International Journal of Research Studies in Management
2026 Volume 14 Number 1, 29-36

Influence of Artificial Intelligence adoption on decision making efficiency in healthcare enterprises

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Received: 27 December 2025 **Revised**: 20 January 2026 **Accepted**: 22 January 2026
Available Online: 23 January 2026 **DOI**: 10.5861/ijrsm.2026.26003

ISSN: 2243-7770
Online ISSN: 2243-7789

OPEN ACCESS

Abstract

This study aimed to examine the influence of Artificial Intelligence (AI) adoption on decision-making efficiency in health care enterprises in China. Specifically, it assessed the extent of AI adoption in terms of customer service, resource management, and task automation; determined decision-making efficiency in terms of speed, accuracy, and quality; tested the significant relationship between AI adoption and decision-making efficiency; evaluated the influence of AI adoption on decision-making efficiency; and proposed an action plan to enhance decision-making efficiency. A total of 250 participants from health care enterprises were surveyed using a descriptive research design. Data were analyzed using SPSS version 28. Weighted mean and rank were employed to assess AI adoption and decision-making efficiency across the identified dimensions. Pearson correlation was used to determine the significant relationship between AI adoption and decision-making efficiency, while regression analysis identified significant predictors. Case-wise diagnostics were conducted to detect outliers. Results revealed that AI adoption in health care enterprises is moderately implemented across customer service, resource management, and task automation. The overall level of decision-making efficiency was found to be efficient across speed, accuracy, and quality. A highly significant positive relationship was observed between AI adoption and decision-making efficiency across all domains. Regression analysis further indicated that resource management, task automation, and customer service are significant predictors of decision-making efficiency, with resource management exerting the strongest influence. Based on these findings, an action plan was developed to further enhance decision-making efficiency in health care enterprises through optimized AI adoption strategies. The study underscores the critical role of AI in improving operational performance and decision-making in the health care sector.

Keywords: AI adoption, health care enterprises, decision-making efficiency, operational performance

Influence of Artificial Intelligence adoption on decision making efficiency in healthcare enterprises

1. Introduction

The integration of Artificial Intelligence (AI) into healthcare enterprises has been a transformative force in the industry, offering promising solutions for enhancing decision-making efficiency. AI technologies enable healthcare organizations to streamline operations, improve patient care, and optimize resource management. AI's role in transforming customer service within healthcare organizations is evident in its ability to automate and personalize patient interactions. AI-powered chatbots and virtual assistants can address patient inquiries instantly, improving service delivery and reducing wait times (Kubatko et.al., 2024). Additionally, AI technologies enable predictive analytics, allowing healthcare providers to anticipate patient needs, thereby enhancing the overall customer experience and increasing decision-making speed. AI technologies, particularly machine learning algorithms, have revolutionized resource management by enhancing decision-making in workforce planning, equipment allocation, and inventory management. In healthcare settings, AI can predict patient volume, optimize staff schedules, and manage inventory, ensuring that resources are utilized efficiently (Sarkhosh, 2024). The automation of administrative and routine tasks through AI is a significant driver of efficiency in healthcare organizations. AI technologies automate processes such as scheduling, billing, and data entry, which traditionally require substantial human intervention (Sharma et al., 2025). Task automation allows healthcare professionals to focus on higher-value activities, improving productivity and decision-making speed (Nianga, 2024).

AI's impact on decision-making efficiency can be evaluated in terms of three key dimensions: speed, accuracy, and quality. AI enables faster decision-making by providing real-time data analysis and actionable insights (Kabir et al., 2024). Additionally, AI reduces human error, enhancing the accuracy of decisions in clinical and operational settings. AI-driven decision support systems (CDSS) ensure that healthcare providers can make evidence-based decisions that improve patient outcomes (Rupakula, 2025). While AI's role in decision-making has been widely explored across various industries, there is limited research specifically addressing the impact of AI on decision-making efficiency within healthcare enterprises, particularly in China (Kubatko et al., 2024). Existing studies primarily focus on AI adoption in isolated areas such as diagnostics or patient management, without examining its comprehensive influence on the overall decision-making process (Kabir et al., 2024). Furthermore, the relationship between AI adoption and the critical factors of decision-making efficiency such as speed, accuracy, and quality has not been extensively investigated (Sarkhosh, 2024). This gap presents an opportunity to explore how AI can enhance operational decision-making in healthcare settings, providing valuable insights for optimizing service delivery and resource management (Sharma et al., 2025).

