AI DRIVEN TRANSFORMATION OF ROMANIA'S MEDICAL TOURISM SECTOR: A STRATEGIC PERSPECTIVE

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Abstract
Romania's medical tourism sector has gained visibility in recent years, driven by the country's competitive healthcare costs, skilled medical professionals, and established spa and wellness traditions. However, the industry remains fragmented and faces challenges related to infrastructure, regulation, and international positioning. This paper explores the transformative potential of artificial intelligence (AI) as a strategic driver for Romania's medical tourism sector. Drawing on recent literature and case studies from Bucharest, Cluj-Napoca, and Iași, the analysis suggests that AI can significantly enhance clinical outcomes, operational efficiency, and patient experiences, thereby strengthening Romania's competitiveness in the European medical tourism market. At the same time, barriers such as regulatory uncertainty, technological disparities, and workforce readiness must be addressed. The paper proposes a strategic roadmap that includes regulatory harmonization, development of AI-enabled medical tourism clusters, public-private partnerships, digital infrastructure investment, patient-centered applications, and professional training. By leveraging these opportunities, Romania can position itself as a technologically advanced, patient-centered, and internationally competitive destination for medical tourism.
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1. INTRODUCTION

In recent years, the convergence of healthcare and tourism has given rise to a dynamic global industry known as medical tourism, where patients travel across borders to access affordable, high-quality medical services. Romania, with its rich natural resources, skilled medical professionals, and competitive pricing, has emerged as a promising destination in this sector. Increasingly, patients seek destinations that offer high-quality care, timely access, affordability, and integrated wellness experiences. However, the country's medical tourism industry remains fragmented, with uneven adoption of digital and technological

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innovations. To fully capitalize on its potential, Romania must embrace the transformative power of artificial intelligence (AI), a technology that is rapidly reshaping both healthcare delivery and the tourism experience worldwide (Sousa et al 2024; Kontogianni et al, 2024).

Artificial intelligence (AI) brings many ooportunities to enhance Romania's medical tourism sector by improving clinical quality, operational efficiency, and the overall patient experience (Topol, 2019; Gretzel et al, 2015). AI technologies such as machine learning, natural language processing, and computer vision are revolutionizing how healthcare services are delivered, from diagnostics and treatment planning to patient engagement and administrative efficiency (Mirbabaie et al, 2021; Kumah, 2025). In tourism, AI enhances personalization, streamlines logistics, and improves customer satisfaction (Flores-Flores et al., 2025; Koo et al, 2021). When applied strategically, AI can serve as a catalyst for integrated, patient-centered medical tourism ecosystems, offering Romania a unique opportunity to differentiate itself in a competitive global market (Yadav et al, 2024). Integrating AI into Romania's medical tourism ecosystem could help overcome structural limitations, support international competitiveness, and create an attractive value proposition for foreign patients.

Despite growing international interest in AI-driven healthcare and smart tourism (Sinha, 2024; Kakale, 2023), Romania's medical tourism sector remains underexplored in terms of digital transformation. While isolated initiatives exist, such as telemedicine platforms and AI-assisted diagnostics, there is a lack of cohesive strategy and infrastructure to support large-scale innovation. This paper addresses this gap by examining how AI can be leveraged to redefine Romania's medical tourism landscape, identifying both the enablers and barriers to adoption (Clark et al, 2024; Eke & Shuib, 2025).

2. LITERATURE REVIEW

Medical tourism as a field of study and practice lies at the intersection of international healthcare services, tourism, and increasingly, advanced digital technologies. To understand how artificial intelligence (AI) can transform Romania's position within this sector, it is necessary to briefly review the theoretical underpinnings of medical tourism, the role of AI in healthcare, the deployment of AI in tourism and hospitality, and the ways in which these streams converge.

2.1 Medical tourism

Medical tourism is typically defined as cross-border travel undertaken primarily for the purpose of receiving medical treatment, ranging from elective interventions such as cosmetic or dental surgery to complex specialties like cardiology, oncology, or fertility treatments (Connell, 2013). The drivers of medical tourism are

well documented in the literature. Cost differentials remain one of the most important factors, with patients from high-income countries often seeking affordable but high-quality treatment in emerging destinations (Lunt et al., 2011). In addition, quality of care and international accreditation strongly influence patients' decisions, as does the promise of shorter waiting times relative to their home healthcare systems (Turner, 2010). A further dimension involves the integration of treatment with leisure and recovery activities, particularly in destinations that can combine healthcare excellence with spa and wellness tourism.

