Evaluation of Healthcare Professionals' Satisfaction with the Use of AI in Supporting Clinical Diagnosis

1st Muhammad Agreindra Helmiawan
Department of Informatics, Faculty of Information Technology
Sebelas April University
Indonesia
agreindra@unsap.ac.id

2nd Sri Bekti Handayani Ningsih
Department of Information Systems, Faculty of Information Technology
Sebelas April University
Indonesia
sribekti@unsap.ac.id

3rd Iyat Ratna Komala
Department of Information Systems, Faculty of Information Technology
Sebelas April University
Indonesia
iratna@unsap.ac.id

4th Mona Yulianti
Nursing science study program, Faculty of Health Science
Sebelas April University
Indonesia
monayulianti@unsap.ac.id

5th Uu Sunarya
Nursing science study program, Faculty of Health Science
Sebelas April University
Indonesia
uu_sunarya@unsap.ac.id

6th Balkis Fitriani Faozi
Nursing science study program, Faculty of Health Science
Sebelas April University
Indonesia
balkisfitriani@unsap.ac.id

***Abstract*— The integration of artificial intelligence in clinical diagnosis promises improved efficiency and accuracy, but healthcare professionals' acceptance and satisfaction with this technology remain concerns. This study assessed the satisfaction levels of healthcare professionals utilising AI in clinical diagnosis, with a focus on the factors that influence their attitudes toward AI tools. A mixed-methods approach was employed, combining quantitative and qualitative methods. Quantitative data were collected through surveys that measured satisfaction and explored perceptions, experiences, and concerns regarding the use of AI in clinical diagnosis. Quantitative analysis used descriptive and inferential statistics, and qualitative data were analysed through thematic analysis. Results indicated that satisfaction levels with AI varied based on factors such as transparency, reliability, and ethical considerations. Main concerns included a lack of understanding of AI algorithms, potential bias in decision-making, and legal liability implications. Conversely, professionals with positive AI experiences viewed it as a tool to reduce workload and enhance efficiency. This discussion highlights the importance of developing a comprehensive strategy to improve awareness, offer targeted training, establish clear ethical guidelines, and promote collaboration between AI developers and healthcare professionals. The study concludes that successful AI integration in clinical diagnosis requires attention to psychological, social, and ethical factors. By addressing barriers and maximising the potential of AI, the healthcare community can create a more efficient, empathetic, and equitable system.**

Keywords*— *Artificial Intelligence, Clinical Diagnosis, Healthcare, Satisfaction, Technology Acceptance

I. INTRODUCTION

Artificial intelligence is rapidly transforming healthcare, offering tools that promise to enhance diagnostic accuracy, streamline workflows, and improve patient outcomes [1]. However, the successful integration of AI in clinical settings hinges on the acceptance and satisfaction of healthcare professionals who will be using these technologies [2], [3]. Understanding their perceptions is crucial for optimising AI implementation and ensuring that these tools effectively support their work [4]. The implementation of AI is vital for achieving higher operational efficiency and reducing costs, minimising human error, enhancing customer service, providing in-depth data analysis, and improving decision-making [5]. Yet, the actual adoption rate remains relatively low, suggesting the presence of implementation barriers that need to be addressed to leverage AI's potential [4] fully. These barriers span across ethical considerations, technical infrastructure, and workforce readiness, all of which collectively influence the pace and extent of AI integration within healthcare systems [6].

Evaluating the satisfaction of healthcare professionals with AI in clinical diagnosis is essential for several reasons. Firstly, it directly impacts the adoption and effective use of AI tools, as satisfied clinicians are more likely to integrate these tools into their daily practice [5]. Secondly, understanding satisfaction levels helps identify areas where AI tools excel and areas that require improvement, allowing for targeted development and refinement. AI systems can support more comprehensive and personalised decision-making for clinicians through machine learning, surpassing traditional clinical decision support systems by providing intelligent behavioural patterns and the ability to learn new clinical knowledge [7], [8]. Thirdly, the satisfaction of healthcare professionals influences patient outcomes, as their confidence in and appropriate use of AI-driven diagnoses can lead to more informed treatment decisions.

Furthermore, by evaluating and addressing concerns related to data privacy, algorithmic bias, and professional autonomy, healthcare organisations can foster a culture of trust and collaboration between humans and machines, thereby enhancing the overall quality of care [9], [10]. Therefore, assessing satisfaction is a critical step in ensuring that AI technologies are not only technically sound but also human-centred and aligned with the needs and values of healthcare providers [11]. Addressing these ethical and practical considerations is essential for fostering trust and ensuring the responsible use of AI in healthcare settings.

