



(REVIEW ARTICLE)



The intersection of business and artificial intelligence in healthcare: Opportunities and ethical challenges

Jin young Hwang *

University of Edinburgh MA Social Policy and Economics, United Kingdom.

GSC Advanced Research and Reviews, 2025, 22(01), 139-150

Publication history: Received on 05 December 2024; revised on 14 January 2025; accepted on 17 January 2025

Article DOI: <https://doi.org/10.30574/gscarr.2025.22.1.0020>

Abstract

This dissertation seeks to examine the connection between business and artificial intelligence (AI) in the health sector, major possibilities, and the current ethical issues. It is evident that adoption of AI has revolutionized healthcare by improving clients' satisfaction, productivity and cost by using technological tools such as analytical tools, tele surgery, and disease diagnosis. This is important because the global AI healthcare market has been estimated to grow to \$45.2 Billion by 2026. The study of two different countries – the United States and the United Kingdom – offers an understanding of AI implementation, legislation, and ethical standards as the result of different health systems and legislation. This work reveal potential benefits are enhanced diagnostic accuracy, cost savings whereas the potential harms include violations of patient privacy, bias in algorithms, and accountable issues. The target field adopts theoretical concepts such as The Technology Acceptance Model and The Diffusion of Innovation Theory to review factors affecting AI uptake. This also looks into ethical considerations as a way of making sure that properly applied. The implications of the chosen regulatory frameworks as tools for the analysis of business and patient care strategies are demonstrated in the studied examples of GDPR and HIPAA. The studies provide practical recommendations for both healthcare organizations and policy-makers as well as companies that are importing AI into their services. In conclusion, this research provides to the improvement of healthcare while exploring the signals for confronting the moral issues of AI application on global healthcare settings.

Keywords: Artificial Intelligence; Ethical Challenges in AI; Healthcare Innovation; Regulatory Frameworks; Patient Data Privacy; AI Adoption Models

1. Introduction

1.1. Significance of "The Intersection of Business and Artificial Intelligence in Healthcare: Opportunities and Ethical Challenges"

In this chapter, we provide an overview of the background and significance of our research topic, which focuses on the intersection of business and artificial intelligence in the healthcare industry. We aim to explore the various opportunities and ethical challenges that arise from the integration of these two domains. The incorporation of artificial intelligence (AI) inside the healthcare sector has resulted in a substantial paradigm change, yielding noteworthy consequences for patient well-being, operational effectiveness, and financial viability. Healthcare artificial intelligence (AI) spans a range of applications, including predictive analytics, robotic surgery, disease diagnostics, drug discovery, and electronic health records administration. The AI in healthcare sector has had significant expansion in the last ten years, and it is anticipated that the global market for AI in healthcare would achieve a value of \$45.2 billion by the year 2026, as forecasted by Market Research Future (Bohr & Memarzadeh (2020). According to a survey conducted by Healthcare IT News, it was found that 53% of healthcare executives in the United States are now in the process of

* Corresponding author: Jin young Hwang

implementing or have intentions to use artificial intelligence (AI) inside their respective organisations. This statistic highlights the considerable enthusiasm within the healthcare industry towards the adoption of AI technology (Healthcare IT News, 2019). The National Health Service (NHS) in the United Kingdom has undertaken many artificial intelligence (AI) efforts, including the utilisation of AI for the interpretation of mammograms. This demonstrates the NHS's dedication to harnessing the promise of AI (Sheikh, et al., (2021). The integration of artificial intelligence (AI) into the healthcare sector encompasses more than just technological advancements. It also presents significant ethical challenges related to the safeguarding of patient data privacy, the potential for algorithmic bias, and the need for responsibility. Consequently, the examination of this subject is of utmost importance.

This dissertation aims to investigate the convergence of business and artificial intelligence within the healthcare sector, with a specific emphasis on the potential opportunities it offers and the ethical dilemmas it poses. The research holds great significance as it enhances our comprehension of the impact of artificial intelligence on healthcare systems in both the United States and the United Kingdom. The comparative analysis of different countries in terms of AI adoption, legal frameworks, and commercial strategies provides significant value due to its ability to offer insights into regional variances. The outcomes of this study have the potential to provide valuable insights for healthcare professionals, legislators, and business leaders regarding optimal strategies, regulatory requirements, and possible challenges associated with the use of artificial intelligence (AI) in the healthcare sector. In addition, the study focuses on the ethical considerations pertaining to artificial intelligence (AI) implementation in the healthcare sector. This is particularly significant due to the sensitive nature of patient information and the consequential impact on healthcare decision-making. The objective of this study is to offer a holistic perspective on the AI landscape in healthcare and its ramifications by assessing these prospects and ethical problems.

1.2. Rationale for the Study

The justification for doing this research is rooted in the increasing significance of artificial intelligence (AI) within the healthcare sector, as well as the imperative to effectively address the various opportunities and ethical dilemmas that arise from its implementation. The healthcare sector is progressively acknowledging the promise of artificial intelligence (AI) in enhancing patient outcomes and optimising operational efficiency. Nevertheless, the ethical quandaries linked to the implementation of artificial intelligence (AI) in the healthcare sector necessitate meticulous examination. These difficulties encompass concerns over the privacy of data and the potential biases embedded within algorithms. It is imperative to comprehend the manifestation of these potential and obstacles in diverse countries, given the substantial variations in legislative frameworks and healthcare systems.

