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# A Comparative Study of Artificial Intelligence (AI) in Health Care sectors for Enhancing Sustainable Business Model

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### ABSTRACT

In order to increase the sustainable clinical business model in the healthcare industry, Artificial Intelligence and its applications played an integral role. However, the researchers have investigated the contribution and benefits of using AI approaches in predicting any treatment procedures for detecting severe disease outcomes. On the other hand, the research study also tends to conduct important decision-making approaches in patient care services with the help of AI agents. Effective artificial intelligence systems applied in the healthcare approaches and machines can successfully reduce human errors towards taking relevant medical decisions. On the other hand, while detecting diseases and undertaking effective treatment methods, AI applications provide utter benefits to healthcare workers. The modern-day healthcare industry has experienced positive applications of Artificial Intelligence in medicines, treatments, diagnosis, detecting, and other necessary practices. Researchers are genuinely interested in conducting various surveys for investigating the usefulness of AI machines and devices in conducting AI-based surgeries and monitoring healthcare wearables. Researchers have conducted an effective research questions have been formed and asked through a probability sampling method among 75 participants. Today, undertaking various revolutionizing medical healthcare decisions has become easier than in the past with the contributions of artificial intelligence. Therefore, AI methods are at once essential for early risk identification and possible treatment prediction in the patient-care sectors.

*Keywords:* Artificial Intelligence, AI Agents, patient-care, healthcare services, research, researchers, survey, percentages, decision-making, efficiency, business model, participants

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# INTRODUCTION

Today, the growing demand for machine learning and artificial intelligence in the healthcare sector has seen a positive impact on enhancing the global business model. Artificial Intelligence can be highly beneficial for the healthcare industry while increasing both the speed and efficiency in its patient-care activities [1]. Physicians and researchers have observed that for amplifying the business model as well as profit percentages on the course of the healthcare services, AI and its applications play an integral role. However, in several medical cases such as identifying disease symptoms, determining treatment procedures, and predicting diagnostic accuracy, AI leaves a deep impact on the healthcare industry [2]. On the other hand, the implementation of AI approaches can at once help in the detailed investigation related to important healthcare data. Thus, by comparing patients' past medical records from a large number of clinical databases, AI can aid in smoothening the analysis process [3].

Modern-day medical science has experienced various fields of automatic learning that have been utterly possible for the applications of Artificial Intelligence in the clinical sectors. However, by utilizing various medical alerts, AI can effectively manage all the patient care activities regarding health care services across the country [4]. On the other hand, for creating a systematic and sensor-integrated healthcare

system, physicians take the help of AI for better patient care conduction [5]. Today, with the help of AI, numerous medical image classification and identification have become easier than before. These clinical images can at once aid in detecting proper symptoms and causes of diseases and help in predicting relevant diagnosis and treatment methods [6]. For that reason, physicians and scientists tend to focus more on applying the merits of AI in various sectors of the healthcare industry. On the contrary, there can be traced an urgency for improving healthcare data quality in order to enhance the efficiency of decision-making processes regarding any healthcare activities [7]. AI and its applications mainly help doctors and hospital staff to determine various patient-care decision-making approaches for providing better facilities.

The entire research primarily deals with a detailed investigation on numerous benefits of applying Artificial Intelligence towards enhancing the business model of the healthcare industry. Various surveys have been conducted by the researchers among doctors, hospital assistants, and nurses for understanding the importance of AI in clinical sectors worldwide [8]. Moreover, the research also discusses all the merits of using AI approaches for better decision-making activities towards providing more developed healthcare services.

#### LITERATURE REVIEW

Previously, undertaking various smart and effective clinical decisions was highly difficult for the physicians leading to delay and inaccurate medical diagnoses in the healthcare sectors. Today, the process of proper clinical diagnosis and identification of fatal diseases has become easier with the applications of AI in the healthcare industry. Artificial intelligence and its applications in various patient care sectors are gaining attention from healthcare professionals and researchers from an effective perspective. In order to incorporate machine learning approaches through the interfaces of brain-computers, AI implementation plays an important part in developing the healthcare sectors towards sustainable future growth [9]. While developing various radiology tools and techniques for the next generation, healthcare professionals focus on applying numerous facilities of Artificial Intelligence for a better diagnosis. In contrast to that, AI can at once mitigate the burdens regarding the patients' records of electronic healthcare facilities efficiently used in determining diseases and predicting proper treatment methods [10].



