variable: Consumer Trust

Predictors: (Constant), Perceived Accuracy, Convenience, Anonymity, Perceived Awareness

Table 2 shows that the p-value is less than 5% which came as 0.000 in the results which means that the model is acceptable.

TABLE 3. COEFFICIENTS<sup>a</sup>

Model		Standardized Coefficients	t	Sig.
		Beta		
	(Constant)		69.188	.000
	Perceived Awareness	.785	19.651	.000
1	Anonymity	.055	1.389	.166
	Convenience	.140	3.511	.001
	Perceived Accuracy	.163	4.085	.000

$$\text{Consumer Trust} = 3.268 + 0.785 * \text{Perceived Awareness} + 0.163 * \text{Perceived Accuracy} + 0.140 * \text{Convenience}.$$

The impact of the factor **Perceived Awareness** is found to be the highest. And the factor **Perceived Accuracy**, and **Convenience** has a significantly low impact compared to **Perceived Awareness**.

V. CONCLUSION

Artificial intelligence (AI) has brought in many changes in medical practice, which include digitalizing data acquisition and analyzing the treatment techniques of various diseases and finding out possible ways to prevent them. Artificial intelligence systems are used to help doctors make better decisions about patients' health. They are used to help diagnose problems, train health workers, and research new ways to improve health care. Over time, AI systems will become better at doing all of these things on their own, without our help. Furthermore, the main challenge we are facing is not the lack of technology itself, as it is rapidly evolving and uncovering various new areas of its use, more so the legal framework requires appropriate regulation and political and financial transformation in the healthcare sector.

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