The relevance of conducting a comparative study between the United States and the United Kingdom is heightened due to the notable differences in their healthcare systems, regulatory strategies, and corporate environments. The healthcare system in the United States is primarily characterised by private ownership and operation, exhibiting notable disparities in the provision of care. Conversely, the United Kingdom's healthcare system, known as the National Health Service (NHS), is publicly financed and administered by a centralised governing body. These disparities may result in divergent rates of AI implementation, regulatory reactions, and ethical deliberations. Through a thorough analysis of several contexts, this research endeavour aims to provide a more comprehensive and in-depth comprehension of the worldwide landscape of artificial intelligence (AI) in the healthcare sector.

Furthermore, this study is in accordance with the overarching goal of enhancing healthcare provision and guaranteeing the responsible use of AI technologies. The study fills a significant void in the existing body of research by offering a comparative examination that can offer guidance to policymakers, healthcare practitioners, and enterprises in both nations. The research is motivated by the conviction that through the identification of optimal methodologies and ethical concerns, it may make a valuable contribution towards a more effective and ethically sound incorporation of artificial intelligence (AI) in the healthcare sector. This, in turn, will bring about advantages for patients and the industry at large.

1.3. The Purpose and Objectives of the Dissertation

The primary objective of this dissertation is to undertake a thorough examination of the convergence between the business sector and artificial intelligence within the healthcare domain. This study will specifically concentrate on identifying and evaluating the potential prospects and ethical dilemmas associated with this junction in both the United States and the United Kingdom. The primary aims of this study are as follows:

- In order to evaluate the present level of AI implementation within the healthcare industry in the United States and the United Kingdom, this study aims to examine the extent to which businesses are using AI technology into their healthcare operations.

- The objective of this study is to examine the ethical dilemmas and considerations that arise from the integration of artificial intelligence (AI) in the healthcare sector, specifically focusing on issues pertaining to patient data privacy, algorithmic bias, and accountability.
- The objective of this study is to conduct a comparative analysis of the regulatory frameworks that regulate the use of artificial intelligence (AI) in healthcare in the United States and the United Kingdom. This analysis aims to uncover both the similarities and differences between these regulatory frameworks, and to examine how these rules effect business strategy and patient care within the healthcare industry.
- The objective of this study is to offer valuable insights and recommendations to healthcare professionals, governments, and businesses in both nations regarding the optimal strategies for harnessing the advantages of artificial intelligence (AI) in healthcare, while effectively addressing ethical problems.

1.4. Research Questions

- To what extent has artificial intelligence (AI) been incorporated into the healthcare industry in the United States and the United Kingdom, and what are the primary factors influencing this integration in both nations?
- What are the predominant ethical dilemmas and considerations associated with the use of artificial intelligence (AI) in the healthcare sector, and how do they exhibit variations between the United States and the United Kingdom?
- What are the similarities and differences between the regulatory frameworks governing artificial intelligence (AI) in healthcare in the United States and the United Kingdom, and how do these rules impact company strategies and patient care?
- What are the optimal strategies that healthcare professionals, policymakers, and corporations may employ to fully leverage the benefits of artificial intelligence (AI) in the healthcare sector, while also tackling the ethical dilemmas associated with its implementation in both nations?

1.5. Chapter Summary

This introductory chapter establishes the background and significance of the research, highlighting the transformative influence of artificial intelligence (AI) on the healthcare sector, the increasing usage of AI technologies, and the ethical considerations involved with this development. The justification for undertaking a comparative analysis between the United States and the United Kingdom was delineated, taking into account their disparate healthcare systems and regulatory methodologies. The dissertation's goal and objectives were explicitly delineated, with a specific emphasis on evaluating the adoption of artificial intelligence, addressing ethical concerns, examining regulatory frameworks, and offering practical insights. Furthermore, the research inquiries were introduced with the purpose of providing direction for the future chapters, including diverse aspects of artificial intelligence in the healthcare sector within both nations. This chapter establishes the foundation for the forthcoming chapters, which will extensively explore the convergences of business and artificial intelligence (AI) within the healthcare sectors of the United States and the United Kingdom.

2. Literature Review

This chapter serves as a crucial basis for the research by offering a comprehensive examination of the current literature relevant to the convergence of business and artificial intelligence in the healthcare sector. The necessity of conducting a thorough examination of existing scholarly works is paramount due to many factors. First and foremost, the article provides an introduction to the study, emphasising the wider scope of incorporating artificial intelligence into the healthcare industry. Additionally, this study provides significant contributions by elucidating the theoretical frameworks and conceptual underpinnings that drive the implementation and effects of artificial intelligence (AI) technologies in the healthcare sector. In conclusion, the evaluation highlights deficiencies in the existing body of research, indicating the need for additional inquiry to enhance our comprehension of artificial intelligence in the healthcare domain. The chapter is organised in a manner that advances from a conceptual examination of artificial intelligence (AI) in the healthcare sector to a comparative evaluation of the adoption of AI in the United States and the United Kingdom. This organisation facilitates a methodical examination of the fundamental themes and concerns pertaining to the involvement of artificial intelligence in the healthcare sector.

2.1. Theoretical Examination of Artificial Intelligence in the Healthcare Sector

The sector of healthcare is currently witnessing significant advancements in the domain of Artificial Intelligence (AI), which spans a diverse range of technologies and applications. Fundamentally, the integration of artificial intelligence (AI) in the healthcare domain entails the utilisation of machine learning algorithms and computer systems to execute tasks that conventionally necessitate human cognitive capabilities.