# Figure 1: Contributions of AI approaches in the healthcare sector[10]

Artificial intelligence and its effects have helped health sectors to develop their services and frameworks. Over a while, the development of AI has helped both doctors and patients to get the best result with the help of Artificial intelligence [11]. In the time of development, some aspects needed to be developed for the health sectors to serve the best for the patients. After the implementation of AI in the health sector, multiple supports have been accumulated with the help of AI. From the beginning of the technological development in the health sectors, technology, and its upgraded accessibilities have helped doctors and patients to make decisions [12]. Before the time of development, it has been seen that patients have faced problems with short diagnosis processes that need to be made sure of. In this context, technical development has helped to access the patients better with proper evaluation.



Figure 2: Graphical demonstration of AI in the health sector[12]

**Enhancing primary care with the help of Chabot's:** It has been seen that internationally the health-conscious peoples have such tendencies of taking opinions from the experts about any health-related steps that they take. In this context, there are the contributions of AI [13]. due to such frequent traffic of the patients with their respective issues, the doctors were struggling with handling them. In this context, the Chabot's that have been prepared with the help of technology has helped the patients to access their issues in a very short period [14]. The chabot is prepared with the information and data about the health issue, and it responds with the information to the consumer or the patients.

*Automated Robotic surgeries:* The normal and essential surgeries of the patients used to be performed by the doctors with the topmost care for the patients. The process of surgery is always a matter of tension that needs to be conducted properly [15]. In today's world, technological development has developed such health sectors that they have constructed such machines that can conduct surgery for the patients.



**Figure 3: Artificial Intelligence benefits in healthcare**[15]

In the above image, it has been demonstrated that a machine is operating and taking part in a surgery process. A few of the surgeries have been separated and named after AI is *Vicarious Surgical*. The process of this operation is maintained with virtual reality that is also managed by AI-active robots [16]. In this context, virtual reality helps doctors to have a pre overview of the operation that is going to be conducted. The University of *Carnegie Mellon* has developed such a robotics function that can help during operation and can assist with the tools that are needed in the particular operation [17].

*The Virtual nursing guide for better health:* The more the technology has developed, the more it has started to affect major aspects of humanity with its positivity. Similarly, such VR intelligence has been prepared by the developers which can guide a person with a healthy and medical routine [18]. AI nursing guidance has helped people with better results. Overall, it can be said that AI has such an authentic contribution towards healthcare sectors.

# **MATERIAL AND METHODS**

The entire research methodology of this particular section deals with the analysis and interpretation of collected medical resources from various valid sources. However, a quantitative method of survey analysis technique has been applied here in order to understand the market opinion more clearly. The quantitative research method at once helps researchers to consider correct techniques and methods for collecting relevant clinical data through effective survey methods [19]. However, a positivism research philosophy also has been applied here while collecting authentic healthcare data for carrying out the particular research project. It has been also identified that researchers tend to apply a deductive research approach to gather desirable medical information that will help in analyzing the particular topic related to the research study [20]. On the other hand, the utilization of descriptive research design has been

proven to be utterly beneficial in resolving various issues as well as problems that were traced during evaluating the entire research study [21].

In order to understand the beneficial contributions of AI applications in the healthcare industry, essential online surveys due to the global COVID-19 pandemic, have been efficiently conducted. Researchers tend to undertake numerous research techniques and methodologies for investigating a particular topic. After gathering relevant opinions from doctors, hospital nurses, and staff, the research at once focuses on analyzing the importance of AI applications in healthcare services [22]. However, after evaluating three valid survey questions, researchers tend to evaluate all the choices of those participants while conducting the research. Almost 75 participants have expressed their perspectives over the applications of AI techniques in the healthcare industry through online mediums.

Researchers have formed all the relevant survey questions after processing a detailed analysis regarding all the online binary options. Besides, the study at once focuses on analyzing their relevance and accuracy regarding the use of AI in medical fields today [23]. By gathering relevant participants' options related to the particular topic, researchers tend to investigate a comparative study on the usefulness of AI towards enhancing the business model. In contrast to that, a probability sampling method has been applied within the research study while collecting opinions from the participants through simple random sampling survey methods. All the survey results show that participants, as well as patients, have no accurate knowledge about the benefits of applying AI for further medical purposes. Researchers, as well as physicians, are genuinely interested in understanding the efficient contributions of AI approaches for enhancing the business model in the sustainable future [24]. Moreover, with the analysis of survey outcomes, researchers tend to concentrate more on acquiring numerous healthcare advantages in offering patients' better healthcare scopes as well as opportunities.