Within Europe, countries such as Hungary, Poland, and Turkey have been particularly successful in leveraging these drivers, building structured medical tourism clusters that integrate clinics, facilitators, and hospitality providers (Crooks et al., 2011). Romania possesses similar advantages in terms of cost competitiveness and clinical expertise, but its medical tourism sector remains fragmented and under-promoted internationally (Voigt et al 2011).

2.2 AI in healthcare and tourism

Artificial intelligence (AI) has become a transformative force in both healthcare and tourism, two sectors that are increasingly converging through the rise of medical tourism. European medical tourism research highlights the potential of AI-enabled ecosystems to integrate healthcare delivery with tourism experiences, creating holistic offerings that address both clinical and recreational needs (Gretzel et al., 2015; Marian et al, 2018).

In healthcare, AI applications span a wide range of functions, including diagnostics, predictive analytics, robotic surgery, and personalized treatment plans (Mirbabaie et al 2021; Kumah, 2025). These technologies not only improve clinical outcomes but also enhance operational efficiency and reduce costs, making healthcare services more accessible and scalable.

In the tourism sector, AI is being used to personalize travel experiences, optimize logistics, and improve customer service through chatbots, recommendation engines, and sentiment analysis (Koo et al, 2021). The integration of AI into tourism has led to the emergence of "smart tourism," where data-driven technologies enhance the visitor experience and enable more efficient destination management (Kontogianni et al, 2024).

The intersection of these two domains, healthcare and tourism, has created fertile ground for innovation in medical tourism, where AI can play a pivotal role in streamlining patient journeys, from pre-travel consultations to post-treatment follow-ups. Sousa et al (2024) highlight that AI-driven platforms can facilitate medical travel planning, match patients with appropriate healthcare providers, and ensure continuity of care across borders. These capabilities are particularly relevant for countries like Romania, which are seeking to position themselves as competitive players in the global medical tourism market.

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2.3 Digital transformation in medical tourism

Digital transformation refers to the integration of digital technologies into all aspects of business and service delivery, fundamentally changing how value is created and delivered. In the context of medical tourism, digital transformation involves the adoption of telemedicine, electronic health records, AI diagnostics, and mobile health applications to enhance patient experience and operational efficiency (Clark et al, 2024; Chang, 2023).

Romania, like many Eastern European countries, is in the early stages of this transformation. While there are promising developments in tele-health and AI-assisted diagnostics, the sector remains fragmented and lacks a unified strategic vision (Sinha, 2024). Kakale (2023) notes that successful digital transformation in healthcare requires not only technological infrastructure but also regulatory support, workforce training, and cultural readines, factors that are still developing in Romania.

3. METHODOLOGY

This study adopts a qualitative, exploratory research design aimed at understanding the strategic role of artificial intelligence (AI) in transforming Romania's medical tourism sector. The methodology is based on two complementary components: a systematic literature review and a case study analysis.

The academic sources were selected based on relevance, recency, and academic credibility, with a focus on studies that provide strategic insights into AI adoption in healthcare and tourism contexts (Sousa et al, 2024; Mirbabaie et al, 2021; Kumah, 2025). The review helped identify key themes such as AI applications, strategic enablers, and barriers to adoption. To complement the theoretical insights, the paper includes a review of Romania's emerging AI-health innovation ecosystems. Data for the case study were drawn from secondary sources, including academic publications, institutional reports, and publicly available information on Romanian healthcare and technology initiatives.

4. STRATEGIC FRAMEWORK FOR AI-DRIVEN TRANSFORMATION

4.1 Key drivers of AI adoption

AI adoption in medical tourism is primarily driven by the need for efficiency, personalization, and global competitiveness. In healthcare, AI enables faster and more accurate diagnostics, predictive analytics, and personalized treatment plans, which are essential for attracting international patients seeking high-quality care (Mirbabaie et al; Kumah, 2025). For example, AI-powered diagnostic tools can reduce waiting times

and improve clinical outcomes, making Romania a more attractive destination for time-sensitive procedures.