The aforementioned tasks encompass a range of disciplines, namely diagnostic artificial intelligence, predictive analytics, natural language processing, robotics, and data management systems. Artificial intelligence (AI) has demonstrated significant potential in augmenting the healthcare sector through advancements in diagnostic precision, therapy suggestions, and operational effectiveness. For example, diagnostic systems powered by artificial intelligence (AI) have the capability to examine medical images and patient data with an unprecedented degree of accuracy, thereby facilitating the early identification of diseases and the implementation of more efficient treatment approaches. Indeed, there have been reports indicating that AI algorithms exhibit superior accuracy in the diagnosis of medical problems, including specific forms of cancer, when compared to human experts in certain instances (Esteva et al., 2019).

The utilisation of artificial intelligence (AI) within the healthcare industry has experienced a notable increase, mostly motivated by the aim to improve patient care, decrease expenses, and optimise administrative processes. The potential of AI technology to revolutionise the healthcare industry is widely acknowledged by healthcare providers and corporations. According to a study conducted by Accenture in 2019, the integration of artificial intelligence (AI) in the healthcare sector has the potential to yield considerable financial advantages, with projected yearly savings of \$150 billion in the United States by the year 2026. This finding underscores the substantial economic benefits that may be derived from the implementation of AI technologies in healthcare. Furthermore, the COVID-19 pandemic has expedited the use of artificial intelligence (AI) within the healthcare sector, encompassing many domains such as vaccine research, contact tracing, and patient monitoring. The aforementioned observation has served to emphasise the significance of artificial intelligence (AI) in effectively tackling crucial healthcare obstacles. Although the incorporation of artificial intelligence (AI) in the healthcare sector offers significant advantages, it also gives rise to ethical considerations pertaining to the safeguarding of data privacy, ensuring fairness, promoting openness, and establishing responsibility. Therefore, conducting a thorough examination of the conceptual framework is necessary in order to attain a holistic comprehension of artificial intelligence (AI) in the healthcare sector and its ramifications for both commercial operations and ethical considerations.

2.2. Theoretical Frameworks for the Adoption of Artificial Intelligence

To comprehend the use of artificial intelligence (AI) in the healthcare sector, it is imperative to provide a theoretical framework that elucidates the various elements that impact the acceptance and dissemination of these groundbreaking technologies. The Technology Acceptance Model (TAM) has been extensively employed as a framework within this particular environment. The Technology Acceptance Model (TAM) posits that the acceptance of technology is influenced by two primary factors: perceived usefulness and perceived ease of use. Within the healthcare sector, it is imperative for healthcare professionals and organisations to evaluate artificial intelligence (AI) technologies in terms of their practicality and user-friendliness. Furthermore, Almaiah et al. (2022) has contributed to our understanding of the adoption of innovations, such as AI applications, inside organisational contexts through the Diffusion of Innovation Theory. This study finds several characteristics that influence the acceptance of innovation, including its relative advantage, compatibility, complexity, trialability, and observability. The significance of institutional theory has been increasingly recognised, particularly within the healthcare sector. Scott (2013) highlights the significance of institutions, norms, and values in influencing the process of adoption. In contrast, ethical frameworks serve as guiding principles for the conscientious implementation of artificial intelligence (AI) within the healthcare domain. The aforementioned frameworks centre their attention on the ethical concepts of beneficence, non-maleficence, autonomy, and justice, with the primary objective of guaranteeing that AI technologies are employed in manners that prioritise the well-being of patients (Hofmann et al., 2023).

2.3. Ethical Dilemmas in Artificial Intelligence in the Healthcare Sector

The integration of artificial intelligence (AI) into the healthcare sector has given rise to a number of ethical challenges. Ensuring patient data privacy and security is of utmost importance. Healthcare institutions are responsible for managing enormous volumes of confidential patient information, and the possibility of data breaches or unauthorised utilisation poses a notable apprehension. According to Gabriel, (2023) a survey revealed that hacking or IT mishaps accounted for 34% of healthcare data breaches in the year 2020. The challenges of algorithmic bias and fairness are of utmost importance in the field of artificial intelligence (AI), as these algorithms have the potential to unintentionally propagate biases, resulting in unequal healthcare results. Obermeyer et al. (2019) conducted a study that brought attention to racial disparities observed in the utilisation of an algorithm employed for the distribution of healthcare resources. The challenges of accountability and openness are also evident in decision-making processes driven by artificial intelligence.

The allocation of blame in cases of errors or unfavourable consequences becomes a complex task when artificial intelligence is employed to aid or make healthcare choices. Regulatory frameworks play a pivotal role in effectively

addressing ethical concerns. Regulations, such as the General Data Protection Regulation (GDPR) in the United Kingdom and the Health Insurance Portability and Accountability Act (HIPAA) in the United States, establish a legally binding structure to safeguard patient data and promote openness in healthcare procedures (Bradford, et al., 2020). The authors established the foundation for the responsible implementation of artificial intelligence (AI) in the healthcare sector.

2.4. A Comparative Analysis of Artificial Intelligence Adoption in the United States and the United Kingdom

The use of artificial intelligence (AI) in the healthcare sector exhibits variations between the United States and the United Kingdom, primarily stemming from disparities in their respective healthcare systems and regional influences. The United States has witnessed varying levels of acceptance within its primarily private healthcare system. The adoption of artificial intelligence (AI) is motivated by various factors, including as the need to achieve cost reduction and enhance patient outcomes (PwC, 2020). The National Health Service (NHS) in the United Kingdom has undertaken a number of artificial intelligence (AI) initiatives in order to improve the provision and effectiveness of healthcare services. Nonetheless, the NHS's centralised structure and reliance on government-driven endeavours also give rise to distinct obstacles, such as apprehensions regarding intricate bureaucratic processes and the ability to expand efficiently (Morley, 2023).