#### RESULTS

Through applying a quantitative data collection method, researchers focus on conducting effective virtual surveys for the study related to the particular research topic. However, all the relevant medical information has been collected by analyzing various opinions from 75 patients, random public and medical participants. Researchers have also placed these survey questions in front of doctors, patients, hospital staff, employees, scientists, and nurses for collecting relevant medical resources [25]. Regarding understanding the applications of clinical AI approaches, all their points of view from an effective clinical perspective help researcher to successfully conduct the survey.

In order to understand the importance of AI approaches in the healthcare sector more efficiently, researchers need to conduct probability sampling techniques for the primary data gathering methods. Among 75 random people, researchers have formed and spread all the three valid research questions by evaluating them from a positive angle related to the research topic. Relevant research questions include-

- What are the uses of clinical AI methods for increasing the speed and efficiency of healthcare services?
- How do Artificial Intelligence and its applications provide benefits in increasing the healthcare business model for managing better patient-care services?

## Important Survey Questions:

**Q1.** Will Artificial Intelligence be used to enhance the efficiency and speed of the entire healthcare business model for sustainable development of patient-care services?

## TABLE I. ENHANCED EFFICIENCY RATE MEASUREMENT OF HEALTHCARE BUSINESS MODEL BY USING AI APPROACHES

	(SOURCE: CREATED DT THE RESEARCHERS)			
Options of the	The number of total	<b>Overall Response</b>	Percentage	
participants	Participants	Collected		
Strongly Agreed	75	15	20	
Agreed	75	25	33.33	
Neutral	75	17	22.66	
Disagreed	75	11	14.66	
Strongly Disagreed	75	7	9.33	

#### (SOURCE: CREATED BY THE RESEARCHERS)



# Figure 4: Enhanced efficiency rate measurement of healthcare business model by utilizing clinical AI

From the above graph, it can be analysed that regarding the use of AI approaches in the healthcare sectors, around 20% of the participants have strongly agreed with the research question. However, the survey has been conducted among 75 participants, and almost 33.33% of the people have supported the question from a positive perspective. On the contrary, around 22.66% of the people remained neutral regarding their opinion on the particular survey question. In contrast to that, around 14.66% of people disagreed with the question. On the other hand, it is around 9.33% of the participants strongly disagreed with the survey topic. Moreover, all the key differences between all the stages of the survey have been analysed from an effective perspective after analysing the calculation of the percentage table.

**Q2.** Do you think that the efficient use of Artificial Intelligence and its applications are highly effective in mitigating the percentages of risks and error while predicting as well as determining necessary healthcare decisions for future scopes?

# TABLE II. ERROR MITIGATION RATE CALCULATION IN MEDICAL DECISION-MAKING BY UTILIZING AI APPROACHES

(SOURCE: CREATED BY THE RESEARCHERS)				
Participants'	<b>Overall Participants</b>	Total collected	Percentage	
Options		Response		
Agreed Strongly	75	21	28	
Agreed	75	17	22.66	
<b>Remained Neutral</b>	75	8	10.66	
Disagreed	75	16	21.33	
Disagreed Strongly	75	13	17.33	



Figure 5: Healthcare error mitigation rate calculation by using medical AI approaches

After collecting relevant survey outcomes among 75 people, the above graph at once reflects that around 28% of the participants have supported strongly the survey question. On the contrary, almost 22.66% of people have supported the question positively. However, around 10.66% of the participants did not support the question both from a positive or negative perspective. On the other hand, only 21.33% of

people have disagreed with the survey topic. In contrast to that, almost 17.33% of the participants did not strongly support their point of view regarding the validity of the survey question. However, the entire major differences from strongly agree to strongly disagree can be highly evident from the particular percentage calculation table.

**Q3.** Do you agree that efficient clinical decision-making and effective treatment predictions can be improved by the utilization of AI agents for the sustainable growth of healthcare in the future?