In the tourism sector, AI enhances the patient journey through intelligent travel planning, multilingual support, and real-time assistance. Flores-Flores et al. (2025) emphasize that generative AI can automate itinerary creation, provide virtual consultations, and tailor experiences to individual patient needs. These capabilities are particularly valuable for medical tourists, who often require seamless coordination between healthcare and hospitality services.

4.2 Strategic enablers

The transformation of Romania's medical tourism sector through AI depends on several strategic enablers:

a. Digital infrastructure

Robust digital infrastructure is foundational for AI deployment. This includes high-speed internet, cloud computing capabilities, and interoperable health information systems. Butt et al. (2024) highlight the role of 5G and IoT in supporting real-time health monitoring and remote diagnostics, technologies that are essential for cross-border medical services.

b. Policy and regulatory support

A clear and supportive regulatory framework is critical for fostering innovation while ensuring patient safety and data privacy. Clark et al (2024) emphasize the importance of aligning national AI strategies with healthcare regulations to facilitate ethical and scalable adoption. Romania's alignment with EU digital health policies can serve as a catalyst for progress.

c. Human capital and education

The availability of AI-literate healthcare professionals and data scientists is another key enabler. Kakale (2023) notes that digital transformation in healthcare requires not only technical skills but also a cultural shift toward innovation and continuous learning. Investment in interdisciplinary education and training programs will be essential to build a workforce capable of implementing and managing AI systems.

d. Public-private partnerships

Collaboration between government, academia, and the private sector can accelerate innovation and reduce implementation costs. Chang (2023) suggests that digital health entrepreneurship, supported by incubators and funding mechanisms, can drive the development of AI solutions tailored to local needs.

4.3 Barriers and risks

Despite its potential, AI adoption in Romania's medical tourism sector faces several barriers and risks that must be addressed strategically:

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a. Data privacy and security

Medical tourism involves the exchange of sensitive health and travel data across borders. Ensuring compliance with GDPR and other data protection regulations is essential to maintain patient trust. Eke and Shuib (2025) argue that explainability and transparency in AI systems are critical for ethical deployment, especially in healthcare contexts.

b. Fragmented systems and lack of interoperability

Romania's healthcare system is characterized by fragmented data silos and inconsistent digital standards, which hinder the integration of AI tools. Manimaran et al. (2025) identify interoperability as a major challenge in AI implementation, requiring coordinated efforts to standardize data formats and communication protocols.

c. Limited investment and innovation culture

Compared to Western Europe, Romania invests less in digital health infrastructure and innovation ecosystems. The health-tech ecosystem is growing but continues to struggle with securing stable investment and a coherent strategic vision to support long-term innovation and service delivery across both public and private sectors (Fitzek & Choi, 2023).While interest in AI is growing, sustained funding and strategic vision are needed to move from pilot projects to scalable solutions.

d. Trust and resistance to change

Healthcare professionals and patients may be skeptical of AI technologies, especially when they lack transparency or appear to replace human judgment. Kumah (2025) emphasizes the need for patient-centered design and stakeholder engagement to build trust and ensure adoption.

The successful integration of artificial intelligence into Romania's medical tourism sector requires a structured approach that connects drivers of adoption, strategic enablers, and barriers to implementation. As highlighted by Mirbabaie et al (2021) and Kumah (2025), AI adoption is motivated by the need for efficiency, personalization, and global competitiveness in both healthcare delivery and tourism services. However, realizing this potential depends on the presence of robust digital infrastructure, supportive regulatory frameworks, skilled human capital, and collaborative public-private partnerships (Butt et al., 2024; Clark et al, 2024; Kakale, 2023; Chang, 2023).

4.4 Strategic framework for AI driven transformation in the medical tourism sector

The proposed strategic framework (Figure 1) illustrates the interaction between these three dimensions. On the left, the key drivers of AI adoption emphasize the demand for improved efficiency, personalized care, and enhanced competitiveness. In the middle, strategic enablers outline the foundational requirements, that allow AI initiatives to move from concept to practice. On the right, barriers and risks such as data privacy concerns, fragmented systems, limited investments, and resistance to change (Eke &

Shuib, 2025; Manimaran et al., 2025; Fitzek & Choi, 2023; Kumah, 2025) highlight the challenges that must be strategically managed. Together, this framework provides a roadmap for policymakers, healthcare providers, and tourism stakeholders to align their efforts and ensure that AI-driven transformation is both effective and sustainable.

