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Risks and Opportunities of Artificial Intelligence Integration in Rural Hospital Entrepreneurship: Perspectives from Healthcare Practitioners

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ABSTRACT

Artificial Intelligence (AI) has become a key innovation in improving healthcare service quality and efficiency; however, its adoption in rural hospitals presents both opportunities and challenges. This study aims to explore the integration of AI in hospital entrepreneurship within Wonogiri, Central Java, to identify its benefits and risks in a rural context. A qualitative approach was employed through in-depth interviews with seven healthcare practitioners, including hospital and clinic owners or directors. Data were transcribed, coded, and thematically analyzed to obtain comprehensive insights. The findings revealed that AI offers several opportunities, including reducing operational costs, enhancing patient adherence through automated reminders, improving efficiency in human resource management, and optimizing inventory systems. Nevertheless, notable risks include patients' limited technological readiness, the low digital competence of healthcare staff, infrastructure and maintenance challenges, and high initial investment costs. This study makes a unique contribution by presenting an in-depth examination of AI implementation in rural healthcare entrepreneurship—an area that has been rarely examined in prior studies. The results provide both academic insight and practical guidance for hospital managers and policymakers in balancing technological innovation with local constraints to support inclusive digital transformation.

Kata kunci:
Kewirausahaan kesehatan; Kecerdasan buatan; Rumah sakit pedesaan; Manajemen rumah sakit; Risiko dan peluang

Kecerdasan buatan (AI) menjadi inovasi penting dalam meningkatkan efisiensi dan kualitas layanan kesehatan, namun penerapannya di rumah sakit pedesaan masih menghadapi tantangan besar. Penelitian ini bertujuan mengeksplorasi integrasi AI dalam kewirausahaan rumah sakit di Wonogiri, Jawa Tengah, untuk memahami peluang dan risikonya dalam konteks pedesaan. Metode penelitian menggunakan pendekatan kualitatif melalui wawancara mendalam dengan tujuh praktisi kesehatan yang terdiri atas pemilik dan direktur rumah sakit/klinik, kemudian data ditranskripsi dan dianalisis secara tematik. Hasil menunjukkan bahwa AI memberikan peluang berupa efisiensi biaya operasional, peningkatan kepatuhan pasien melalui pengingat otomatis, peningkatan efektivitas manajemen sumber daya manusia, serta optimalisasi sistem inventori. Namun, ditemukan pula risiko utama seperti rendahnya kesiapan pasien pedesaan terhadap teknologi, keterbatasan kompetensi tenaga kesehatan, kendala infrastruktur dan pemeliharaan, serta tingginya biaya investasi awal. Studi ini unik karena menawarkan perspektif baru tentang penerapan AI di sektor kesehatan pedesaan, memberikan kontribusi akademik sekaligus panduan praktis bagi manajemen rumah sakit dan pembuat kebijakan dalam mendorong transformasi digital yang inklusif.

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INTRODUCTION

Hospitals need to emphasise the importance of leveraging innovative solutions to improve healthcare services while maintaining financial sustainability (Bamel et al., 2023; Gemelgo et al., 2025). In this regard, artificial intelligence (AI) technology has emerged as a key component for fostering innovation, promising significant changes in the rapidly evolving digital era (Topol, 2019). In this framework, AI acts as a transformation tool capable of

redefining traditional business models. For example, predictive analytics and machine learning algorithms enable hospitals to project admission rates. Consequently, the integration of AI in hospital operations has great potential to improve efficiency, accuracy, and effectiveness in hospital management by enhancing capacity planning (Saheb et al., 2021). Moreover, AI can help healthcare organisations in various aspects, ranging from human resource management and patient data processing to faster and more precise medical decision-making.

