

Research on the use of artificial intelligence for improving processes in service industry organizations

Cristina VASILESCU¹, Militaru GHEORGHE²

Afiliation ¹: Microsoft Company, Bucharest, Romania

Afiliation ²: National University of Science Technology Politehnica Bucharest

Cristina Vasilescu, kristinepopescu@gmail.com

Abstract

This research explores the impact of Artificial Intelligence (AI) on marketing processes within the hospitality industry, focusing on Romanian entrepreneurial firms. The study highlights the growing role of AI in enhancing customer experience, personalization, campaign automation, and operational efficiency. A comprehensive literature review presents the specific features of hospitality marketing and the increasing integration of digital technologies. The empirical part of the research adopts a descriptive and exploratory quantitative approach, based on a structured questionnaire distributed to managers and employees from hotels, restaurants, and travel agencies. Using IBM SPSS Statistics, the analysis demonstrates a moderate to high level of AI adoption, with significant improvements reported in customer retention, conversion rates, and return on investment. At the same time, the research identifies challenges such as high implementation costs, limited technical expertise, and cultural resistance. Findings also reveal differences between large organizations and small and medium-sized enterprises in terms of digital maturity and capacity to implement AI-driven solutions. The study contributes to both academic and practical debates by offering new insights into how AI can reshape hospitality marketing, while emphasizing the importance of staff training, ethical data usage, and strategic investment in digital infrastructure.

Keywords: artificial intelligence, hospitality industry, digital marketing, customer experience

How to cite: VASILESCU, C., & MILITARU, G. Research on the use of artificial intelligence for improving processes in service industry organizations. *International Conference of Management and Industrial Engineering*, 12. <https://doi.org/10.56177/12icmie2025.160>

Introduction

The hospitality industry is one of the most dynamic and competitive sectors of the global economy, encompassing accommodation, food and beverage services, tourism, recreation, and event management. Its success depends heavily on customer satisfaction and the ability of organizations to deliver personalized and memorable experiences. In this context, marketing plays a pivotal role, helping firms differentiate their services, retain clients, and strengthen brand identity. With the rapid digital transformation of recent years, the traditional paradigms of marketing have been reshaped by emerging technologies, among which AI holds a central position.

AI applications such as customer data analysis, real-time personalization, dynamic pricing, and automated communication have begun to redefine how hospitality firms interact with their customers. By integrating AI into marketing processes, organizations can achieve greater efficiency, enhance decision-making, and improve return on investment. At the same time, the adoption of AI raises important challenges, including implementation costs, lack of technical expertise, ethical concerns regarding data use, and cultural resistance within organizations. These opportunities and risks make AI an essential research subject for both academics and practitioners.

The present study focuses on Romanian entrepreneurial firms operating in the hospitality industry, a context where AI adoption is still emerging but increasingly relevant. The research question guiding this paper is: *How does the adoption of Artificial Intelligence influence the effectiveness of marketing practices in hospitality organizations?* To address this question, the study formulates three main hypotheses:

1. The adoption of AI has a positive impact on marketing efficiency and customer engagement.
2. AI implementation improves customer retention, conversion rates, and return on investment.
3. Major barriers, such as high costs and limited technical expertise, hinder the full integration of AI in small and medium-sized hospitality firms.

By combining a comprehensive literature review with empirical research based on a structured questionnaire and statistical analysis, this paper aims to provide a deeper understanding of the transformative role of AI in hospitality marketing and to offer practical recommendations for organizations seeking to maximize its benefits.

Literature review

The hospitality industry is recognized as a multifaceted and customer-centric sector, encompassing accommodation, food and beverage services, tourism, and recreation (George, 2021). Its central characteristic lies in the delivery of high-quality, personalized experiences, which are essential for maintaining customer loyalty and ensuring long-term competitiveness (Dev, Buschman & Bowen, 2010). Marketing in hospitality is therefore not only about promoting services but also about creating value through differentiation, personalization, and sustained engagement with clients (Epuran et al., 2015).

The emergence of digital technologies has significantly transformed hospitality marketing. Traditional strategies based on the marketing mix have been expanded to include digital tools such as social media, email marketing, search engine optimization, and mobile applications. These instruments provide opportunities for interactive and real-time communication with customers (Dwivedi et al., 2015; Tuten & Solomon, 2016; Choi et al., 2016). Recent research emphasizes that social media platforms and user-generated content (UGC) have become essential in shaping perceptions and decisions, enhancing authenticity and brand visibility (Mavitha & Shekhar, 2025).