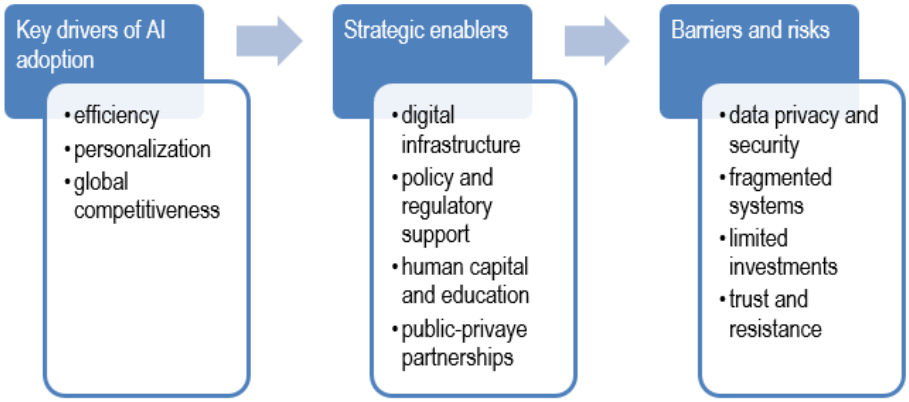

FIGURE 1. STRATEGIC FRAMEWORK FOR AI DRIVEN TRANSFORMATION IN THE MEDICAL TOURISM SECTOR
Source: Authors' research

This framework illustrates the relationship between the key drivers of AI adoption, the strategic enablers required for implementation, and the barriers and risks that must be managed. For practitioners, this framework serves as a practical roadmap for aligning institutional strategies with broader policy objectives. Healthcare providers and tourism operators can use it to identify priority areas for investment, assess readiness for AI adoption, and anticipate challenges that may arise during implementation. By mapping their initiatives against the framework, practitioners can ensure that technological adoption is supported by adequate resources, governance structures, and stakeholder engagement, ultimately enhancing Romania's competitiveness as a medical tourism destination.

5. ROMANIA'S EMERGING AI DRIVEN HEALTH INNOVATION

5.1 Romania's medical tourism sector: current landscape

Romania's medical tourism sector has emerged gradually over the past two decades, leveraging the country's strong medical expertise, competitive costs, and traditions in spa and wellness tourism. While the industry is still in its formative stages compared to regional leaders, recent statistics suggest steady growth and an increasing international profile. Approximately 20,000 foreign visitors traveled to Romania for medical purposes in 2023, generating revenues exceeding 125 million lei (The Romania Journal, 2024). Although industry-based estimates including diaspora patients and wellness tourists suggest higher figures, the data confirm a measurable inbound flow of medical travelers (Romania Insider, 2020).

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To place Romania's medical tourism prospects in context, it is useful to examine broader inbound tourism flows over the last decade and benchmark them against the European average. According to the National Institute of Statistics (2025), international tourist arrivals in Romanian accommodation establishments increased from approximately 1,9 million foreign visitors in 2014 to 2,4 million foreign arrivals in 2024. Despite this upward trend, the share of foreign tourists in Romania remains low relative to overall tourist flows: only 16,5% of all overnight stays were by international visitors in 2024 (National Institute of Statistics, 2025) compared with an EU average of approximately 48% (Eurostat, 2025).

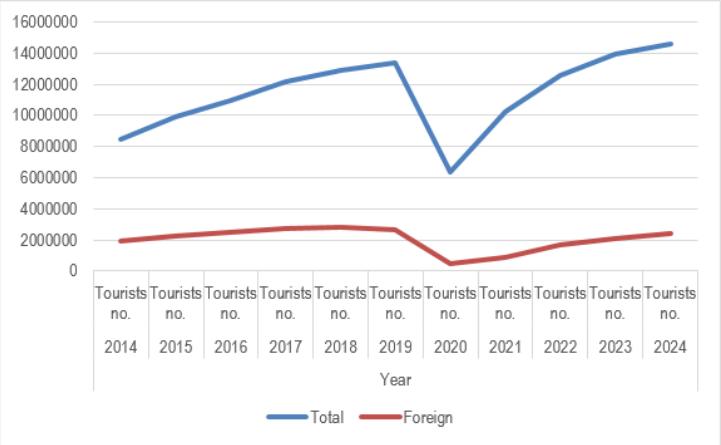

FIGURE 2. INBOUND TOURISM FLOWS IN ROMANIA (2014-2024)
Source: National Institute of Statistics (2025)