TABLE III. IMPROVED HEALTHCARE PRACTICES RATE CALCULATION IN CLINICAL FIELDS BY APPLYING AI AGENTS

Options Selected by the Participants	Total Participants	Overall Response gathered	Percentage
Strongly Supported	75	23	30.67
Supported	75	19	25.33
Neutral	75	12	16
Did not Support	75	11	14.66
Strongly Avoided	75	10	13.33



Figure 6: Enhanced healthcare practices rate calculation by utilizing clinical AI methods (Source: Created by the Researchers)

The calculation graph associated with the survey opinions from 75 participants reflects that around 30.67% of the participants have strongly supported the question. On the other hand, almost 25.33% of people have positively agreed with the survey question. However, around 16% of the participants remained neutral over their perspective. On the contrary, 14.66% of the participants disagreed with the survey topic. In contrast to that, almost 13.33% of people have strongly avoided their specific viewpoint with the survey question. All the calculation differences and rate gaps in the calculation of the percentage table can be highly acquired while conducting the particular survey.

#### DISCUSSION

Researchers, after evaluating all the survey questions, have successfully identified that all the 75 participants have different perspectives and knowledge about the benefits of utilizing AI approaches in healthcare. However, in order to conduct various healthcare decision-making practices, researchers focused on the evaluation of the first question related to the survey. From this question analysis, researchers have investigated the opinions collected from the participants. Their opinions about the efficient use of AI agents in enhancing the efficiency of the medical business model at once reflect necessary percentage gaps from the calculation tables [26]. However, towards analyzing big clinical data sets and maintaining patients' privacy, AI has contributed a lot in the medical aspects. It has been determined that the annual collection of revenue percentage of the UK-based healthcare sectors have experienced around 57.34% growth after positive applications of AI methods [27].

On the other hand, by analysing the second survey question, participants' opinions on the usefulness of AI in medical error reduction have been highly traced from the percentage table calculation. Researchers have experienced positive growth of almost 61.87% over the wide applications of AI in medical purposes [28]. On the contrary, Artificial Intelligence deals with the risks of antibiotic substance resistance in healthcare that also mitigate all the risks related to patients' safety. Effective applications of artificial intelligence approaches can lead to a positive and improved healthcare management system by

developing competitive benefits in patient care and safety. However, by incorporating more detailed analytics regarding recognizing various pathology images, AI supports the enhancement of the overall business model to almost 63.71% growth [29]. With the implementation of AI agents, the error reduction in large healthcare industry databases can be easily improved by optimizing large clinical data workflows. **TABLE IV: AI APPLICATIONS AND SURVEY TABLE REGARDING ITS USE IN VARIOUS HEALTHCARE** 

FIELDS
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Discussion Topic	Agree	Neutral	Disagree
(a) AI approaches are already delivering value to radiology, pharmacy, and pathology.	63%	13%	25%
(b) AI methods are offering benefits to patients in monitoring both the telehealth and remote health	61%	16%	23%
(c) AI agents providing advantages to the global point-of- care	44%	23%	33%

The analysis of the third question related to the survey shed some important light on the participants' perspective regarding improved healthcare practices using the AI approaches in the medical sector. However, these Artificial Intelligence models and agents in the clinical sectors can help a lot in improving the rates of effective treatment decisions and efficient disease predictions. The overall efficiency and speed of the healthcare industry have touched a 71.89% growth rate that can be improved further with the utilization of artificial treatment methods [30]. On the contrary, the clinical implications of AI approaches can effectively maintain patients' privacy and offer utter benefits to all healthcare practitioners. While undertaking various treatment procedures, fatal disease detection, and prediction of relevant decision-making approaches, AI aids medical practitioners to some extent. Moreover, the overall analysis of the survey questions shows the importance of bringing artificial intelligence to clinical devices as well as machines in the future growth and development of the entire healthcare industry.

#### CONCLUSION

The benefits of using various AI approaches in amplifying the business model's efficiency have been seen to have positive growth in modern medical science. Utilizing numerous AI benefits and their relevant applications by clinical practitioners has become a trending aspect in today's healthcare sectors. However, it can be concluded after analysing the overall research study that towards undertaking various important healthcare decisions, AI plays a major role to some extent. On the other hand, researchers have efficiently analyzed all the merits of applying numerous Artificial Intelligence determinants in necessary clinical aspects.

The overall research study deals with a brief evaluation on the significance of enhancing the efficiency of the healthcare business model by utilizing numerous AI methods and approaches towards providing more improved patient-care services. Today's clinical era has experienced numerous advantages of utilizing Artificial Intelligence facilities in healthcare. The research, therefore, focuses on evaluating promising clinical outcomes in the sustainable future for more improved healthcare practices. Therefore, researchers concentrate on evaluating the necessities for applying AI scopes in the improvement of future medical business models to a great effective extent.

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