Having previously worked in the pharmaceutical industry, the researcher observed firsthand the increasing reliance on technology to streamline operations and improve decision-making. In healthcare enterprises, where precision and speed are crucial, Artificial Intelligence (AI) has the potential to significantly enhance decision-making efficiency. By assessing AI's role in customer service, resource management, and task automation, this study aims to explore how AI adoption influences key factors such as speed, accuracy, and quality of decisions. It is the aim to contribute valuable insights into how healthcare enterprises, particularly in China, can harness AI's potential for enhanced efficiency. The experience in the pharmaceutical sector has fueled the desire to investigate AI's impact on decision-making in a context that directly decision-making efficiency.

Objectives of the study - This study aims to examine the influence of Artificial Intelligence adoption on decision making efficiency in health care enterprises in China. Specifically, it aimed to assess the extent of artificial intelligence adoption in terms of customer service, resource management, and tasks automation; determine the decision-making efficiency in terms of speed, accuracy, and quality; Test the significant relationship between AI adoption and decision making; evaluate the influence of AI adoption on decision making efficiency; and come up

with an Action Plan to improve decision-making efficiency in health care enterprises.

2. Methods

Research Design - Descriptive research design was used in this paper. In summary, descriptive research is valuable in business research because it provides detailed, reliable, and contextual information about a particular situation, process, or phenomenon. It helps businesses understand the current state of affairs, identify patterns, make informed decisions, and set the stage for further analysis.

Participants of the Study - Participants of the study will come from 5 top companies in Henan Province in China. Fifty (50) employees were taken from the following companies: Henan Haiwang Medicine Group Co., Ltd; Autobio Diagnostics Co., Ltd. Zhengzhou Yonghen Pharmacy Ltd.; Henan Zhengzhou Pharmaceutical Co., Ltd.; and Zhengzhou Baixiaodan Pharmaceutical Co., Ltd, totalling 250 participants. Quota random sampling technique was used to ensure that the sample represents different roles, departments, and experience levels within the healthcare sector. The questionnaires were distributed to healthcare professionals, administrators, and decision-makers who are involved in the decision-making process and/or the use of AI within their organizations. It was distributed electronically (via email or online survey platforms) or in paper format, depending on the preferred method of data collection.

Instruments - The self- structured questionnaire will be used as a primary data collection tool to understand the impact of AI on decision-making efficiency in healthcare enterprises. Questionnaire will have two parts. Part 1 is the extent of the use of Artificial Intelligence in terms of in terms of customer service; resource management; and tasks automation. Part 2 is about Decision Making efficiency in terms of accuracy, speed and quality. This will be subjected to validation and reliability test.

Table 1.

Reliability Results

Variables	No. of Items	α value	Interpretation
Artificial Intelligence Adoption			
Customer Service	5	0.824	Good
Resource Management	5	0.748	Acceptable
Task Automation	5	0.895	Good
Overall	15	0.924	Excellent
Decision-Making Efficiency			
Speed	5	0.823	Good
Accuracy	5	0.894	Good
Quality	5	0.771	Acceptable
Overall	15	0.937	Excellent

Legend > 0.9 =Excellent; >0.8=Good:>0.7=Acceptable;>0.6=Questionable;>0.5=Poor;<0.5=Unacceptable

The reliability results indicate strong internal consistency across all variables measured under Artificial Intelligence Adoption and Decision-Making Efficiency. For Artificial Intelligence Adoption, the sub variables showed acceptable to good reliability: Customer Service had a Cronbach's alpha of 0.824, and Task Automation scored 0.895, both reflecting good reliability. Resource Management, with an alpha of 0.748, falls within the acceptable range. The overall reliability for Artificial Intelligence Adoption, combining all 15 items, is 0.924, which is considered excellent, signifying a high degree of consistency in responses across the domain. For Decision-Making Efficiency, the reliability of individual components also ranged from acceptable to good. The sub variables for Speed (0.823) and Accuracy (0.894) demonstrated good reliability, while Quality yielded an acceptable reliability score of 0.771. The overall reliability for Decision-Making Efficiency is 0.937, which is classified as excellent, indicating highly reliable responses across all its measured aspects. These results suggest that the survey instrument used to assess these constructs is statistically sound and capable of producing consistent data.