This discrepancy highlights Romania's still limited international visibility as a tourism destination, which directly constrains the growth of high-value niches such as medical tourism. At the same time, structural indicators of the healthcare system also reveal gaps: Romania's health expenditure per capita was approximately €858 in 2022, significantly below the EU-27 average of €3.685 (Eurostat, 2024), while practising doctors numbered 36,2 per 10.000 inhabitants (World Health Organization, 2025), slightly under the EU mean. These figures illustrate both the opportunities and constraints: while Romania's relatively low costs are attractive for price-sensitive patients, limited international inflows and underinvestment in health infrastructure underscore the importance of leveraging digital technologies and artificial intelligence to differentiate and enhance competitiveness in the European medical tourism market.

Nevertheless, alongside these structural limitations, Romania retains a set of distinctive comparative advantages that provide a strong foundation for developing its medical tourism sector, including affordability and medical expertise, particularly in dentistry, cosmetic surgery, ophthalmology, and fertility treatments, which are often priced significantly lower than in Western Europe while maintaining international standards (Lunt et al., 2011; Turner, 2010). Wellness and spa tourism, exemplified by resorts such as Băile Felix, Sovata, and Covasna, enhances the country's appeal for post-operative recovery and rehabilitation (Voigt et al, 2011).

Romania's digital health landscape is also evolving, with several cities, particularly Cluj-Napoca, Iași, and Bucharest, emerging as hubs for healthcare innovation. While still in its early stages, this ecosystem demonstrates the potential for Romania to become a regional leader in AI-powered medical tourism.

5.2 AI applications in practice

AI can transform Romania's medical tourism sector across the patient journey. In the pre-arrival stage, AI-driven chatbots, virtual assistants, and recommender systems enhance patient engagement, providing multilingual support, consultations, and guidance for treatment selection (Gretzel et al., 2015).

Several Romanian healthcare providers have begun integrating AI into their clinical workflows. For instance, private clinics in Bucharest and Cluj are using machine learning algorithms to support diagnostics and imaging, offering faster and more accurate assessments for international patients (RMN Cluj, 2025; Bioderm Hospital, 2024).

In Cluj-Napoca, the convergence of a strong academic base and a vibrant health-tech startup ecosystem has enabled several AI-driven initiatives. The "Iuliu Hațieganu" University of Medicine and Pharmacy collaborates with startups such as Synaptiq, which has developed AI-powered radiotherapy planning software. This system significantly reduces contouring time for oncological treatments, from hours to under one minute, while maintaining clinical accuracy (Romania Insider, 2024a). The technology is currently piloted in both public and private hospitals, offering faster treatment pathways for international patients seeking oncology care. In parallel, imaging centers such as RMN Cluj have adopted advanced MRI technologies powered by deep-learning algorithms, which enhance image clarity and reduce waiting times for results (RMN Cluj, 2025). Private operators like Affidea (Romania Insider, 2021) and Cardiomed (Highlander Partners, 2021) further expand the city's diagnostic and treatment capacity, integrating advanced imaging and cardiology services. Together, these developments enhance clinical precision and operational efficiency, gradually positioning Cluj as a technologically advanced hub within Romania's medical landscape.

In Iași, AI applications are closely linked to high-complexity clinical services and advanced surgical care. The Cardiovascular Institute of Iași, affiliated with the "Grigore T. Popa" University of Medicine and Pharmacy, was the fist to introduce hybrid operating rooms equipped with robotic-assisted surgery and real-time imaging systems. While the direct use of AI in robotic surgery is still emerging, these systems integrate AI-assisted navigation and planning, allowing for greater precision in cardiovascular interventions (Mediafax, 2009). While the direct use of AI in robotic surgery is still in its early stages, these systems incorporate technology that enhances surgical planning and precision. Telemedicine services are also expanding in Iași, enabling remote consultations and follow-up care for patients, including those living

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abroad, and laying the groundwork for future integration of AI-assisted monitoring tools (Ziarul de Iași, 2023). Together, these developments reflect the growing emphasis on technological innovation and its potential to improve the medical care experience for both local and international patients.