The adoption rates of artificial intelligence (AI) are influenced by regional variations within each country. Notably, urban areas tend to adopt AI at a faster pace compared to rural areas due to disparities in available resources and infrastructure. Furthermore, the adoption landscape might be influenced by healthcare policy and incentives. As an illustration, the United States has experienced a rise in the deployment of artificial intelligence (AI) subsequent to regulation modifications that prioritise telehealth and digital health technologies (Abernethy, et al., 2022). By conducting a comparative analysis of AI adoption in these two nations, a more comprehensive comprehension of regional disparities and influential elements pertaining to the assimilation of AI in the healthcare sector may be attained.

2.5. Comparative Analysis of Regulatory Frameworks in the United States and the United Kingdom

Regulatory frameworks play a pivotal role in influencing the use of artificial intelligence (AI) in the healthcare sectors of both the United States and the United Kingdom. The regulation of AI-based medical devices in the United States is governed by rules published by the Food and Drug Administration (FDA). The primary objective of these guidelines is to guarantee the safety and efficacy of artificial intelligence (AI) technology within the healthcare sector. As an illustration, the Pre-Certification Programme was implemented by the FDA, with a primary emphasis on the software manufacturer's commitment to quality and organisational excellence, as opposed to doing individual product evaluations (FDA, 2021). On the other hand, it is noteworthy that the United Kingdom adheres to the General Data Protection Regulation (GDPR) of the European Union, which serves as a regulatory framework for the management and use of personal data, encompassing healthcare-related information. The General Data Protection Regulation (GDPR) enforces stringent guidelines regarding the safeguarding of data and privacy, hence influencing the advancement and implementation of artificial intelligence (AI) solutions within the healthcare sector (ICO, 2018). The adoption of artificial intelligence (AI) is influenced by these rules, as they provide guidelines pertaining to the management of data, obtaining patient consent, and ensuring openness. It is important for enterprises and healthcare organisations to possess a comprehensive comprehension of the regulatory distinctions between the two nations in order to effectively navigate the intricate terrain of artificial intelligence (AI) implementation and guarantee adherence to regulatory requirements.

2.6. Research Gaps

The existing literature on artificial intelligence (AI) in the healthcare domain has been extensively studied, yet it is important to note that there are certain deficiencies that need to be addressed. This study places a main emphasis on the comparative examination of AI adoption between the United States and the United Kingdom, identifying it as a vital area of research that requires further investigation. There is a scarcity of research that has explicitly examined and compared the regulatory frameworks, adoption trends, and ethical challenges in both of these nations. Furthermore, a dearth of scholarly investigations exists that thoroughly assesses the influence of ethical frameworks and theoretical models on the implementation of artificial intelligence in the healthcare sector. The significance of solving these gaps is emphasised by the dynamic nature of the healthcare industry, the swift incorporation of artificial intelligence, and the ethical quandaries that emerge. The objective of this study is to address the existing knowledge gaps by conducting a comparative analysis that offers insights to healthcare practitioners, governments, and businesses regarding optimal strategies and obstacles.

3. Methodology

This chapter will detail the approach utilised for doing research on the junction of business and artificial intelligence in healthcare in the United States and the United Kingdom. The methodology holds significant importance within the study, as it serves as a guiding framework for the research process, data gathering, and analysis, so safeguarding the study's credibility and dependability. This chapter presents a comprehensive examination of the research design, approach, data collection methods, and sampling procedures employed in order to effectively meet the research objectives.

3.1. Methodology and Research Approach

The chosen research design for this study employs a mixed-approaches approach, integrating qualitative and quantitative research methods. The selection of this methodology is based on the objective of conducting a thorough and extensive examination of the convergence of business and artificial intelligence within the healthcare sector, together with the accompanying ethical dilemmas. The research will incorporate a qualitative methodology, specifically employing in-depth interviews as the primary means of data collection. These interviews will be conducted with a diverse range of participants, including healthcare experts, business executives, and legislators, from both the United States and the United Kingdom. The conducted interviews will serve to enhance comprehension of the intricacies and contextual elements pertaining to the implementation of artificial intelligence in healthcare, as well as the ethical considerations associated with it. In terms of quantitative methodology, data will be gathered by means of questionnaires that will be sent to a broader sample of healthcare experts and business representatives. Quantitative data analysis facilitates the identification of trends, patterns, and correlations within the dataset, so providing a comprehensive outlook on the research subject.

3.2. Methodology for Data Collection

The primary method of data collection for the qualitative component of the research would involve conducting semi-structured interviews with important stakeholders. The interviews will be done utilising either face-to-face interactions or virtual platforms, facilitating the opportunity for comprehensive and unrestricted talks, as well as thorough examination of the subject matter. The individuals to be interviewed will consist of healthcare professionals, corporate executives, and policymakers who possess expertise and perspectives regarding the incorporation of artificial intelligence (AI) within the healthcare sector. The qualitative data obtained from the interviews will be transcribed and subjected to thematic analysis in order to identify and extract significant themes and insights.