Accordingly, the integration of AI in healthcare operations is a complex endeavour that requires multidisciplinary collaboration and a well-thought-out strategy (Gautam et al., 2022). In other words, the adoption of this technology is not without its risks. The integration of AI in healthcare presents significant challenges and risks, including ethical dilemmas, data privacy concerns, and resistance to technological change (Morley et al., 2020). These risks become more complex in an entrepreneurial context, where the adoption of advanced technologies must be balanced with regulatory compliance and cost-effectiveness. Therefore, understanding the duality of AI's risks and opportunities is crucial for healthcare leaders and policymakers. Amidst such great potential, healthcare providers as complex organisations face various challenges that need to be overcome to optimally leverage AI opportunities (Dwivedi et al., 2021).

A few studies have tried to explain and determine both opportunities (i.e., Meskó et al., 2018; Rajpurkar et al., 2018; Reddy et al., 2019) and risks (i.e., Elwy et al., 2020; Gemelgo et al., 2025; Jiang et al., 2021) of AI integration in the healthcare business. However, those studies are conducted in large cities, which are more likely to be exposed to technological advancements. Recent studies have examined AI's opportunities, such as improved diagnostic accuracy, workforce efficiency, and patient outcomes (Meskó et al., 2018; Reddy et al., 2019), as well as its risks, including bias, patient distrust, and high implementation costs (Elwy et al., 2020; Jiang et al., 2021). Yet, most of this research has focused on large urban hospitals with better infrastructure, stronger funding, and higher digital readiness. It leaves a critical gap in understanding rural healthcare entrepreneurship, where hospitals operate with limited financial resources, insufficient infrastructure, fewer skilled professionals, and patient populations less accustomed to digital solutions (Arifian, 2025; Leksono et al., 2024). Strategies for AI adoption in rural areas cannot simply replicate those in metropolitan contexts; instead, they require tailored approaches that reflect the unique realities of each location. This condition also implies a need to analyze this area of study in rural areas to gain a more comprehensive understanding of the topic. To address this gap, this research aims to explore the risks and opportunities of AI integration in healthcare organisations within rural areas, specifically in Wonogiri. The focus of the research is on the insights of healthcare practitioners, such as owners and directors of healthcare organisations, who are expected to explain the strategic implications of AI utilisation.

By exploring the perspectives of these healthcare stakeholders, this research is expected to provide deeper insights into the dynamics of AI implementation in healthcare operations. From an academic perspective, the study of AI in the healthcare business offers a new intersection between technology, business, and healthcare. This interdisciplinary approach can reveal unique insights into how AI is reshaping both risks and opportunities in the healthcare industry. In addition, this research bridges the gap between theory and practice by synthesising insights from healthcare practitioners and academics. Moreover, from a managerial standpoint,

this research contributes to a holistic understanding of how AI can drive competitive advantages in healthcare beyond clinical care, underscoring the need for healthcare leaders to equip themselves with the necessary skills to navigate the complexities of AI integration.

RESEARCH METHOD

This study is an exploratory-descriptive study that employed a qualitative method, involving in-depth interviews with healthcare practitioners in the area of healthcare entrepreneurship in Wonogiri. These in-depth interviews aimed to obtain detailed information regarding the use of AI in the management of healthcare organisations. Such a method was utilized to explore the views of healthcare directors and owners, delving deeper into the concept, operations, and implications of applying developing AI technology to business problems, specifically in the healthcare industry. Not only that, this research objective is to solicit their opinions to examine issues specific to this sector, especially in conceptualising possible opportunities and risks of AI integration in hospital and clinic management.

Seven healthcare practitioners participated in this study, comprising hospital and clinic owners, as well as directors from various healthcare organizations in Wonogiri. Participants were selected using purposive sampling based on the following criteria: (1) holding a strategic or managerial position in a hospital or clinic, (2) having at least ten years of experience in healthcare management, and (3) being directly involved in planning or overseeing the adoption of digital or AI-related initiatives. Recruitment was conducted through formal invitations and follow-up discussions. Data saturation was reached when no new themes or insights emerged during the final interviews, confirming that seven participants were adequate for this study's exploratory scope.