Procedure - Prior approval from the listed companies in the conduct of study were sought before the actual

survey. Before the actual survey, validation of the instrument by the experts were conducted. After the validation, the paper was subjected to ethics review approval. After the approval, pilot testing was conducted to 35 participants to have the reliability test. After passing the reliability test, the questionnaires were distributed. The questionnaire responses were collected over a period of 2-4 weeks, ensuring that participants have enough time to respond. Follow-up reminders were sent to increase the response rate. Results of the survey were tallied and subject to the processing of the statistician.

Ethical Considerations - Ethical considerations were practiced in the conduct of the research. The Ethics Review of the University conducted review and approval of the paper. The researcher warrant that every information that was gathered are used for research purposes only to maintain the quality and integrity of the research. The researcher also sought the consent of the companies under study through letter and communication to make sure that the target respondents will be prepared to answer necessary questions involved in the research. It also ensured the confidentiality and anonymity of the respondents by not seeking their names as they were answering the questionnaires. The researcher also ensured that the respondents voluntarily answer the questionnaires according to their will. Lastly, it also ensured that none of the respondents of the study will be hurt or harmed and their safety and security is of top priority.

Data Analysis - Weighted mean and rank were used to assess the extent of artificial intelligence adoption in terms of customer service, resource management, and tasks automation.; and to determine the decision-making efficiency in terms of speed, accuracy, and quality; Pearson r was used to determine the significant relationship. Regression analysis was used to determine the significant predictors of decision-making efficiency. Case wise diagnostics was used to identify the outliers. All analyses were performed using SPSS version 28.

3. Results and Discussions

Table 2

Summary Table of Extent of Artificial Intelligence Adoption

Indicators	Weighted Mean	Verbal Interpretation	Rank
Customer Service	3.31	Moderately Adopted	2
Resource Management	3.23	Moderately Adopted	3
Tasks Automation	3.34	Moderately Adopted	1
Composite Mean	3.29	Moderately Adopted	

Legend: 3.50-4.00=Highly Adopted; 2.50-3.49=Moderately Adopted; 1.50-2.49=Slightly Adopted; 1.00-1.49=Not Adopted

Table 2 summarizes the extent of AI adoption in healthcare enterprises across three key operational areas: customer service, resource management, and task automation. The composite mean of 3.29 indicates that AI is moderately adopted overall. This suggests that while AI tools are becoming increasingly integrated into healthcare operations, full-scale implementation and optimization are still in progress. Tasks Automation ranked first with a weighted mean of 3.34, indicating a relatively higher acceptance and usage of AI in automating routine administrative and clinical tasks. Automation is known to significantly reduce operational workload and enhance efficiency, especially in repetitive and data-driven processes (Jagannathan, 2025). The second and third ranks were Customer Service (3.31) and Resource Management (3.23), respectively, both also rated as moderately adopted. Interestingly, Resource Management had the lowest adoption level among the three, despite its potential to optimize staffing, inventory, and facility operations. This lag may reflect the complexity and organizational hesitation in relinquishing control of resource allocation to AI-driven systems—a concern also noted by Zuo et al. (2025), who emphasized that generative AI adoption requires robust readiness and strategic frameworks.

Table 3 presents the summary of respondents' perceptions regarding decision-making efficiency in healthcare enterprises using AI. The results indicate that all three indicators—accuracy (3.24), quality (3.21), and speed (3.19)—are rated as "Efficient", with a composite mean of 3.21. Accuracy ranks highest, suggesting that AI is particularly effective in enhancing the correctness and reliability of decisions. This supports findings by Al-Rakhami et al. (2023), who emphasized that AI-powered clinical support systems significantly reduce diagnostic

errors and improve data interpretation. Similarly, Nguyen et. al.,(2022) noted that AI improves decision accuracy by enabling real-time analysis and predictive insights.