With several clinics, 26 public and 4 private hospitals, open 24/7, Bucharest offers the largest concentration of hospital and health services in Romania. As the capital and largest urban center, it combines a high concentration of private hospitals with investments in digital health infrastructure. The Regina Maria network, one of Romania's largest private healthcare providers, has piloted AI tools for real-time transcription of medical consultations, automated scheduling, and predictive triage (Romania Insider, 2024b). These innovations enhance operational efficiency and reduce patient wait times, factors that are especially important for foreign visitors who value timeliness and reliability. Additionally, some clinics within the network are exploring AI-enabled patient engagement platforms that offer virtual consultations, follow-up reminders, and personalized communication strategies (Regina Maria, 2025). These innovations improve workflow efficiency and patient experience, highlighting Bucharest's role as a leading center for technologically enhanced healthcare services.

A notable example is the implementation of the AI-powered symptom checker developed in collaboration with DRUID and Infermedica, by Regina Maria. This tool, accessible via Regina Maria's website and mobile app, allows patients to assess their symptoms against a database of over 720 conditions. By guiding users through a series of questions, the AI agent directs them to the appropriate medical specialist and facilitates appointment scheduling. Since its launch, the platform has supported over 10 million digital health checkups worldwide, with a significant portion attributed to Regina Maria's five million patients, indicating a high adoption rate among its user base (DRUID, 2025). Further enhancing its digital offerings, Regina Maria introduced the Virtual Clinic, Romania's most complex telemedicine solution, during the COVID-19 pandemic. Developed in collaboration with Microsoft, the Virtual Clinic enables patients to consult with healthcare professionals remotely, ensuring continuous care while minimizing the risk of virus transmission (Rotaru & Edelhauser, 2024).

These cases collectively illustrate that AI in Romania's medical tourism sector is not merely experimental but is being implemented in ways that directly improve patient outcomes and experience. Furthermore, these examples highlight the potential for scalable solutions. By sharing best practices, standardizing AI protocols, and fostering collaboration among cities and institutions, Romania can strengthen its national medical tourism offering while addressing current fragmentation and capacity disparities.

5.3 Outcomes and lessons learned

While these initiatives are still in pilot or early deployment stages, they offer valuable insights into the opportunities and challenges of AI adoption in Romania's medical tourism sector. On the positive side,

early adopters report improvements in diagnostic accuracy, patient satisfaction, and operational efficiency. Clinics offering AI-enhanced services have also seen increased interest from international patients, particularly from Western Europe and the Middle East, where treatment costs are significantly higher (Kumah, 2025; Chang, 2023).

However, several challenges persist. Many AI tools are developed in isolation, without integration into national health information systems, leading to data fragmentation and limited scalability. Additionally, there is a shortage of healthcare professionals trained in AI technologies, and regulatory uncertainty continues to slow down broader adoption (Manimaran et al., 2025; Eke & Shuib, 2025).

Despite these barriers, the Romanian case illustrates that strategic investment in AI infrastructure, education, and cross-sector collaboration can yield tangible benefits. With the right policy support and continued innovation, Romania has the potential to position itself as a digitally advanced, patient-centered medical tourism destination in Eastern Europe.

6. POLICY AND STRATEGIC RECOMMENDATIONS

To fully harness the potential of artificial intelligence (AI) in transforming Romania's medical tourism sector, a coordinated national strategy is essential. First, Romania should develop a dedicated digital health and medical tourism policy, aligned with the EU's Digital Europe Programme, to provide regulatory clarity and strategic direction (Clark et al, 2024). This policy should prioritize interoperability standards, data governance, and cross-border health service integration.