The decision to collect data through interviews, one of the participatory research methods (Vaughn & Jacquez, 2020), was made based on literature demonstrating the benefits of employing this qualitative data collection method (Lubin & Feeley, 2016) . Over the past two decades, participatory research strategies have been increasingly employed in the social sciences, public policy sectors, and other disciplines, including hospital management (Carey, 2016; Hamilton & Finley, 2019; Luke & Goodrich, 2019). This research method, especially interviews, is a natural approach to obtaining data for people-focused subjects and, therefore, becomes the most appropriate method for gaining insights from individuals in senior or creative roles (Thelwall & Nevill, 2021).

In this study, seven healthcare practitioners specializing in healthcare entrepreneurship were interviewed. All informants were directly involved with the implementation of strategic plans at the hospital in Wonogiri. This interview stage aimed to conceptualise possible future trends based on the reflections of hospital entrepreneurship experts. Table 1 outlines the profiles of the seven participants, who were selected based on their expertise in hospital management. All had more than 10 years of experience.

Table 1. Profile of Interviewees

Number	Role	Company
1	Director	Astrini Hospital
2	Owner	Fitri Candra Hospital
3	Director	Mulia Hati Hospital
4	Owner	Sabrina Clinic
5	Owner	Nur Anisa Clinic
6	Owner	Husada Medika Clinic
7	Owner	Amal Sehat Hospital

Source: *Processed Data (2025)*

Questions asked respondents to imagine possible future situations as AI is implemented, perfected, and deployed in healthcare organisations. In this matter, the respondents chosen not only had healthcare management expertise but also a comprehensive understanding of the technological opportunities and risks. They were also asked to consider how AI will impact both businesses in the healthcare sector. The interviews lasted on average 75 minutes and were supported by a semi-structured interview guide, which was used to probe and analyze the information in depth. This approach guided the coding and categorization of the data, enabling a systematic, thorough, and cumulative analysis of the information (Michel-Villarreal et al., 2023). The interview questions and prompts, as shown in Table 2, helped facilitate a discussion at each interview that was focused primarily on acquiring participants' feedback on the role of AI in their healthcare organisation, specifically in determining the opportunities and risks of AI integration in hospital and clinic management.

Table 2. Interviews Guide: Key Questions and Prompts

Purposes	Questions
Discussing the benefits of AI integration in healthcare management	What significant benefits or opportunities for your organisation can AI offer by integrating into the operations?
Exploring the risks in integrating AI in healthcare management	What are the potential challenges for your organisation in integrating AI into hospital business operations?

Source: *Processed Data (2025)*

After conducting the interview sessions, the data were summarized as necessary to meet the study's main objectives. To achieve the objectives of this study, thematic analysis was utilised. The data were examined through open and axial coding, a well-established qualitative methodology (Corbin & Strauss, 2015). Codes were assigned to units of meaning, which included various text sizes, such as words, sentences, and phrases, within the transcripts. Initially, open coding was conducted, involving the segmentation and categorisation of data, followed by axial coding, which entailed reorganising the data in novel ways (Corbin & Strauss, 2015). AF manually executed this coding process and was subsequently reviewed by RA, KD, and MS. Multiple themes emerged from the transcripts, which were then organised under broader themes for further discussion. This approach can lead to broader applicability and increased credibility of qualitative data.

RESULTS AND DISCUSSION

A semi-structured interview was conducted with healthcare practitioners to gather their perspectives on incorporating AI into healthcare entrepreneurship. Consistent with existing research, the findings indicated that AI has the capacity to transform healthcare management in various ways. Nevertheless, significant obstacles must be overcome first. The opinions of industry professionals from a rural perspective (Wonogiri) generally align with current literature, but they also provide additional insights that have not been extensively documented. Figure 1 outlines the main themes that emerged from the interviews, which are opportunities and risks mentioned by the experts. These themes are explored in greater detail in this section.