Table 3

Summary Table of Decision-making Efficiency

Indicators	Weighted Mean	Verbal Interpretation	Rank
Speed	3.19	Efficient	3
Accuracy	3.24	Efficient	1
Quality	3.21	Efficient	2
Composite Mean	3.21	Efficient	

Legend: 3.50-4.00=Highly Efficient; 2.50-3.49=Efficient; 1.50-2.49=Less Efficient; 1.00-1.49=Not Efficient

Quality follows as the second-highest dimension, indicating that AI contributes meaningfully to enhancing the overall value and consistency of decisions made in healthcare settings. Chen et al. (2024) also highlighted AI's role in improving care quality by standardizing procedures and optimizing treatment paths based on data analytics. Speed, while still rated efficient, ranks third, which may suggest that although AI facilitates faster decision-making, there are still barriers such as system integration delays or initial training requirements (Rodriguez et al., 2025). Nonetheless, the technology still streamlines many time-consuming processes in hospital administration and patient care. Overall, the findings affirm that AI-driven decision-making in healthcare is efficient, with notable strengths in accuracy and quality, and slightly lower—yet still positive—ratings in speed. This supports the broader narrative that while AI is not a perfect substitute for human decision-making, it greatly enhances efficiency, consistency, and confidence in clinical and administrative contexts (Nguyen et al., 2022; Chen et al., 2024).

Table 4

Relationship Between AI Adoption and Decision-Making Efficiency in Health Care Enterprises

Variables	r	p-value	Interpretation
Customer Service			
Speed	.558**	<.001	Highly Significant
Accuracy	.721**	<.001	Highly Significant
Quality	.782**	<.001	Highly Significant
Resource Management			
Speed	.862**	<.001	Highly Significant
Accuracy	.851**	<.001	Highly Significant
Quality	.982**	<.001	Highly Significant
Tasks Automation			
Speed	.829**	<.001	Highly Significant
Accuracy	.832**	<.001	Highly Significant
Quality	.819**	<.001	Highly Significant

Legend: Significant at p-value<0.01

Table 4 presents a highly significant relationship between artificial intelligence (AI) adoption and decision-making efficiency across three core domains within healthcare enterprises: customer service, resource management, and task automation. In the domain of customer service, AI adoption demonstrates moderate to strong positive correlations with decision-making speed (r = .558), accuracy (r = .721), and quality (r = .782), all statistically significant at $p < .001$. These results suggest that AI-enhanced systems enable faster response times, reduce human error, and improve service personalization, thus improving the overall quality of decision-making processes (Chen et al., 2024; Nguyen et al., 2022).

In the area of resource management, the relationship is even more robust, with AI adoption exhibiting very strong correlations with speed (r = .862), accuracy (r = .851), and especially quality (r = .982). These findings emphasize the critical role of AI in forecasting resource needs, streamlining inventory control, and improving the precision of logistical decisions, which is consistent with prior studies highlighting the transformative effect of AI on operational resource planning in healthcare (Al-Rakhami et al., 2023; Rodriguez et al., 2025). Similarly, in the context of task automation, AI adoption also shows highly significant positive correlations with decision-making speed (r = .829), accuracy (r = .832), and quality (r = .819). These values reinforce the notion that automating

repetitive and time-consuming tasks not only expedites decision cycles but also reduces cognitive load on healthcare professionals, leading to more accurate and higher-quality decisions (Chen et. al., 2024). The findings affirm that strategic AI integration across operational processes is vital for enhancing the efficiency and effectiveness of decision-making in health enterprises.

Table 5

Predictors of Decision-making Efficiency in Health Care Enterprises

Variable	B	β	t-value	p-value	Interpretation
(Constant)	-0.232		-3.869	<.001	Highly Significant
Customer Service	0.068	0.072	2.864	0.005	Significant
Resource Management	0.731	0.658	17.734	<.001	Highly Significant
Tasks Automation	0.257	0.288	9.593	<.001	Highly Significant

Legend: Significant at p-value<0.05; F=1168.841;p=<.001; r^2 = 0.934

Table 10 presents the results of a regression analysis identifying the predictors of decision-making efficiency in healthcare enterprises. The model is statistically significant ($F = 1168.841$, $p < .001$) and explains a substantial proportion of the variance in decision-making efficiency ($r^2 = 0.934$). This suggests that the predictors included in the model—customer service, resource management, and task automation—account for 93.4% of the variability in decision-making outcomes. These findings highlight the critical role of AI integration in optimizing healthcare enterprise performance. Among the predictors, resource management emerges as the most influential factor ($\beta = 0.658$, $t = 17.734$, $p < .001$). This aligns with findings by Zhang et al. (2023), who emphasized that AI-driven resource allocation systems in healthcare significantly enhance operational decision-making by improving data-driven insights and reducing waste. Similarly, Chen et al. (2024) found that AI systems improve scheduling, logistics, and supply chain decisions, thereby increasing overall organizational efficiency.

