

NAVIGATING AI IN DESTINATION MANAGEMENT: OPPORTUNITIES, CHALLENGES, AND ADAPTATION AMONG CZECH DMOS



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ABSTRACT

This article explores the role of artificial intelligence (AI) in the operations of Destination Management Organizations (DMOs) in Czechia. Drawing on a quantitative survey conducted among 44 certified DMOs, the study investigates how these organizations are adopting AI tools in areas such as marketing, visitor communication, and service personalization. The results reveal that while 68% of respondents report some level of AI integration, many still face significant barriers, including limited budgets, lack of technical expertise, and insufficient data protection frameworks. Smaller DMOs, in particular, struggle to keep pace with digital transformation. Despite these challenges, most organizations expressed a strong willingness to collaborate with national tourism bodies to build capacity and share knowledge. By mapping current practices and highlighting both opportunities and constraints, the study contributes to ongoing discussions about the practical and responsible use of AI in destination management.

Keywords: Destination management. AI adoption. Artificial intelligence. Strategic planning. Tourism marketing and management. Destination management organizations. Czechia. Tourism planning. Data protection. Sustainable tourism.

INTRODUCTION

AI has progressed from simple rule-based programs to advanced deep learning and generative models, transforming various sectors. Within tourism, AI-driven tools such as personalized recommendations, predictive analytics, and real-time data monitoring are increasingly vital for enhancing service delivery and operational efficiency.

Despite growing recognition of AI's transformative potential, there has been relatively little examination of its adoption among Czech Destination Management Organizations (DMOs). This gap is notable given the potential for AI to streamline marketing campaigns, improve visitor engagement, and

optimize logistical operations. Yet, factors such as budgetary limitations and the need for robust data protection may hinder the smooth integration of these technologies.

In response, this paper investigates the current landscape of AI use in Czech DMOs, highlighting the opportunities it presents and the challenges these organizations encounter. By offering a detailed analysis of AI practices and outlining areas for further development, the study aims to inform strategic decisions that foster sustainable, efficient, and ethically responsible deployment of AI in the local tourism sector.

LITERATURE REVIEW

This literature review will explore the theoretical framework of AI, existing research on global applications, benefits, challenges, and the specific research gap concerning Czech DMOs.

The development of AI has undergone significant milestones, from theory to practical application. Understanding these milestones helps us grasp the technological and societal impacts of AI. Pioneers like Alan Turing and John McCarthy laid the foundational theories in the 1950s (Elamin, 2024). Early AI systems utilized rule-based methods, such as the Logic Theorist. In the 1980s and 1990s, the advent of machine learning allowed algorithms to learn from data instead of predefined rules (Verma, 2024). Deep learning models, such as AlexNet and AlphaGo, significantly improved capabilities in computer vision and gaming (Radanliev, 2024).

Generative models, including GANs and GPT-3, have enhanced AI's ability to interact more complexly and human-like (Verma, 2024). However, these advances have also raised ethical questions regarding bias and transparency, necessitating responsible innovation (Elamin, 2024; Ahmad et al., 2024).

Application of AI in tourism includes recommendation systems, chatbots, predictive analytics, and smart destination management, which collectively aim to improve tourist satisfaction and resource allocation (Das, 2024; Eswaran et al., 2024). When it comes to examples of AI adoption or use cases in DMOs globally, we can see that AI technologies

facilitate personalized travel experiences through advanced recommendation systems that analyze user preferences and behaviors, thereby tailoring suggestions for destinations, accommodations, and activities (Doğan & Niyet, 2024). Additionally, AI-driven chatbots and virtual assistants provide 24/7 customer support, streamlining communication and improving service delivery (Traversa, 2024). Furthermore, predictive analytics enable DMOs to forecast demand and optimize resource allocation, addressing challenges such as overtourism (Bairachna & Krupitsa, 2024). By employing AI for real-time data analysis, DMOs can also enhance safety measures, ensuring a secure environment for travelers (Das, 2024). Overall, the integration of AI in tourism not only boosts customer satisfaction but also promotes efficient and sustainable destination management practices (Eswaran et al., 2024; Traversa, 2024).