Second, the government should invest in AI infrastructure and workforce development, including funding for AI research centers, digital health incubators, and interdisciplinary training programs for healthcare professionals (Kakale, 2023; Chang, 2023). Public-private partnerships can play a pivotal role in accelerating innovation and scaling successful pilot projects. Such partnerships can accelerate AI adoption while distributing costs and risks. By collaborating with academic institutions, healthcare providers, and technology companies, the government can facilitate research and development of AI tools for diagnostics, telemedicine, workflow automation, and patient engagement. They can also support joint marketing campaigns to promote Romania as an AI-enabled medical tourism destination, increasing international awareness and patient inflows. Examples from Cluj-Napoca, where universities collaborate with AI startups for radiotherapy planning, demonstrate the feasibility and benefits of such partnerships (Romania Insider, 2024a).

Human-capital development is essential for sustaining AI adoption. Continuous training programs for healthcare professionals, hospital administrators, and tourism operators should focus on AI literacy, digital health skills, and patient-centered service design. Universities, professional associations, and private

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providers can collaborate to create certification programs, workshops, and seminars, ensuring that staff are capable of managing AI tools effectively. A skilled workforce will increase patient confidence, improve operational efficiency, and strengthen Romania's reputation as a technologically advanced medical tourism destination (Topol, 2019).

Investment in digital health infrastructure is another strategic imperative. Hospitals and clinics require interoperable electronic health records, secure telemedicine platforms, and scalable AI applications. EU funding mechanisms, such as the Digital Europe Programme and Horizon Europe, offer opportunities for co-financing these initiatives. Investment in infrastructure ensures that AI solutions are widely deployable, creating consistent patient experiences across public and private healthcare settings.Third, Romania must enhance international visibility by branding itself as a smart medical tourism destination. This includes promoting AI-enhanced services, multilingual digital platforms, and patient-centered care models (Sousa et al, 2024; Flores-Flores et al., 2025).

Finally, fostering trust and transparency in AI systems is critical. Policies should mandate explainability, ethical AI design, and patient consent protocols to ensure responsible adoption (Eke & Shuib, 2025; Kumah, 2025). regulatory clarity and standardization are critical. The Romanian government should establish comprehensive guidelines for the use of AI in healthcare, covering data privacy, algorithm validation, liability, and interoperability with existing electronic health records. Aligning these policies with the European Union's General Data Protection Regulation (GDPR) and the emerging European Health Data Space framework would ensure compliance while fostering innovation (European Commission, 2025). Standardized regulations can reduce uncertainty for private hospitals and startups, encouraging investment in AI technologies that directly improve the medical tourist experience.

Lastly, the creation of AI-enabled medical tourism clusters should be a national priority. These clusters would integrate hospitals, universities, technology startups, and tourism operators, enabling shared infrastructure, knowledge exchange, and joint marketing initiatives. Cities such as Cluj-Napoca, Iași, Bucharest, and Timișoara can serve as pilot cluster locations, leveraging existing clinical expertise and digital innovation. Cluster-based approaches have proven effective in other countries, enhancing operational efficiency, fostering innovation, and improving international visibility for medical tourism services (Connell, 2013; Crooks et al, 2011).

7. CONCLUSIONS

This paper has explored the strategic potential of artificial intelligence (AI) to transform Romania's medical tourism sector into a digitally advanced, patient-centered ecosystem. Through a literature review and case study of Romania's emerging AI-health innovation centres, the analysis has shown that by integrating AI

strategically, Romania can improve clinical outcomes, operational efficiency, and patient satisfaction, thereby strengthening its appeal to international patients. Key drivers such as personalization and global competitiveness, alongside enablers like infrastructure and policy support, were identified, while barriers including data fragmentation and limited investment remain. Romanian cities like Bucharest, Iași, and Cluj are already piloting AI applications in diagnostics, telemedicine, and multilingual patient support, illustrating the country's untapped potential. Realizing this potential requires coordinated policy action, investment in digital infrastructure, and a cultural shift toward innovation, alongside addressing ethical concerns and building trust in AI systems.

Future research should focus on empirical evaluation of AI's impact on patient outcomes and satisfaction in medical tourism settings. Comparative studies between Romania and other emerging medical tourism destinations could also provide valuable insights into best practices and scalable models. Additionally, exploring the role of generative AI in marketing, patient education, and multilingual communication could further enhance Romania's global competitiveness.

By strategically embracing AI, Romania has the opportunity to redefine its position in the global medical tourism landscape, not just as a cost-effective destination, but as a smart, innovative, and patient-centric hub.

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