Task automation also demonstrates a significant contribution to decision-making efficiency ($\beta = 0.288$, $t = 9.593$, $p < .001$). This supports the research of Alhassan et al. (2022), who reported that automating repetitive and data-intensive tasks through AI leads to faster processing and more accurate clinical and administrative decisions. Automation facilitates consistent application of guidelines and reduces human errors, especially in high-volume healthcare operations. Although customer service exhibits the smallest effect size ($\beta = 0.072$), it remains statistically significant ($t = 2.864$, $p = 0.005$). This implies that AI-enabled customer interactions—such as virtual assistants, automated triage, and chatbots—still contribute meaningfully to efficient decision-making by reducing patient wait times and improving service delivery, as supported by Rahman et al. (2025) and Lee et al. (2022). Collectively, these findings affirm that strategic AI adoption in healthcare—particularly in resource management and task automation—can substantially drive more efficient, accurate, and effective decision-making.

Table 6

Action Plan to Improve Decision Making Efficiency in Health Care Enterprises in China

Key Results Area	Strategies	Objectives of the Strategies	Persons Involved	Expected Outcomes
Speed AI-Enabled Inter-Departmental Coordination	Conduct a gap analysis of current inter-departmental communication tools and processes. Implement an AI-based workflow system that automates information sharing and task tracking between departments (e.g., AI-assisted scheduling, alerts, or case routing). Provide training on using AI coordination tools across departments.	To minimize delays and streamline communication and task handoffs between departments through intelligent automation.	IT Department, Department Heads, Process Improvement Team, HR Training	Improved real-time coordination. Reduced lag in referrals and approvals. Faster turnaround in interdependent tasks.

Quality Consistency and Quality in AI-Assisted Decision-Making	Develop standardized AI decision protocols aligned with institutional policies and clinical guidelines across all departments. Implement a centralized AI decision support system (DSS) to be used consistently across units. Conduct cross-departmental training sessions on AI decision tools to ensure consistent interpretation and application.	To enhance the reliability and quality of decisions made with AI support by ensuring uniform usage and interpretation across departments.	Medical Directors, Department Heads, IT Department, Training & Development, AI Governance Committee	increased alignment of decisions across departments; Fewer variations in practice; Improved quality and accountability in decision-making.
Accuracy Evidence-Based Decisions Using AI	Audit existing AI data sources to ensure accuracy, timeliness, and reliability. Enhance data integration systems to reduce fragmented or incomplete information being used by AI. Conduct capacity-building workshops for staff on interpreting AI data and applying it in clinical/administrative decisions. 4. Establish review protocols to verify the evidence basis of AI recommendations before implementation.	To strengthen the accuracy and credibility of AI-supported decisions by improving data quality and user understanding.	Data Management Team, IT Department, Department Heads, Training & Development Office, Quality Assurance	More accurate AI output; Increased staff confidence in AI recommendations; Improved decision-making backed by high-quality evidence.

4. Conclusions

- The Artificial Intelligence adoption in health care enterprises is moderately adopted across all indicators such as Tasks Automation, Customer Service and Resource Management.
- The overall level of decision-making efficiency in health care enterprises is interpreted as Efficient across all assessed area like accuracy, speed and quality.
- There is a highly significant positive relationship between AI adoption and decision-making efficiency in health care enterprises. across all domains—customer service, resource management, and task automation—particularly in terms of speed, accuracy, and quality.
- Resource Management, Task Automation, and Customer Service are significant predictors of decision-making efficiency in health care enterprises, with Resource Management having the strongest influence.
- A plan of Action is prepared to improve the decision-making efficiency.

Recommendations

- The Healthcare organizations may enhance infrastructure, provide targeted training, and implement pilot programs focused on customer service, resource management, and task automation to improve the adoption of AI.
- The action plan may be presented to healthcare organizations for review and possible implementation to enhance adoption of AI and improve decision-making efficiency.
- Future studies may consider examining the barriers and enablers of AI adoption using qualitative approaches to gain deeper insights into organizational readiness and user perceptions

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