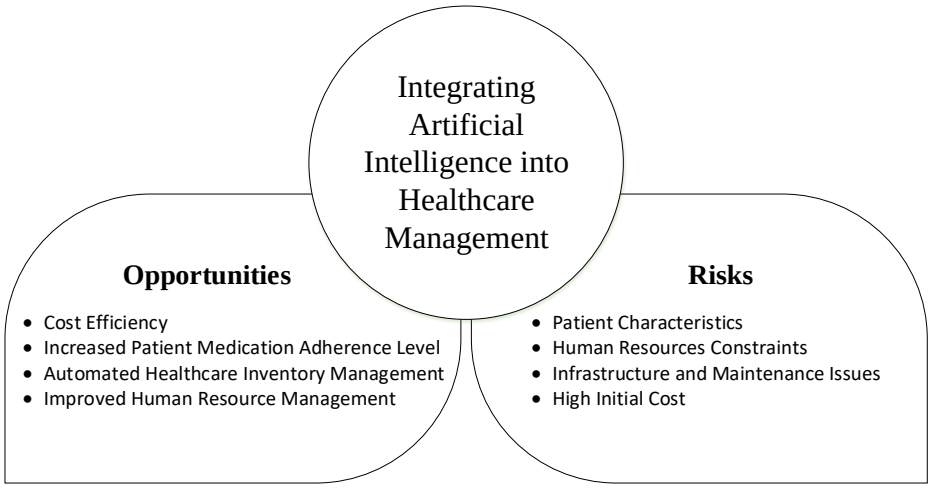

Figure 1. Opportunities and Challenges of AI Integration in Healthcare Management
Source: *Author's Own Collaboration*

1. Opportunities

1.1. Cost Efficiency

The use of AI is proven to create cost efficiency for healthcare organisations. The application of AI, especially in administrative tasks such as patient registration, can reduce the number of employees required and thus save hospital operating costs, where one of the biggest expenses for a hospital is employee salaries and wages.

> "AI in hospital management can help us to improve efficiency, especially in administrative matters, because there are several jobs that can now be done by AI without the need to use human resources" (Director of Astrini Hospital)**.**

AI can also serve as an automatic reminder to patients, alerting them when they should consult immediately. In this way, AI can reduce the hospital's operational costs, particularly by replacing the role of administrative employees responsible for sending reminder messages to patients.

> "The presence of AI can be utilised to send consultation reminder messages automatically, especially for patients who are required to carry out controls consistently, such as cancer patients, pregnant women consultations and others, so that we as management do not need to employ reminder staff who are usually part of the hospital's public relations team" (Director of Mulia Hati Hospital).

These findings regarding "cost efficiency" align with those of Trenggono & Bachtiar (2023), who stated that AI technology will continue to contribute more widely in the world of healthcare, particularly due to its influence in reducing hospital operational costs.

Participants consistently highlighted cost efficiency as a primary benefit of AI adoption. Automation reduces administrative workloads, particularly in patient registration and follow-up, allowing staff to focus on clinical tasks. One hospital director noted that AI "helps us reduce repetitive administrative work."

However, this study extends the discussion by illustrating how cost efficiency manifests differently in rural healthcare entrepreneurship. In small hospitals, savings are not only financial but also managerial—reducing pressure on limited staff resources. Unlike urban settings where automation complements large workforces, rural hospitals rely on AI to compensate for staff shortages, making efficiency a survival strategy rather than merely a performance enhancement.

1.2. Increased Patient Adherence Level

As explained earlier, AI can act as an automatic message reminder to patients. In this regard, one of the positive impacts of these reminder messages is an increase in patient adherence levels, as stated by the Director of Astrini Hospital.

> "Automated reminders have improved patients' compliance with health check-ups. Previously, many patients ignored or forgot their scheduled visits, but the reminder messages now help them remember and attend their consultations regularly" (Director of Astrini Hospital).