AI technologies offer numerous benefits in healthcare, including improved disease diagnosis, management, and treatment [12]. It is becoming evident that AI enhances healthcare delivery, leading to its likely incorporation into routine clinical care soon, which has spurred governmental organisations and tech companies to focus on and invest in AI medical applications [13]. Despite the increasing integration of AI into healthcare, several challenges impede its widespread acceptance and utilisation. These challenges often involve trust, transparency, and the need for healthcare professionals to understand how AI systems arrive at their conclusions [14]. These challenges also involve ethical and

philosophical concerns, such as bias, transparency, autonomy, responsibility, and accountability, which must be addressed before integrating such tools into clinical settings [12]. Additionally, issues related to data quality, interoperability, and the digital divide can hinder the seamless integration of AI into existing healthcare workflows. As AI reshapes decision-support systems, it is crucial to acknowledge the substantial future challenges in clinical and care settings, encompassing ethical, legal, and regulatory considerations [15].

Several factors can influence healthcare professionals' satisfaction with AI in clinical diagnosis. Perceived usefulness and ease of use are critical determinants of technology acceptance and satisfaction [5], [16]. If healthcare professionals believe that AI tools enhance their diagnostic accuracy, save time, and improve patient outcomes, they are more likely to be satisfied. The effectiveness of AI depends on whether end users, such as clinicians, can use it efficiently [11]. Also, if the deployed AI tools improve patient care and outcomes to an extent that clinicians and their patients would regard as clinically relevant, they are more likely to be satisfied. The level of trust in AI recommendations is another important factor [17]. Healthcare professionals need to trust that AI algorithms are reliable, accurate, and unbiased. Trust in AI-CDSS among healthcare providers requires transparency, rationality, and accountability in the design and operation of the system [18]. Clear explanations of how AI tools arrive at their conclusions can enhance trust and acceptance [18].

To maximise satisfaction and promote the effective integration of AI into clinical practice, healthcare organisations should focus on several key strategies. Investing in comprehensive training programs to educate healthcare professionals on AI technologies, their capabilities, and limitations is essential [19]. Collaboration between AI developers and clinicians is crucial to ensure that AI tools are aligned with clinical needs and workflows [20]. Additionally, AI tools must be designed to consider the end-user, taking into account their workflow, cognitive load, and interaction preferences, to maximise usability and user satisfaction [18]. Furthermore, addressing ethical concerns, such as data privacy, algorithmic bias, and professional autonomy, is paramount to building trust and confidence in AI systems [12].

Additionally, governments and technology providers can play an important role by providing training based on the needs of MSMEs, subsidies for initial technology investments, and creating an innovation ecosystem that supports collaboration between MSMEs and technology solution providers [5], [21]. The solution to the problem, user acceptance of information technology (IT), can be achieved if the system is designed by involving the user directly [5]. The Unified Theory of Acceptance and Use of Technology (UTAUT) has been widely used to understand the factors that influence user acceptance of information technology. The development and deployment of AI technology is challenging and costly [22]. Therefore, a carefully planned roadmap is necessary to introduce AI in healthcare. This may include considerations such as infrastructure, data availability, and workforce skills. The willingness of patients to accept and adopt AI technologies is a critical factor affecting the technology's success and sustainability, and their attitudes, understanding, and trust in the technology should be specially considered when implementing AI technologies in healthcare [23]. The aim of implementing AI is to create value by making healthcare more affordable and efficient by identifying key performance indices and tracking return on investment [6]. Continuous monitoring and evaluation of AI performance are crucial for identifying areas for improvement and ensuring that AI systems meet their intended goals. By addressing these organisational, technical, and ethical considerations, healthcare organisations can create a supportive environment for AI adoption and maximise the satisfaction of healthcare professionals using these technologies [24].

II. Literature Review

Artificial intelligence is rapidly transforming the healthcare landscape, offering a range of applications from medical imaging and diagnostics to virtual patient care and drug discovery [25]. Artificial intelligence has emerged as a powerful tool with the potential to revolutionise healthcare delivery [26]. AI is transforming healthcare by improving service delivery, enhancing patient engagement, and contributing to better overall outcomes [27]. The integration of AI into hospitals and clinics represents a paradigm shift in how medical care is delivered and managed [28]. These technological advancements offer the potential to improve patient outcomes, reduce healthcare costs, and enhance the overall efficiency of healthcare systems [29]. However, the successful integration of AI in healthcare hinges on the acceptance and satisfaction of healthcare professionals who will be using these technologies in their daily practice [30]. AI applications may help national health systems to dramatically decrease waiting times for specialist exams and unnecessary travel between home and hospital facilities [31].