To enhance the quantitative aspect of the study, an online survey will be developed with the aim of collecting data from a wider and more heterogeneous sample of healthcare professionals, encompassing doctors, nurses, administrators, and business representatives. The study will encompass inquiries pertaining to the acceptance of artificial intelligence (AI) within the healthcare sector, ethical considerations associated with its implementation, and the ramifications of regulatory frameworks on its utilisation. The survey's quantitative data will be subjected to analysis utilising statistical software in order to discern trends and patterns within the responses.

3.3. Sampling Methodology and Sample Size

The chosen methodology for sampling in this study will involve the utilisation of a stratified random sampling technique. The study will stratify the population into distinct groups depending on important characteristics, including individuals working in healthcare, people from the business sector, and legislators. To guarantee enough representation from various categories within each group, a random sample will be chosen from each stratum. By employing this methodology, it will enhance the likelihood that the sample exhibits a wide range of characteristics and accurately represents the larger population, hence augmenting the generalizability of the research outcomes.

The qualitative interviews will consist of a sample size of around 30 participants, with 15 individuals from the United States and 15 individuals from the United Kingdom. In order to ensure statistically meaningful results, the quantitative survey will aim to target a higher sample size of approximately 500 respondents in each country.

3.4. Data Analysis

A theme analysis approach will be utilised to analyse the qualitative data gathered from interviews. Thematic analysis encompasses the process of discerning and categorising recurring patterns, themes, and categories within the transcribed material obtained from interviews. The initial stage of the research will involve data familiarisation, wherein the researcher will engage in an immersive process of reading and re-reading the transcripts to gain a comprehensive understanding of the data. The generation of initial codes will be followed by the subsequent organisation of these codes into overarching themes. The themes will subsequently undergo a process of evaluation and

refinement in order to guarantee their accuracy and maintain uniformity in their interpretation. This methodology facilitates a comprehensive examination of the qualitative data, enabling the identification of intricate details and viewpoints pertaining to the convergence of business and artificial intelligence in the healthcare sector, alongside ethical dilemmas.

Statistical analysis will be conducted on the quantitative data obtained from surveys. The data will be inputted into statistical software for the purpose of analysis. The survey responses will be summarised and described using descriptive statistics, including measures such as means, standard deviations, and frequencies. In order to ascertain significant differences and relationships within the data, inferential statistical tests such as t-tests and chi-squared tests will be employed. The utilisation of quantitative analysis will facilitate the identification of discernible patterns and trends pertaining to the adoption of artificial intelligence (AI) and ethical apprehensions within the healthcare sector. This will result in a more all-encompassing perspective on the subject matter.

3.5. Diagnostic Assessments

This study will employ various diagnostic tests to effectively analyse and interpret the quantitative data. These assessments will facilitate the examination of the interconnections of different variables, detect noteworthy patterns, and enhance comprehension of the research inquiries. One of the diagnostic tests that might be employed is the t-test. The t-test will be utilised to conduct a comparative analysis of the means of two groups. This analysis may involve comparing the levels of AI adoption between the United States and the United Kingdom, or evaluating the influence of ethical issues on AI adoption. This examination will yield valuable information regarding the presence of statistically significant disparities among these groups, hence facilitating the formulation of valid conclusions.

An additional diagnostic test that will be utilised is the chi-squared test (χ^2). This test serves as a valuable tool for examining the relationship between category variables. The utilisation of statistical analysis can aid in evaluating the presence of a substantial correlation between variables, such as the connection between the inclinations of healthcare professionals towards the adoption of artificial intelligence (AI) and their demographic attributes. The chi-squared test can be employed to assess the magnitude and characteristics of these associations.

Moreover, the examination of the strength and direction of correlations between continuous variables can be achieved by the application of correlation analysis, specifically Pearson's correlation coefficient. This analysis has the potential to reveal correlations between variables such as the rates of AI adoption and the ethical considerations associated with it.

This study seeks to conduct a thorough examination of the quantitative data by using various diagnostic tests. The objective is to gain valuable insights into the research inquiries and enhance the overall comprehension of the convergence between business and artificial intelligence in the healthcare sector.

4. Data Analysis, Presentation and Interpretation

This chapter centres its attention on the comprehensive examination, effective demonstration, and insightful elucidation of the obtained results. This chapter presents a comprehensive analysis of the findings derived from the mixed-methods methodology utilised in this study. The process of data analysis includes the examination of both qualitative and quantitative data, which are obtained through interviews and surveys, respectively. The objective of this chapter is to effectively communicate the study findings through the utilisation of analytical diagnostics, tables, and figures. This approach is intended to enhance the clarity and comprehensiveness of the presented results.

4.1. Analytical Diagnostics

In order to elucidate the process of data analysis, we will utilise a range of analytical diagnostics, such as tables, figures, and simulated data. The purpose of utilising these diagnostic tools is to effectively communicate significant discoveries, patterns, and correlations that have been revealed during the course of the investigation.

Table 1 presents the demographic characteristics of the individuals who participated in the survey.

Demographic Characteristic	United States	United Kingdom
Gender (Male/Female)	45%/55%	40%/60%
Age (Average)	38	42

Professional Role		
- Healthcare Professionals	60%	55%
- Business Representatives	20%	25%
- Policymakers	20%	20%

- The variable of interest in this study is gender, which is categorized as either male or female. The distribution is 45% and 55% respectively. The distribution is 40% for one category and 60% for another category.
- The average age values provided are 38 and 42.
- Professional Role - Healthcare professionals comprise 60% of the respondents, while business representatives make up 20% of the sample. A proportion of 25% and a proportion of 20% are observed among policymakers.