Gusdiani (2021) suggested that reminder messages have a significant positive influence on patient compliance. The results of their study indicated that health organisations, such as hospitals, can utilise reminder messages to enhance patient adherence levels. Additionally, this reminder message, if applied regularly, will help patients maintain self-care at home. Furthermore, Saputra et al. (2024) also found that pulmonary tuberculosis patients at the Mataram City Hospital would be more compliant in taking medication if they received reminder messages, which is also in line with Alfian (2015), who contend that with reminder messages, pharmacists can improve patients' medication compliance. AI-based reminder systems were reported to improve patient compliance with treatment schedules. As one participant explained, "Automated reminders have increased patient visits; they no longer forget their check-ups." This finding reinforces previous studies (Gusdiani, 2021; Saputra et al., 2024) that show reminder systems support adherence.

What is novel here is that, in a rural context, reminders address both behavioral and access challenges. Many patients in Wonogiri live far from hospitals and have limited digital literacy. Therefore, AI not only supports adherence but also bridges gaps in communication between institutions and patients. This nuance contributes to the literature by reframing digital reminders as access enablers in resource-limited settings, not just compliance tools.

1.3. Improved Human Resource Management

In healthcare organisations, the application of AI is seen as a means to help healthcare institutions, such as clinics and hospitals, with human resource management. The Owners of Sabrina Clinic and Amal Sehat Hospital stated that integrating AI into the human resource management system will make it easier for management to supervise and monitor employee performance.

"With this technology, I can read data more quickly, especially those related to employee discipline, including punctuality of working hours, because it may be helped by the automatic summarisation results generated by AI" (Owner of Sabrina Clinic).

"AI has significantly improved the hospital's employee performance assessment process. The system automatically generates summaries of staff performance, including attendance, punctuality, and absenteeism, allowing for faster and more accurate evaluations. This efficiency enables the hospital to deliver fair rewards and sanctions, ultimately enhancing overall organizational performance and supporting business growth" (Owner of Amal Sehat Hospital).

Trenggono & Bachtiar (2023) argued that AI has several positive roles in the health sector. According to him, AI will have a good impact with aggressive improvements, one of which is increasing the level of effectiveness and efficiency of human resources. Integrating AI into HR systems has enhanced performance monitoring and decision-making. According to one clinic owner, AI "automatically summarizes attendance and punctuality," enabling fair and efficient evaluations. Yet, this study nuances those findings by situating them within the context of rural healthcare entrepreneurship, where management capacity is often constrained. In this setting, AI serves as both a monitoring system and a leadership support tool, enabling small hospitals to maintain accountability despite limited administrative personnel. Digitalization in rural organizations serves not only efficiency goals but also institutional stability.

1.4. Automated Healthcare Inventory Management

The use of AI in healthcare institutions, when properly implemented, will provide several benefits, one of which is enhanced hospital inventory recording systems.

"By utilizing AI technology, our hospital has improved its inventory management system. The AI helps monitor supplies, automatically alerting us when medicines are nearing expiration so they can be prioritized for use or sale. It also automates procurement for items running low, ensuring that inventory levels remain optimal and operations continue smoothly." (Director of Mulia Hati Hospital).

In this regard, Pattinasarany et al. (2025) argue that supply chain optimisation in hospitals is a key element to ensure the smooth operation and quality of health services. Here, Artificial Intelligence (AI) plays an important role in improving supply chain efficiency through predictive capabilities, real-time monitoring, and automation of logistics processes, so as to help reduce the risk of stock shortages of drugs, medical equipment, and consumables that are often a challenge in many hospitals, including in Indonesia, according to them.

However, the present study adds that in rural hospitals, inventory automation carries strategic importance: it reduces dependency on delayed supplier deliveries. It mitigates waste from expired medicines, a common issue in small healthcare facilities. It highlights how AI supports sustainability in health service delivery—an underexplored dimension in prior studies.

2. Challenges

2.1. Patient Characteristics

Although the use of AI has been shown to provide numerous benefits, its use in small cities like Wonogiri also poses risks due to the profile of health users who are not yet fully ready to accept technological advancements.

"Our hospital has developed a patient application equipped with various AI features, including automated consultation reminders, location and room guides, and digital payment procedures. However, many patients still require direct assistance from on-site staff due to limited technological literacy and a lack of trust in digitally provided information. While technological innovation enhances service accessibility, successful adoption in rural contexts depends strongly on patient readiness and confidence in digital systems." (Owner of Astrini Hospital).