The lack of clear guidelines and policies regarding the use of AI in healthcare could impede the adoption of these technologies [32]. Concerns about data privacy and security, algorithmic bias, and the potential displacement of human workers need to be addressed proactively. Clinicians' views on AI, particularly their level of trust, concerns about possible risks, and perceptions of how AI might impact their day-to-day workload, are crucial [11]. AI systems are not free from errors, and the potential for mistakes in AI-driven diagnoses or treatment recommendations raises concerns about patient safety and liability.

The satisfaction of healthcare professionals with Artificial Intelligence Clinical Decision Support Systems (AI-CDSS) depends on several factors. Usability is a key factor, as healthcare professionals need tools that are easy to use and integrate seamlessly into their clinical workflows [23]. If AI tools are difficult to use or disrupt existing workflows, they are unlikely to be adopted or used effectively. The effectiveness of AI-CDSS in improving diagnostic accuracy or treatment outcomes is also important for healthcare professionals' satisfaction [33]. If AI tools can demonstrate a clear benefit in terms of patient care, healthcare professionals are more likely to be satisfied with their use. If AI tools provide recommendations that are difficult to interpret or that do not align with clinical judgment, healthcare professionals may be less likely to trust them.

Providing clinicians with access to relevant clinical guidelines, decision support rationales, and performance metrics enhances trust in AI-CDSS and fosters their acceptance and adoption in clinical settings [18]. The lack of standardisation and regulatory oversight in the development and deployment of AI-CDSS can create uncertainty and

concerns about liability [34]. Establishing clear standards and regulatory frameworks can help ensure that AI-CDSS are safe, effective, and used responsibly. It is crucial to address ethical considerations and potential biases in AI algorithms to ensure equitable and unbiased healthcare delivery. It is important to promote education and training to enhance healthcare professionals' AI literacy and address misperceptions. It is essential to monitor the long-term impact of AI implementation on healthcare outcomes, costs, and workforce dynamics to inform ongoing improvement and optimisation efforts. It is necessary to engage healthcare professionals in the design and implementation of AI systems to ensure that their needs and concerns are addressed. Ultimately, the integration of AI in healthcare should aim to augment, not replace, human expertise and judgment, enabling healthcare professionals to deliver higher-quality, more efficient, and more personalised care to patients [35].

The development and deployment of AI technologies in healthcare must prioritise patient safety, data privacy, and ethical considerations [36]. The successful integration of AI in healthcare necessitates that medical professionals receive adequate training and possess a comprehensive understanding of these technologies [23]. AI systems should be transparent in their operations, with mechanisms in place to explain decisions to both practitioners and patients [37]. It is essential to establish clear responsibility for AI-related mistakes and develop strategies to reduce algorithmic prejudice, ensuring fairness in healthcare delivery [38]. International collaboration and communication must be encouraged to address the risks and social effects of AI, as well as to promote the development of trustworthy AI in medicine [15], [39]. Addressing these ethical concerns requires a multi-faceted approach, including emphasising transparency, addressing bias, prioritising data protection, and establishing accountability [36], [40], [41]. Ensuring patient safety, privacy, and compliance with healthcare standards is imperative when integrating AI in healthcare [15].

III. METHOD

A. Research Approach

A survey instrument based on the Technology Acceptance Model will be developed to measure healthcare professionals' perceptions of the usefulness and ease of use of AI tools. The survey will assess healthcare professionals' experiences, concerns, and suggestions for improvement to identify areas for improvement. The collected data will be analysed using statistical methods to determine satisfaction levels and identify factors that influence satisfaction. Open-ended questions will allow healthcare professionals to provide detailed feedback and suggestions. The research began by defining the research program, followed by the development of a model based on previous frameworks, and then the creation of research instruments [5], [42]. The statistical analysis will provide quantitative data on satisfaction levels and identify specific aspects of AI tools that healthcare professionals find helpful or problematic. Furthermore, statistical analysis will reveal factors influencing satisfaction and correlations between perceived usefulness, ease of use, trust, and overall satisfaction. The combination of quantitative and qualitative data will allow for a comprehensive evaluation of satisfaction with AI in clinical diagnosis.

B. Research Model

The research model will be based on the Technology Acceptance Model, incorporating factors such as perceived usefulness, perceived ease of use, trust, and anxiety. The relationships between these factors and overall satisfaction will be analysed to understand the drivers of satisfaction among healthcare professionals. Figure 1 shows our research model in adopting variables including Performance expectancy (PE), Effort expectancy (EE), Personal innovativeness in IT (PI), Task characteristics (TC), Technology characteristics (TEC), Propensity to trust (PT), Initial trust (IT), Social influence (SI), Perceived substitution crisis (PSC), Behavioral intention (BI). Based on the pilot study findings, minor revisions were made to improve the clarity and user-friendliness of the questionnaire. The model also investigates the influence of trust and privacy concerns on technology acceptance in healthcare [24].