Even though it all sounds good, implementing AI in the tourism industry faces several significant challenges. Firstly, while AI technologies such as chatbots and predictive analytics can enhance customer engagement and personalize travel experiences, they also increase operational complexities for DMOs, necessitating ongoing maintenance and updates to ensure accurate information delivery (Ilieva et al., 2024; Sharma, 2024). Additionally, concerns regarding data privacy and the ethical use of AI pose substantial risks, as both businesses and consumers must navigate the implications of data handling and security (Kumar et al., 2024). Furthermore, the initial investment required for AI integration can be

a barrier for many companies, especially for DMOs with small budgets, which raises further questions (Su et al., 2024). To address these challenges, stakeholders are encouraged to adopt a user-centric approach, focusing on improving information quality and ensuring robust security measures while fostering innovation in service delivery (Ilieva et al., 2024).

While global studies provide insights into AI’s potential, there is a lack of specific research on

its application within Czech DMOs, particularly regarding local adaptation and regulatory challenges (Tuo et al., 2025).

We can conclude that AI offers substantial benefits for destination management, it is crucial to address the associated challenges to ensure sustainable and ethical implementation. The specific context of Czech DMOs remains unexplored, presenting an opportunity for further research to understand AI’s role and impact in this region.

DATA AND METHODS

This study employed a quantitative, survey-based approach to investigate how AI technologies are integrated into the operations of Czech Destination Management Organizations (DMOs). The research

focused on identifying AI usage patterns, perceived benefits, challenges, and the extent to which DMOs are prepared to embrace AI-driven initiatives.

Table 1: Types of DMOs

Total count	Regional DMO	Local DMO	Local DMO (specific to a municipality or smaller area)
44	11	27	6

Source: Own processing, 2025.

SAMPLING

A total of 44 DMOs participated in the study. Of these, 11 were regional DMOs responsible for larger geographic areas, 27 were local DMOs overseeing mid-sized localities, and 6 were local DMOs dedicated to smaller municipalities or niche destinations (Table 1). This categorization allowed comparative insights into how AI adoption may differ based on organizational scope and scale.

DATA COLLECTION

Data were gathered via an online survey distributed to certified Czech DMOs during November 2024, yielding a 64% response rate. The survey comprised both closed- and open-ended questions addressing:

- AI Adoption: Frequency and types of AI tools employed.
- Operational Impact: Application areas within

- planning, marketing, and management.
- Perceived Benefits and Challenges: Respondents’ assessments of AI’s influence on efficiency, visitor engagement, and overall performance.
- Demographic information about each DMO’s size and type was also collected, facilitating a more nuanced examination of the findings.

DATA ANALYSIS

Descriptive statistics, including frequency counts and mean scores, were used to summarize the key trends in AI implementation and perceived outcomes. This approach provided a clear overview of how AI is deployed across varying organizational levels, highlighting shared opportunities and hurdles.