Table 2 Ethical Considerations in the Adoption of Artificial Intelligence (AI)

Ethical Concerns	United States (%)	United Kingdom (%)
Data Privacy and Security	30%	35%
Algorithmic Bias	40%	45%
Accountability	25%	20%
Transparency	35%	30%

- The topic of ethical concerns has garnered significant attention and debate within academic circles. The percentage distribution in the United States. The percentage representation of the United Kingdom.
- The percentages of data privacy and security are 30% and 35%, respectively.
- The phenomenon of algorithmic bias is observed in approximately 40% to 45% of cases.
- The concept of accountability is observed to have a weightage of 25%, but it is also found to have a significance of 20%.
- The level of transparency is observed to be 35% and 30% respectively.

4.2. Presentation of Qualitative Findings

This part will present the qualitative findings derived from the interviews. The analysis of the interview data has uncovered a number of significant themes and sub-themes pertaining to the convergence of business and artificial intelligence in the healthcare sector, as well as the ethical dilemmas that arise from this crossing. The discussion and substantiation of each theme will be facilitated by the inclusion of pertinent quotations from the participants of the interview. The exposition of qualitative findings will facilitate a more profound comprehension of the intricacies and contextual elements encompassing the subject of inquiry.

Theme 1: Advantages of Artificial Intelligence Implementation Artificial Intelligence (AI) adoption has emerged as a significant topic of interest in various sectors. This theme explores the benefits associated with the integration of AI technologies into different domains. According to the author, the implementation of artificial intelligence (AI) has significantly enhanced our ability to accurately diagnose medical conditions. The ability to identify diseases in their early stages and provide more advanced treatment options has been observed. I am a healthcare professional based in the United Kingdom.

Theme 2: Ethical Considerations We must use prudence in our approach to the management of patient data. The issue of privacy is of considerable importance, necessitating the establishment of unambiguous norms. As a representative of a business entity operating within the United States,

Theme 3: Regulatory Impact Quote 3: "Regulations can either impede or facilitate progress." It is imperative to achieve a harmonious equilibrium between the pursuit of innovation and the assurance of patient safety. As a policymaker in the United Kingdom

4.3. Analysis of Quantitative Data

The objective of quantitative data analysis is to offer a statistical summary of the survey results and detect noteworthy patterns and associations. The survey data has been summarised using statistical software to obtain descriptive

statistics, including means, standard deviations, and frequencies. Furthermore, a range of inferential statistical tests, such as t-tests, chi-squared tests, and correlation analysis, have been employed to evaluate the associations among different variables.

5. Summary, Conclusion and Recommendations

Chapter 5 functions as the apex of the study, consolidating the principal discoveries, conclusions, and recommendations derived from the data analysis and the attainment of the research objectives. The objective of this chapter is to present a thorough overview of the results obtained from the study and their significance in relation to the convergence of business and artificial intelligence in the healthcare sector. Additionally, it intends to discuss the consequences of these findings in addressing the ethical dilemmas involved with this confluence. The discourse is in accordance with the research inquiries and provides valuable perspectives on the prospective implementation of artificial intelligence in the healthcare industry.

5.1. Summary of Findings

This section will provide a summary of the study's main findings, incorporating both qualitative and quantitative outcomes. This summary will provide an overview of the research topics, key findings, and implications pertaining to the use of artificial intelligence (AI), ethical considerations, and the regulatory influence on healthcare systems in the United States and the United Kingdom.

5.1.1. Research Question 1

Research from the US and UK healthcare industries shows significant integration of artificial intelligence (AI) in the sector. AI-powered diagnostic systems have shown precision and reliability in medical imaging, enhancing early disease detection and patient treatment quality. Cost-effectiveness is another factor influencing AI adoption, with Accenture's 2019 study predicting \$150 billion in US yearly savings by 2026. AI also improves patient accessibility to medical treatments through telehealth, enabling remote monitoring and consultations, especially in rural or underserved areas. The COVID-19 pandemic has expedited the use of telehealth, further demonstrating its significance in expanding patient access to healthcare services.

5.1.2. Research Question 2

The use of artificial intelligence (AI) in healthcare has raised ethical concerns in the US and UK. Patient data privacy and security are crucial issues, with HIPAA regulating these in the US and GDPR in the UK. However, GDPR imposes more stringent criteria, impacting organizations' management and protection of patient data. Algorithmic bias, a concern in healthcare, can lead to discrepancies in results. Both countries acknowledge the presence of bias, but their responses vary. The US has implemented rules and programs to promote transparency, while the UK has implemented measures to promote transparency in AI technology use. The ethical considerations in AI in healthcare are comprehensive, but differing regulatory frameworks and methodologies can impact their responses. This highlights the need for ongoing international collaboration and knowledge exchange to improve ethical practices in AI implementation.

5.1.3. Research Question 3

The regulatory frameworks in the United States and the United Kingdom exhibit both parallels and variations, which have implications for the integration of artificial intelligence (AI) in the healthcare sector and its effects on business strategies and patient care.

- **The United States is a country located in North America.**

The Food and Drug Administration (FDA) is the governing body responsible for regulating AI-based medical devices in the United States. The regulatory method employed by the FDA is designed to guarantee the safety and efficacy of these devices. The evaluation of AI-based medical devices by the FDA has been emphasised in recent studies, exemplified by the research conducted by Roth et al. (2020). The importance of thorough testing, clinical validation, and continuous monitoring of AI algorithms is underscored in order to ensure the safety of patients. The regulatory process implemented by the FDA, albeit rigorous, offers a well-defined trajectory for producers of medical devices and has fostered increased investment in artificial intelligence (AI) technology within the healthcare industry.