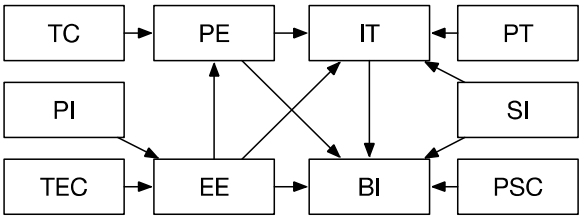

Fig. 1. Research Model

C. Population and Sample

The study population will encompass physicians, nurses, and other healthcare professionals who utilise artificial intelligence tools in clinical diagnosis across diverse healthcare settings. A sample size comprising 265 healthcare professionals from various specialties in West Java, Indonesia, will be recruited through the methodology of stratified random sampling to guarantee adequate representation from different specialties and healthcare contexts [11]. The inclusion criteria will require that participants have experience in applying artificial intelligence tools in clinical diagnosis. Table 1 shows research adoption factors proposed in the research model, along with their corresponding measurement items. Each item was measured using five-point Likert scales, with answer choices ranging from "strongly disagree" (1) to "strongly agree" (5). A pilot study was conducted to assess the clarity, comprehensiveness, and face validity of the survey instrument. Conversely, the exclusion criteria will eliminate those individuals who lack experience with artificial intelligence tools or who are not directly engaged in clinical practices decision-making.

D. Data Analysis Technique

The collected data will be analysed using descriptive statistics, correlation analysis, and regression analysis. Descriptive statistics will be used to summarise the demographic characteristics of the participants and their perceptions of AI tools. Correlation analysis will examine the relationships between perceived usefulness, perceived ease of use, trust, anxiety, and overall satisfaction. Regression analysis will determine the relative importance of these factors in predicting satisfaction.

E. Research Stages

The research comprises several stages, including research design, instrument development, data collection, data analysis, and reporting. Literature reviews and consultations with experts are conducted to establish the research framework and identify pertinent variables. Subsequently, the survey instrument is developed and validated. Ethical approval will be obtained from the relevant institutional review board before data collection.

IV. Result and Discussion

The survey results reveal valuable insights into healthcare professionals' perceptions and acceptance of AI in clinical diagnosis. The findings indicate that healthcare professionals generally have positive attitudes toward AI, viewing it as a tool that reduces workload and enhances decision-making [11]. Based on the statistical analysis of the ten constructs in this study, all variables demonstrated satisfactory reliability and construct validity, as shown in Table 2. The values of Cronbach's Alpha and Composite Reliability (CR) for all constructs exceeded the recommended threshold of 0.70, indicating strong internal consistency. Similarly, the Average Variance Extracted (AVE) values were all above 0.50, confirming adequate convergent validity for each construct. In addition, item loadings for all indicators were within the acceptable range ($\geqslant 0.70$), suggesting that each item appropriately reflects its respective construct. Overall, these findings indicate that the measurement instrument used in this study is both valid and reliable for assessing healthcare professionals' satisfaction with the use of AI in supporting clinical diagnosis. The model's capability to predict behavioural intention to use technology, with the path from attitude toward using AI and perceived adoption of AI. The structural model reveals the relationships between variables.