The most prominent challenge relates to patient readiness. Many participants observed that patients in Wonogiri are hesitant to use AI-based applications due to their limited digital skills and lack of trust. One hospital owner noted, "Patients still prefer direct assistance because they don't fully trust digital information.", this is in line with the results of research conducted by Leksono et al. (2024) which revealed that health users, especially in small towns or villages, have the idea that human personnel (health workers) remain the best choice when serving directly to patients. In their study, perhaps AI will be able to improve the quality of health services, but it still cannot replace the value of empathy, feelings, heart, and touch that humans provide. Yet, this study extends the literature by emphasizing how low digital literacy directly shapes AI implementation strategies, forcing hospitals to adopt hybrid models that combine technology and personal service. This context highlights the socio-cultural dimensions of AI adoption, which are often overlooked in urban-focused research.

2.2. Human Resources Constraints

One of the main risks associated with the use of AI in the healthcare sector is the lack of capability of employees to operate AI technology. Sakinah & Kuswinarno (2024) argued that implementing AI in HR management requires a change in employees' skills and outlook; therefore, companies must allocate funds for training and development so that all employees can keep pace with the new technology. This finding aligns with the results of this study, which suggests that management must bear the responsibility of developing their HR knowledge in operating AI technology, as expressed by the Director of Mulia Hati Hospital.

"One of the main challenges in implementing AI across our hospital operations—such as clinical diagnosis and inventory management—is the limited readiness and capability of our human resources to operate the new technology. This situation requires additional efforts to train and develop staff competencies in AI usage, as the transition initially increases their workload before long-term efficiency gains can be realized." (Director of Mulia Hati Hospital).

It makes it difficult for the management to implement AI-integrated systems. The lack of skilled health workers in using this latest technology is one of the reasons some hospitals and clinics have not implemented AI in their daily operations. Nur Anisa Clinic's owner stated as follows.

"Our human resource capabilities are still insufficient to be able to integrate AI technology in our clinic, this is because most of our human resources are not able to operate this technology properly" (Owner of Nur Anisa Clinic).

In line with this, Arifian (2025) stated that the application of AI technology in the health sector requires healthcare human resources (HR) who are adaptive, capable, and ready to accept change. Therefore, the management of healthcare organisations needs to design inclusive and sustainable strategies to make the best use of AI while safeguarding the welfare

of employees because in general, the presence of AI in the work environment, especially in the healthcare sector, provides great opportunities for innovation and increased productivity, but also requires organisations to face the ethical challenges and responsibilities that arise (Sakinah & Kuswinarno, 2024).

2.3. Infrastructure and Maintenance Issues

Another major risk faced by health institutions in Wonogiri when integrating AI is the maintenance of AI technology systems. The absence of experts in rural areas, such as Wonogiri, is believed to hinder the performance of clinics, hospitals, or other health institutions in the event of future problems, as expressed by the Owner of Nur Anisa Clinic, who was also agreed upon by the owner of Husada Medika Clinic.

> "Another significant risk involves maintaining the AI system and addressing technical issues, such as hardware damage or software errors. When such problems occur, we often need to bring in technicians from larger cities, such as Jakarta, which requires additional time and financial resources. These delays can disrupt clinic operations and highlight the vulnerability of rural healthcare facilities that depend on external technical support." (Owner of Nur Anisa Clinic).
>
> "If problems occur with the AI-equipped system, they become major operational obstacles because it is very difficult to find qualified technicians in Wonogiri who can perform repairs. Most system suppliers and maintenance providers are located in larger cities, far from our area, making the process time-consuming and costly. This situation underscores the infrastructural and technical support limitations that rural healthcare institutions face in sustaining advanced digital systems." (Owner of Husada Medika Clinic).