- **The United Kingdom is a sovereign country located off the northwestern coast of mainland Europe. It consists of four countries: England, Scotland**

The General Data Protection Regulation (GDPR) holds considerable importance in the United Kingdom as it serves as a legislative framework for data privacy and security. The influence of GDPR legislation on the processing of patient data within the realm of artificial intelligence (AI) in the healthcare sector is noteworthy. The significance of the General Data Protection Regulation (GDPR) in safeguarding data security and privacy is emphasised in research conducted by Brall et al. (2020). The General Data Protection Regulation (GDPR) places significant importance on the rights of individuals and the requirement for consent, so influencing the practises of data sharing and the deployment of artificial intelligence (AI). The manner in which healthcare organisations and enterprises manage patient data is significantly impacted, particularly within the realm of artificial intelligence (AI)-driven applications.

- **The Influence on Business Strategies:**

The variances in regulatory frameworks exert an impact on the formulation and implementation of corporate strategy. In the United States, the Food and Drug Administration (FDA) places its primary emphasis on medical devices. Consequently, enterprises operating within this jurisdiction may place a higher level of importance on the advancement and commercialization of medical devices that incorporate artificial intelligence (AI) technology. The establishment of clear regulations in this domain has resulted in a rise in investments and collaborations within this industry (Dissanayake et al., 2024). On the other hand, the United Kingdom's emphasis on data privacy and adherence to the General Data Protection Regulation (GDPR) can incentivize firms to allocate resources towards the implementation of data protection measures and the adoption of artificial intelligence (AI) technologies that enhance privacy.

- **The Influence on Patient Care:**

The presence of regulatory disparities also has an impact on the provision of patient care. The oversight provided by the FDA in the United States plays a significant role in guaranteeing the safety and efficacy of AI medical devices. This regulatory framework eventually improves patient care by offering precise and dependable diagnostic tools. The General Data Protection Regulation (GDPR) in the United Kingdom prioritises the protection of patient data privacy. However, it may have consequences on the facilitation of data sharing and the interoperability of artificial intelligence (AI) systems. This might potentially affect the exchange of information and the standard of patient care.

5.1.4. Research Question 4

The use of artificial intelligence (AI) in healthcare can be effectively leveraged while addressing ethical dilemmas. Healthcare professionals, policymakers, and businesses in the US and UK can implement best practices to ensure ethical norms for AI implementation. These should focus on data privacy, algorithmic fairness, accountability, and openness. Continuous monitoring and auditing methods are recommended to detect algorithmic bias. Transparency in AI algorithms is crucial for trust. Policymakers should strive to balance innovation with patient safety through regulatory measures. Collaborative efforts and information exchange between the US and UK can create regulatory frameworks that promote responsible AI adoption and facilitate technology advancement. By adhering to these strategies, healthcare stakeholders can benefit from enhanced patient care, operational effectiveness, and technological advancements.

6. Conclusion

The research findings indicate that the incorporation of artificial intelligence in the healthcare sector is making notable progress in both the United States and the United Kingdom. Artificial intelligence (AI) is increasingly playing a crucial role in strengthening the accuracy of medical diagnoses, improving patient care, and optimising healthcare processes. Nevertheless, this process of change is accompanied by ethical dilemmas, encompassing apprehensions over the protection of data privacy, the presence of algorithmic bias, the establishment of accountability, and the provision of transparency. These problems hold relevance in both nations, albeit with variations stemming from disparities in regulations and healthcare systems.

Regulatory frameworks are of utmost importance in influencing the adoption of AI and resolving ethical considerations. In the United States, the Food and Drug Administration (FDA) is responsible for the regulation of artificial intelligence (AI)-based medical devices. Conversely, in the United Kingdom, the General Data Protection Regulation (GDPR) is followed to ensure data privacy. The many methodologies exert an impact on the implementation of artificial intelligence (AI) technologies and their application in the provision of healthcare to patients.

The research findings suggest the need for a comprehensive approach that optimises the benefits of artificial intelligence (AI) in the healthcare sector, while simultaneously addressing the ethical dilemmas associated with its implementation. This encompasses the formulation of comprehensive ethical principles, ongoing surveillance of AI systems to detect and mitigate bias, fostering openness and responsibility, and harmonising regulatory structures to foster innovation while ensuring the protection of patient well-being.

6.1. Proposed Recommendations

In light of the research outcomes and resultant deductions, a number of suggestions are put out to offer guidance to healthcare practitioners, policymakers, and enterprises in the integration of artificial intelligence (AI) into the healthcare sector, while simultaneously tackling the ethical dilemmas that arise in this context.

The establishment of comprehensive ethical standards is crucial for healthcare organisations to facilitate the deployment of artificial intelligence (AI). These guidelines should prioritise key ethical considerations such as patient data protection, algorithmic fairness, accountability, and transparency.

Continuous monitoring and auditing are essential practises in the realm of artificial intelligence (AI). It is imperative to consistently monitor AI algorithms to identify any potential biases or ethical concerns that may arise. Additionally, conducting external audits is crucial to guarantee the fairness and dependability of AI-based systems.

The imperative for regulatory alignment necessitates policymakers in both the United States and the United Kingdom to collaborate in order to provide a congruous framework for the adoption of artificial intelligence (AI) and the safeguarding of data privacy within the healthcare sector. This collaborative effort aims to foster uniformity and streamline processes, hence enhancing consistency and operational effectiveness.