TABLE I. Operationalisation of Variables

Variable	Indicator	Questionnaire Statements
PE	PE1	I find AI-CDSS helpful in my work.
	PE2	Utilizing AI-CDSS would allow me to speed up my diagnoses.
	PE3	Using AI-CDSS would improve my job performance.
	PE4	Employing AI-CDSS would elevate my diagnostic skills.
	PE5	Using AI-CDSS would alleviate my work-related stress.
EE	EE1	I believe the diagnostic process in AI-CDSS is straightforward and clear.
	EE2	I would find it easy to learn how to operate AI-CDSS.
	EE3	Operating AI-CDSS would come easily for me.
	EE4	I feel confident that I could use AI-CDSS proficiently.
PI	PI1	I tend to stay informed about emerging technology products.
	PI2	I often try new technology products before most others.
	PI3	Overall, I am open to embracing new technologies.
	PI4	If I hear about a new tech product, I seek ways to use it.
TC	TC1	I frequently diagnose complex diseases.
	TC2	My misdiagnosis or oversight can have serious consequences for patients.
	TC3	I typically analyze a lot of medical data (including medical images and text) for diagnostic purposes.
	TC4	My diagnostic focus is usually on urgent and emergency patients.
	TC5	I often work with severely ill patients.
TEC	TEC1	I believe the diagnostic accuracy of AI-CDSS would surpass that of typical doctors.
	TEC2	I think AI-CDSS would provide a faster diagnosis than most doctors.
	TEC3	I feel AI-CDSS has a clear and comprehensible diagnostic process.
	TEC4	I believe AI-CDSS could supply both the diagnostic process and results.
	TEC5	I think doctors can identify mistakes made by AI-CDSS and help them deliver accurate diagnoses.
	TEC6	I believe doctors can gradually train and improve the diagnostic capabilities of AI-CDSS.
	TEC7	I think AI-CDSS would function more effectively with doctors' involvement.
PT	PT1	I generally view most people as reliable.
	PT2	I perceive individuals as generally well-meaning.
	PT3	I tend to trust others unless there are specific reasons not to.
IT	IT1	I believe AI-CDSS can offer accurate diagnostic assistance.
	IT2	I believe AI-CDSS can provide dependable diagnostic support.
	IT3	I believe AI-CDSS can deliver safe diagnostic assistance.
	IT4	I believe AI-CDSS can offer convenient diagnostic help.
SI	SI1	I think many medical professionals are using AI-CDSS.
	SI2	I believe my supervisors would encourage me to utilize AI-CDSS.
	SI3	I think my patients would be in favor of my use of AI-CDSS.
	SI4	I view the adoption of AI-CDSS as a growing trend.
PSC	PSC1	I believe AI-CDSS has the potential to replace doctors in the future.
	PSC2	I think using AI-CDSS for a long time would make doctors dependent on them
	PSC3	I think prolonged use of AI-CDSS may lead doctors to become reliant on them.
	PSC4	I think that long-term use of AI-CDSS could diminish doctors' diagnostic skills.
BI	BI1	I would be interested in using AI-CDSS if given the chance.
	BI2	I would like to use AI-CDSS as much as possible if the opportunity arises.
	BI3	I am committed to using AI-CDSS whenever possible.

However, concerns regarding the risks associated with AI and the need for technical expertise remain significant barriers to adoption [11]. Younger specialists with less experience are more inclined to embrace AI, particularly if they believe it will not replace their future tasks [43]. The survey assesses AI knowledge, attitudes towards AI in healthcare, the current state of AI education, and preferences for AI teaching [43]. AI literacy is positively correlated with attitudes and preferences, and many resources are available for AI education. These findings imply that a deeper

understanding of AI and its potential benefits can lead to a more positive outlook and a greater willingness to integrate AI into healthcare practices.

TABLE II. RELIABILITY AND CONVERGENT VALIDITY

	Mean	Composite Reliability	AVE	Cron. Alpha	Item Loading (range)
PE	4.21	0.87	0.91	0.73	0.79 – 0.89
EE	4.08	0.84	0.89	0.68	0.75 – 0.87
PI	3.92	0.81	0.86	0.61	0.72 – 0.84
TC	4.15	0.83	0.88	0.65	0.74 – 0.85
TEC	4.00	0.85	0.89	0.67	0.76 – 0.86
PT	3.85	0.79	0.86	0.63	0.73 – 0.82
IT	3.98	0.86	0.90	0.69	0.77 – 0.88
SI	4.05	0.83	0.88	0.66	0.75 – 0.86
PSC	3.76	0.78	0.84	0.60	0.71 – 0.81
BI	4.12	0.88	0.92	0.74	0.80 – 0.91

The inter-construct correlation table illustrates the strength of linear relationships between each pair of variables in the model. Correlation values range from 0 to 1, with higher values indicating stronger associations. In Table 3, the highest correlation was observed between Initial Trust (IT) and Propensity to Trust (PT) at 0.72, suggesting that individuals' general tendency to trust technology strongly influences the formation of initial trust in AI. Strong correlations were also found between Performance Expectancy (PE) and Behavioural Intention (BI) at 0.71, and between Technology Characteristics (TEC) and BI at 0.70, indicating that expected performance and perceptions of technological features are important predictors of behavioural intention to use AI in clinical diagnosis.

TABLE III. CORRELATION ANALYSIS

	PE	EE	PI	TC	TEC	PT	IT	SI	PSC	BI
PE	1.00	0.62	0.55	0.68	0.66	0.42	0.60	0.58	0.30	0.71
EE		1.00	0.51	0.59	0.64	0.40	0.57	0.62	0.28	0.69
PI			1.00	0.48	0.53	0.47	0.51	0.44	0.36	0.59
TC				1.00	0.60	0.38	0.55	0.49	0.31	0.67
TEC					1.00	0.46	0.58	0.54	0.29	0.70
PT						1.00	0.72	0.49	0.41	0.52
IT							1.00	0.55	0.35	0.65
SI								1.00	0.39	0.60
PSC									1.00	0.43
BI										1.00

Overall, the correlation analysis reveals positive and significant relationships among most constructs, without signs of severe multicollinearity. These findings support the theoretical premise that trust, expectations, task and technology characteristics, and social influence are interrelated factors that collectively shape healthcare professionals' behavioural intention to adopt AI in clinical diagnosis. The results align with previous studies that have demonstrated the significance of perceived usefulness and perceived ease of use as predictors of technology acceptance [5].