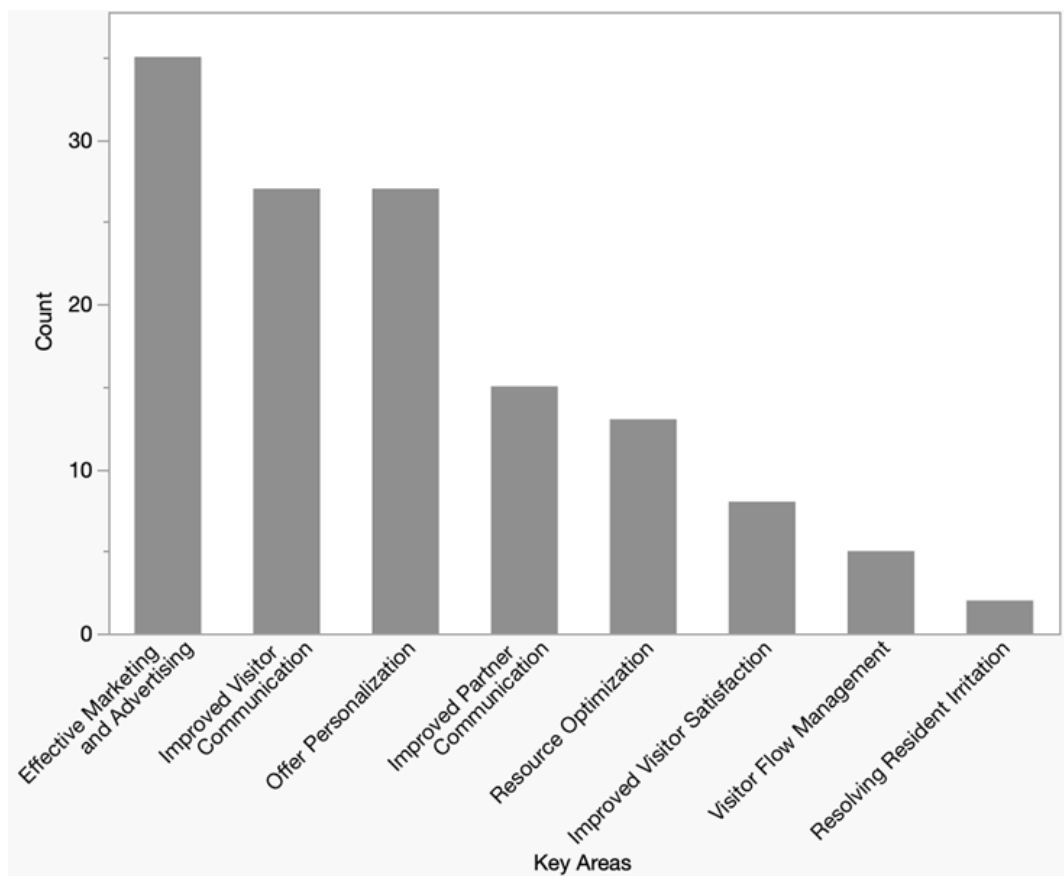
RESULTS AND DISCUSSION

The present study investigated the extent, nature, and implications of AI adoption among Czech Destination Management Organizations (DMOs). Overall, the findings underscore both a growing enthusiasm for AI and the considerable challenges that DMOs face. This section synthesizes the quantitative results with interpretive discussion, situating them within the broader academic and practical context.

This study examined the extent of AI adoption among Czech Destination Management

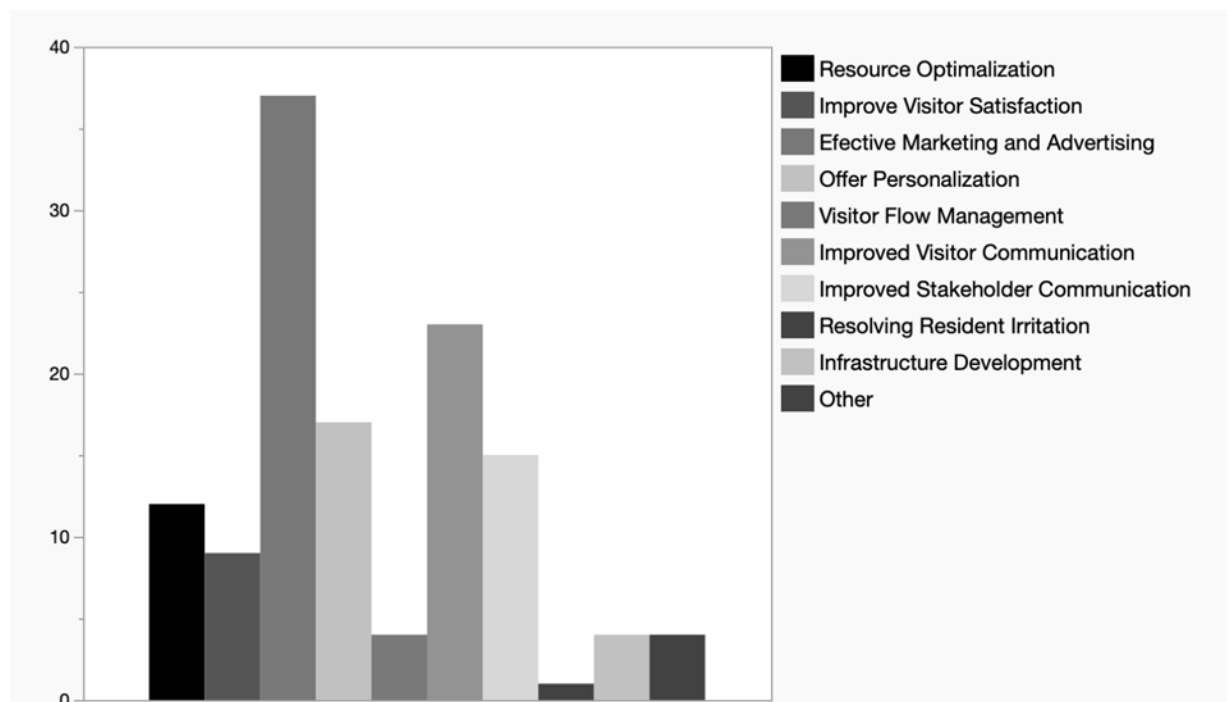
Organizations (DMOs) and its impact on their operations. In total, 68% of the surveyed DMOs reported using AI in some capacity, a figure that aligns with global trends emphasizing AI's growing influence on tourism management (Das, 2024; Eswaran et al., 2024). Notably, 14 DMOs indicated no AI use, whereas 33.33% (10 DMOs) integrated AI into daily activities, suggesting that once AI is introduced, it becomes a core part of routine operations. Only one DMO reported weekly usage, indicating that there are still organizations exploring AI in a more limited capacity.