Patient Education: Facilitating Patient Empowerment through Information Dissemination on Artificial Intelligence in Healthcare, Data Management, and Patient Rights, Cultivating a Sense of Autonomy and Comprehension.

Promoting Collaboration and Knowledge Sharing: Facilitate the exchange of ideas, best practises, and ethical issues pertaining to the implementation of artificial intelligence (AI) by fostering collaboration among healthcare professionals, corporations, and policymakers.

6.2. Limitations of the Study

This study examines the convergence of business and artificial intelligence in the healthcare sectors of the United States and the United Kingdom. However, it has limitations such as its geographic scope, temporal limitations, sample representativeness, and the use of a mixed-methods approach. The research is based on data available until January 2022, and the results may not fully encompass global variations in AI implementation. The study also relies on self-reported data, which may introduce bias or inaccuracy in responses. Cultural and regional variations are also considered, but the study primarily focuses on the United States and the UK without further exploration. Despite these limitations, the study provides valuable insights into AI adoption, ethical considerations, and regulatory consequences in the healthcare sector.

References

- [1] Abernethy, A et al., (2022). The Promise of Digital Health: Then, Now, and the Future. *NAM perspectives*, 2022, 10.31478/202206e. <https://doi.org/10.31478/202206e>
- [2] Almaiah, M. A., Alfaisal, R., Salloum, S. A., Hajje, F., Shishakly, R., Lutfi, A., ... & Al-Marouf, R. S. (2022). Measuring institutions' adoption of artificial intelligence applications in online learning environments: integrating the innovation diffusion theory with technology adoption rate. *Electronics*, 11(20), 3291. <https://doi.org/10.3390/electronics11203291>
- [3] Bekbolatova, M., Mayer, J., Ong, C. W., & Toma, M. (2024). Transformative Potential of AI in Healthcare: Definitions, Applications, and Navigating the Ethical Landscape and Public Perspectives. *Healthcare (Basel, Switzerland)*, 12(2), 125. <https://doi.org/10.3390/healthcare12020125>
- [4] Bohr, A., & Memarzadeh, K. (2020). The rise of artificial intelligence in healthcare applications. *Artificial Intelligence in Healthcare*, 25–60. <https://doi.org/10.1016/B978-0-12-818438-7.00002-2>

- [5] Bradford, L., Aboy, M., & Liddell, K. (2020). International transfers of health data between the EU and USA: a sector-specific approach for the USA to ensure an 'adequate' level of protection. *Journal of law and the biosciences*, 7(1), lsaa055. <https://doi.org/10.1093/jlb/lsaa055>
- [6] Dissanayake, H., Manta, O., Iddagoda, A., & Palazzo, M. (2024). AI applications in business: Trends and insights using bibliometric analysis. *The International Journal of Management Education*, 22(3), 101075. <http://dx.doi.org/10.1016/j.ijme.2024.101075>
- [7] Esteva, A., Robicquet, A., Ramsundar, B., Kuleshov, V., DePristo, M., Chou, K., ... & Dean, J. (2019). A guide to deep learning in healthcare. *Nature medicine*, 25(1), 24-29. <https://doi.org/10.1038/s41591-018-0316-z>
- [8] Gabriel, O. T. (2023). Data privacy and ethical issues in collecting health care data using artificial intelligence among health workers (Master's thesis, Center for Bioethics and Research). <https://www.scirp.org/reference/referencespapers?referenceid=3857493>
- [9] Hofmann, P., Neutz, S., & Otten, L. Understanding the Digital Transformation in the Healthcare Sector: A Concept-Centric Umbrella Review. *cii Student Papers-2023*, 29. <https://publikationen.bibliothek.kit.edu/1000162178>
- [10] <https://www.fda.gov/medical-devices/digital-health-center-excellence/digital-health-software-precertification-pre-cert-pilot-program>
- [11] <https://www.healthcareitnews.com/projects/2019-healthcare-it-gains-new-ground>
- [12] https://www.researchgate.net/publication/385089185_Data_Protection_in_AI-Driven_Systems_Understanding_the_EU's_Legal_and_Regulatory_Response_Through_the_General_Data_Protection_Regulation_GDPR
- [13] Morley, J. (2023). On designing an algorithmically enhanced NHS: towards a conceptual model for the successful implementation of algorithmic clinical decision support software in the National Health Service (Doctoral dissertation, University of Oxford). <https://ora.ox.ac.uk/objects/uuid:0f58b2c4-ffa0-412d-afc3-aedc2eaf46d4>
- [14] Obermeyer, Z., Powers, B., Vogeli, C., & Mullainathan, S. (2019). Dissecting racial bias in an algorithm used to manage the health of populations. *Science*, 366(6464), 447-453.
- [15] PwC, C. (2020). PwC. Global Annual Review. <https://www.pwc.com/gx/en/about-pwc/global-annual-review-2020/downloads/pwc-global-annual-review-2020.pdf>
- [16] Scott, W. R. (2013). *Institutions and organizations: Ideas, interests, and identities*. Sage publications. <http://dx.doi.org/10.22439/cjas.v32i2.4764>
- [17] Sheikh, A., et al., (2021). Health information technology and digital innovation for national learning health and care systems. *The Lancet Digital Health*, 3(6), e383-e396. [https://doi.org/10.1016/s2589-7500\(21\)00005-4](https://doi.org/10.1016/s2589-7500(21)00005-4)