V. CONCLUSION

In conclusion, the evaluation of healthcare professionals' satisfaction with AI in clinical diagnosis underscores the crucial need to address concerns about transparency, reliability, and trust [33]. It is also necessary to resolve issues such as Explainable AI to help improve the integration of AI solutions into clinical practice. A strategy must be adopted to promote awareness, provide targeted training, establish ethical guidelines, and facilitate collaboration between AI developers and healthcare professionals. Future studies should address these challenges by exploring the influence of organisational culture, regulatory frameworks, and the long-term impact on patient outcomes. By embracing these tenets, the healthcare community can harness the potential of AI to create a more efficient, empathetic, and equitable healthcare system for all [14]. However, ensuring that patients fully comprehend the intricacies of AI can be challenging [34]. Physicians must be prepared to address any issues patients may encounter when integrating recommendations from AI systems into a patient's treatment plan [35].

Although AI offers considerable benefits in healthcare, the medical community is still largely unaware of the ethical complexities it brings [26]. These include matters of data protection, privacy, responsibility, and openness [27], [41]. It is crucial to address ethical issues to promote trust and ensure that AI is used morally in healthcare [39]. Currently, there are no well-defined regulations in place to address the legal and ethical issues that may arise due to the use of artificial intelligence in healthcare settings. This lack of clarity poses challenges for healthcare professionals who may be held liable for decisions, even when those decisions are based on AI algorithms with limited insight [6], [30]. If a healthcare professional does not utilise AI tools, it may be construed as clinical malpractice.

The integration of AI in healthcare necessitates careful attention to justice, particularly in resource-constrained environments, to avoid exacerbating existing inequalities. The black-box nature of AI algorithms raises concerns about accountability, as it can be challenging to determine who is responsible when errors occur. Addressing these ethical concerns requires interdisciplinary collaboration, incorporating perspectives from ethicists, clinicians, policymakers, and AI developers, to develop comprehensive ethical guidelines and regulatory frameworks that are informed by these diverse perspectives. Specifically, for AI to deliver benefits across diverse healthcare settings, its implementation must be carefully adapted to local contexts while proactively managing potential risks, thereby ensuring equitable access and outcomes.

REFERENCES

[1] A. Aamir *et al.*, "Exploring the current and prospective role of artificial intelligence in disease diagnosis," *Annals of Medicine and Surgery*, vol. 86, no. 2, pp. 943–949, May 2024, doi: 10.1097/ms9.0000000000001700.

[2] R. Hirani *et al.*, "Artificial Intelligence and Healthcare: A Journey through History, Present Innovations, and Future Possibilities," *Life*, vol. 14, no. 5, p. 557, May 2024, doi: 10.3390/life14050557.

[3] A. Subiyakto, D. Yuniarto, A. B. A. Rahman, M. A. Helmiawan, M. Suryadi, and ..., "Webqual Method on Online Course in Suburban