Figure 1: Key Areas of AI Application



Source: Own processing, 2025.

Figure 2: Key Perceived Benefits of AI Implementation



Source: Own processing, 2025.

The primary areas where AI is applied include marketing and advertising, visitor communication, offer personalization, and partner communication, echoing prior studies that highlight AI's potential in optimizing promotional strategies and customizing visitor experiences (Figure 1; Doğan & Niyet, 2024; Traversa, 2024).

Marketing and advertising stand out as the most frequently cited benefits, with DMOs using AI to refine campaign targeting and measure real-time performance. AI-driven chatbots and automated tools also enhance visitor communication by providing instant, accurate responses—critical for smaller organizations with limited staffing (Figure 2).

Despite these advantages, the research reveals persistent challenges. Smaller DMOs, often operating with only one or two employees, struggle with financial and expertise constraints, consistent with findings that emphasize the difficulties faced by organizations with smaller budgets (Su et al., 2024). Additionally, almost half of the DMOs lack formal data protection protocols, with some relying on supplier policies alone and only 14 having internal safeguards. This shortfall raises concerns about

compliance and security, underscoring broader issues that Kumar et al. (2024) highlighted regarding the need for robust data protection when deploying AI systems.

Looking ahead, the strong willingness—95.45%—among DMOs to collaborate with CzechTourism indicates a readiness to pool resources and expertise to address these shortcomings. Joint initiatives could alleviate financial burdens, foster best-practice sharing, and support targeted training in AI competencies. Such collaborative strategies may be especially vital for helping smaller DMOs realize AI's potential in visitor flow management and resource optimization, which remain underexplored areas with promising sustainability applications.

In conclusion, while Czech DMOs demonstrate substantial progress in AI adoption, their experiences underscore the importance of capacity-building measures, financial support, and sound data protection policies. Addressing these issues through partnerships, training, and clear guidelines will ensure the long-term effectiveness and ethical use of AI within Czech tourism.

LIMITATIONS

This study is geographically specific, focusing on Czech DMOs; its findings may not transfer seamlessly to other contexts. Furthermore, given the nature of survey-based research, self-reporting biases may affect responses, particularly in areas

regarding organizational capabilities and technology adoption. Future research might broaden the geographical scope, compare DMOs across different regions, or employ additional methods (e.g., case studies) to complement these survey findings.

CONCLUSION

This study examines the adoption and impact of the use of AI in Czech DMOs, providing information on their current practices, opportunities, and challenges. The findings reveal a high rate of AI adoption (68%) among Czech DMOs, aligning with global trends that emphasize the role of AI in improving marketing, visitor communication, and personalized service offerings. However, the study also highlights significant barriers, including financial and operational constraints, such as limited budgets, staff shortages, and gaps in AI expertise. These challenges are particularly pronounced for smaller DMOs, where resource limitations impede the full integration of AI solutions. Moreover, the absence of data protection measures raises concerns about compliance and the security of sensitive information, underscoring areas for improvement.

To address these challenges and fully exploit the potential of AI, several practical recommendations emerge. Czech DMOs should prioritize investing in staff training and capacity building, with initiatives such as AI-focused workshops and collaborative efforts with CzechTourism. Additionally, adopting AI tools designed to align with smaller organizations'

operational and financial capacities can facilitate a more inclusive digital transformation. Strengthening internal data protection policies and cybersecurity frameworks is also crucial for mitigating the risks associated with AI adoption. Collaboration with national tourism organizations and technology providers offers another avenue to pool resources, share expertise, and develop standardized solutions.

Future research may focus on qualitative approaches, such as interviews or case studies, to provide deeper insights into DMOs' experiences and strategies in integrating AI. Comparative studies that examine the adoption of AI in different countries may further illuminate cross-cultural and operational differences, while longer-term research tracking the evolution of AI adoption could shed light on its evolving impact on the tourism industry.

By addressing these barriers and adopting strategic interventions, Czech DMOs can harness the transformative potential of AI to improve their competitiveness and contribute to the sustainable development of the tourism industry.

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