In line with the two clinic owners, Pattinasarany et al. (2025) noted that the implementation of AI in Indonesian hospitals still faces several challenges, as stated by the two clinic owners. According to them, the main obstacles are limited technological infrastructure, a lack of skilled personnel, resistance to change, and concerns about privacy and data security. Therefore, collaborative efforts from the government, private sector, and educational institutions are needed to overcome these obstacles through improving infrastructure, training health workers, and drafting supportive regulations. Furthermore, by overcoming these challenges, AI can be optimally implemented in the strategic management of healthcare institutions in Indonesia, thereby significantly improving operational efficiency, according to them. Thus, the integration of AI is not only a solution to improve the productivity and effectiveness of healthcare services but also an important step towards sustainable digital transformation in the healthcare sector.

2.4. High Initial Cost

Last but not least, the high upfront investment to adopt AI technology is the next risk that limits the use of AI in healthcare organisations. Most healthcare entrepreneurs recognize this issue.

> "To be able to implement AI technology into our hospital's operations and services, it takes quite a large amount of money to do so, and at first we had to admit that it was a bit difficult for us to prepare such a large investment, but in the end we were able to overcome it" (Director of Mulia Hati Hospital).

"The amount of budget to implement AI in the healthcare industry, especially in Wonogiri, is very large, and it is not possible to do it in the near future due to the limited funds we have" (Owner of Fitri Candra Hospital).

Based on this information, it can be understood that the large budget required to adopt AI is one of the most significant risk factors experienced by hospitals and clinics in a small city like Wonogiri. Wibowo et al. (2025) successfully illustrated how financial barriers, including restrictive funding regulations, high innovation costs, and a lack of public sector investment, significantly hinder the development and implementation of AI in healthcare in small towns.

CONCLUSION

The purpose of this research is to investigate in more detail the opportunities and risks associated with integrating AI in healthcare organizations in rural areas, particularly Wonogiri. The research focuses on the perspectives of healthcare professionals, including directors and owners of healthcare organizations, who are expected to use the interview method to explain the strategic implications of using AI. According to the findings, healthcare providers can benefit from the use of AI in several ways, including cost savings, increased patient adherence rates, improved human resource management, and automated healthcare inventory management systems. However, despite its many advantages, the use of AI poses serious risks, particularly at Wonogiri Hospital, due to the patient's characteristics, the lack of human resources, inadequate infrastructure, and maintenance problems, as well as the high initial cost.

However, several limitations of this study should be acknowledged. Nevertheless, these limitations also provide suggestions for future research. The first one relates to the limited scope and selection bias. The first one has an association with selection bias and the narrow scope. Typically, the interview method focuses on specific individuals, communities, or groups within a particular context. This study places a lot of emphasis on healthcare executives, including directors and owners. As a result, the conclusions drawn here might not accurately reflect the opinions of all parties involved in healthcare. Comparing the opinions of various parties in order to identify commonalities and differences could be the goal of future exchanges. It may provide us with a more comprehensive understanding of the various viewpoints on the application of AI in healthcare. Second, the research design used in this study is cross-sectional, meaning that data is gathered all at once. Therefore, this study did not examine the changes in results over time. In this sense, future studies could employ a longitudinal research design to capture how individuals' or groups' perspectives on AI utilisation evolve over extended periods.

This research, viewed from a broader perspective, offers several implications. Academically, it enriches the understanding of digital innovation by demonstrating how AI adoption differs across geographic and economic contexts, and encourages comparative research between rural and urban healthcare systems. Practically, it provides insights for hospital leaders and healthcare entrepreneurs to adopt gradual AI integration strategies, enhance workforce training, and maintain a hybrid model that combines digital technology with human-centered service to strengthen patient trust. From a policy standpoint, the findings emphasize the need for stronger digital infrastructure, local maintenance and training networks, and government incentives that enable rural healthcare providers to participate

equitably in digital transformation. Despite its limited scope and cross-sectional design, which primarily focus on hospital leaders' perspectives, this study provides valuable groundwork for future longitudinal and multi-stakeholder research to examine the evolving dynamics of AI adoption in rural healthcare over time.

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