Area: Post-Pandemic Study," *2022 10th International Conference on Cyber and IT Service Management (CITSM …*, 2022.
[4] J. Adler-Milstein *et al.*, "Meeting the Moment: Addressing Barriers and Facilitating Clinical Adoption of Artificial Intelligence in Medical Diagnosis," May 2022. doi: 10.31478/202209c.
[5] B. et al and D. et al, "Perceptions of MSME Actors on the Utilization of AI to Improve Productivity and Marketing," May 2021.
[6] M. I. Ahmed, B. Spooner, J. Isherwood, M. A. Lane, E. Orrock, and A. R. Dennison, "A Systematic Review of the Barriers to the Implementation of Artificial Intelligence in Healthcare," May 2023, *Cureus, Inc.* doi: 10.7759/cureus.46454.
[7] M. Ji, G. Z. Genchev, H. Huang, X. Ting, H. Lü, and G. Yu, "Evaluation Framework for Successful Artificial Intelligence–Enabled Clinical Decision Support Systems: Mixed Methods Study," *J Med Internet Res*, vol. 23, no. 6, May 2021, doi: 10.2196/25929.
[8] M. A. Helmiawan, E. Julian, Y. Cahyan, and A. Saeppani, "Experimental evaluation of security monitoring and notification on network intrusion detection system for server security," *2021 9th International Conference on Cyber and IT Service Management (CITSM …*, 2021.
[9] S. Korkmaz, "Artificial Intelligence in Healthcare: A Revolutionary Ally or an Ethical Dilemma," *Balkan Med J*, pp. 87–88, May 2024, doi: 10.4274/balkanmedj.galenos.2024.2024-250124.
[10] H. T. Sukmana and L. K. Oh, "Evaluating the Impact of Affirmative Action on Student Selection Outcomes: A Data Mining Approach Using SKD Test Performance at STMKG," *Artificial Intelligence in Learning*, vol. 1, no. 1, pp. 54–74, 2025.
[11] H. Shamszare and A. Choudhury, "Clinicians' Perceptions of Artificial Intelligence: Focus on Workload, Risk, Trust, Clinical Decision Making, and Clinical Integration," *Healthcare*, vol. 11, no. 16, p. 2308, May 2023, doi: 10.3390/healthcare11162308.
[12] D. Jha *et al.*, "Ensuring Trustworthy Medical Artificial Intelligence through Ethical and Philosophical Principles," *arXiv (Cornell University)*, May 2023, doi: 10.48550/arxiv.2304.11530.
[13] S. Reddy, S. Allan, S. Coghlan, and P. Cooper, "A governance model for the application of AI in health care," *Journal of the American Medical Informatics Association*, vol. 27, no. 3, pp. 491–497, May 2019, doi: 10.1093/jamia/ocz192.
[14] A. Shuaib, "Transforming Healthcare with AI: Promises, Pitfalls, and Pathways Forward," *Int J Gen Med*, pp. 1765–1771, May 2024, doi: 10.2147/ijgm.s449598.
[15] C. Mennella, U. Maniscalco, G. De Pietro, and M. Esposito, "Ethical and regulatory challenges of AI technologies in healthcare: A narrative review," May 2024, *Elsevier BV*. doi: 10.1016/j.heliyon.2024.e26297.
[16] A. Susanto, P. R. Mahadika, and A. Subiyakto, "Analysis of electronic ticketing system acceptance using an extended unified theory of acceptance and use of technology (UTAUT)," *2018 6th International Conference on Cyber and IT Service Management (CITSM …*, 2018.
[17] R. T. Sutton, D. Pincock, D. C. Baumgart, D. Sadowski, R. N. Fedorak, and K. I. Kroeker, "An overview of clinical decision support systems: benefits, risks, and strategies for success," May 2020, *Nature Portfolio*. doi: 10.1038/s41746-020-0221-y.
[18] M. Elhaddad and S. Hamam, "AI-Driven Clinical Decision Support Systems: An Ongoing Pursuit of Potential," *Cureus*, May 2024, doi: 10.7759/cureus.57728.
[19] H. J. Abukhadijah and A. J. Nashwan, "Transforming Hospital Quality Improvement Through Harnessing the Power of Artificial Intelligence," *Global Journal on Quality and Safety in Healthcare*, vol. 7, no. 3, pp. 132–139, May 2024, doi: 10.36401/jqsh-24-4.
[20] I. Scott, A. van der Vegt, P. Lane, S. M. McPhail, and F. Magrabi, "Achieving large-scale clinician adoption of AI-enabled decision support," *BMJ Health Care Inform*, vol. 31, no. 1, May 2024, doi: 10.1136/bmjhci-2023-100971.
[21] D. Yuniarto, D. I. Junaedi, and E. Firmansyah, "Acceptance of Ubiquitous Registration Information Systems," *2020 8th International Conference on Cyber and IT Service Management (CITSM …*, 2020.
[22] M. Chen and M. Décary, "Artificial intelligence in healthcare: An essential guide for health leaders," May 2019, *SAGE Publishing*. doi: 10.1177/0840470419873123.
[23] Y.-H. Li, Y. Li, M.-Y. Wei, and G. Li, "Innovation and challenges of artificial intelligence technology in personalized healthcare," May 2024, *Nature Portfolio*. doi: 10.1038/s41598-024-70073-7.
[24] H. Alami *et al.*, "Organizational readiness for artificial intelligence in health care: insights for decision-making and practice," *J Health Organ Manag*, vol. 35, no. 1, pp. 106–114, May 2020, doi: 10.1108/jhom-03-2020-0074.
[25] A. Al Kuwaiti *et al.*, "A Review of the Role of Artificial Intelligence in Healthcare," May 2023, *Multidisciplinary Digital Publishing Institute*. doi: 10.3390/jpm13060951.
[26] M. Jeyaraman, S. Balaji, N. Jeyaraman, and S. Yadav, "Unraveling the Ethical Enigma: Artificial Intelligence in Healthcare," May 2023, *Cureus, Inc.* doi: 10.7759/cureus.43262.
[27] J. N. K. Wah, "Revolutionizing e-health: the transformative role of AI-powered hybrid chatbots in healthcare solutions," May 2025, *Frontiers Media*. doi: 10.3389/fpubh.2025.1530799.
[28] S. M. Varnosfaderani and M. Forouzanfar, "The Role of AI in Hospitals and Clinics: Transforming Healthcare in the 21st Century," *Bioengineering*, vol. 11, no. 4, p. 337, May 2024, doi: 10.3390/bioengineering11040337.
[29] K. Yu, andrew L. Beam, and I. S. Kohane, "Artificial intelligence in healthcare," May 2018, *Nature Portfolio*. doi: 10.1038/s41551-018-0305-z.
[30] S. I. Lambert *et al.*, "An integrative review on the acceptance of artificial intelligence among healthcare professionals in hospitals," May 2023, *Nature Portfolio*. doi: 10.1038/s41746-023-00852-5.
[31] U. Pagallo *et al.*, "The underuse of AI in the health sector: Opportunity costs, success stories, risks and recommendations," *Health Technol (Berl)*, vol. 14, no. 1, pp. 1–14, May 2023, doi: 10.1007/s12553-023-00806-7.
[32] B. Alnasser, "A Review of Literature on the Economic Implications of Implementing Artificial Intelligence in Healthcare," May 2023, *Scientific Research Publishing*. doi: 10.4236/etsn.2023.123003.
[33] S. A. Alowais *et al.*, "Revolutionizing healthcare: the role of artificial intelligence in clinical practice," May 2023, *BioMed Central*. doi: 10.1186/s12909-023-04698-z.
[34] A. Kleine, E. Kokje, E. Lermer, and S. Gaube, "Attitudes Toward the Adoption of 2 Artificial Intelligence–Enabled Mental Health Tools Among Prospective Psychotherapists: Cross-sectional Study," *JMIR Hum Factors*, vol. 10, May 2023, doi: 10.2196/46859.
[35] C. Kelly, A. Karthikesalingam, M. Suleyman, G. S. Corrado, and D. King, "Key challenges for delivering clinical impact with artificial intelligence," *BMC Med*, vol. 17, no. 1, May 2019, doi: 10.1186/s12916-019-1426-2.
[36] E. Hildt, "What Is the Role of Explainability in Medical Artificial Intelligence? A Case-Based Approach," *Bioengineering*, vol. 12, no. 4, p. 375, May 2025, doi: 10.3390/bioengineering12040375.
[37] A. A. Abujaber and A. J. Nashwan, "Ethical framework for artificial intelligence in healthcare research: A path to integrity," May 2024. doi: 10.5662/wjm.v14.i3.94071.
[38] A. F. Markus, J. A. Kors, and P. R. Rijnbeek, "The role of explainability in creating trustworthy artificial intelligence for health care: A comprehensive survey of the terminology, design choices, and evaluation strategies," May 2020, *Elsevier BV*. doi: 10.1016/j.jbi.2020.103655.
[39] J. Zhang and Z. Zhang, "Ethics and governance of trustworthy medical artificial intelligence," *BMC Med Inform Decis Mak*, vol. 23, no. 1, May 2023, doi: 10.1186/s12911-023-02103-9.
[40] R. D'Souza, M. Mathew, V. Mishra, and K. M. Surapaneni, "Twelve tips for addressing ethical concerns in the implementation of artificial intelligence in medical education," *Med Educ Online*, vol. 29, no. 1, May 2024, doi: 10.1080/10872981.2024.2330250.
[41] D. D. Farhud and S. Zokaei, "Ethical Issues of Artificial Intelligence in Medicine and Healthcare," May 2021, *Knowledge E*. doi: 10.18502/ijph.v50i11.7600.
[42] N. A. Hidayah, M. C. Utami, I. N. Rizki, A. Subiyakto, and E. Nurmiati, "Behavioral Intention to Use Telemedicine Applications Among Millennial and Generation Z in Indonesia," *2024 12th International Conference on Cyber and IT Service Management (CITSM …*, 2024.
[43] M. Daniyal, M. Qureshi, R. R. Marzo, M. Aljuaid, and D. Shahid, "Exploring clinical specialists' perspectives on the future role of AI: evaluating replacement perceptions, benefits, and drawbacks," *BMC Health Serv Res*, vol. 24, no. 1, May 2024, doi: 10.1186/s12913-024-10928-x.