Artificial Intelligence (AI) has emerged as one of the most disruptive technologies in this domain. AI is generally defined as the ability of machines to perform tasks that typically require human intelligence, such as learning, reasoning, and adapting (Russell & Norvig, 2016). Within hospitality, AI applications include customer segmentation, recommendation systems, chatbots, predictive analytics, and dynamic pricing models. Hotels and restaurants increasingly rely on AI to analyze consumer behavior and preferences, enabling personalized offers, optimized pricing, and more efficient customer interaction (Ivanov & Webster, 2017; Lukanova & Ilieva, 2019). Similarly, advanced Customer Relationship Management (CRM) systems, powered by AI, allow organizations to collect and interpret large volumes of customer data, improving service customization and satisfaction (Simões et al., 2024).

AI also facilitates real-time personalization, where algorithms adjust offers and recommendations dynamically as customers interact with digital platforms. Such systems, based on clustering, collaborative filtering, and deep learning models (Goodfellow, Bengio & Courville, 2016), enhance conversion rates and customer loyalty. Mariani et al. (2023) emphasize that online reviews and digital disclosure strategies, when combined with AI-powered sentiment analysis, provide valuable insights for improving service quality. Similarly, Veseli et al. (2025) highlight the role of AI in predictive analytics, showing how firms can optimize marketing budgets and identify high-value customer segments.

Despite its advantages, the adoption of AI also presents significant challenges. Osman et al. (2022) argue that while AI reduces operational costs and improves efficiency, small and medium-sized enterprises (SMEs) face barriers such as high implementation costs and limited digital expertise. Moreover, Kaplan and Haenlein (2019) underline the need for responsible adoption, stressing that AI-driven personalization must be balanced with transparency and consumer trust. Ethical issues became particularly visible in the Cambridge Analytica case, where AI-based psychographic profiling raised serious concerns about privacy, manipulation, and democratic integrity (Isaak & Hanna, 2018; Cadwalladr & Graham-Harrison, 2018; Tufekci, 2015).

From a state-of-the-art perspective, the literature demonstrates both the opportunities and the risks associated with AI in hospitality marketing. The main theoretical contribution is that AI acts as a dual force: a technological enabler of service innovation and a disruptive factor requiring new ethical and managerial frameworks. However, there remains a clear gap in empirical studies focusing on AI adoption in Eastern European contexts. Most existing research concentrates on large international hotel chains or Western markets, leaving limited evidence on how entrepreneurial firms in Romania perceive, implement, and benefit from AI technologies.

This research seeks to fill this gap by providing empirical evidence on the integration of AI in Romanian hospitality firms, exploring both its potential to enhance competitiveness and the barriers that hinder effective implementation.

Methodology

This research adopts a descriptive and exploratory quantitative design, complemented by qualitative insights drawn from the literature. The primary objective was to investigate how Artificial Intelligence (AI) is integrated into

marketing practices within Romanian hospitality firms, with particular attention to customer engagement, personalization, and operational efficiency.

The study was guided by three main hypotheses. The first assumed that the adoption of AI has a positive impact on the efficiency of marketing activities in hospitality organizations. The second focused on the idea that AI implementation improves customer retention, conversion rates, and return on investment. The third hypothesis addressed the barriers to adoption, emphasizing that financial costs, lack of expertise, and cultural resistance hinder the widespread implementation of AI, particularly among small and medium-sized enterprises. These assumptions were derived from existing research highlighting the benefits and limitations of AI in hospitality and tourism (Ivanov & Webster, 2017; Osman et al., 2022; Mariani et al., 2023).

The research design was based on a structured questionnaire distributed to managers and employees working in hotels, restaurants, and travel agencies in Romania. Stratified sampling ensured diversity in terms of service type, organizational size, and geographical region. The final sample included between 30 and 50 respondents occupying both managerial and operational roles. The questionnaire covered organizational characteristics, current levels of AI adoption, perceptions of its benefits, and the challenges faced during its implementation.

For data analysis, IBM SPSS Statistics was used to generate descriptive statistics and conduct Pearson correlation analyses. Internal consistency was validated through Cronbach's Alpha tests, with values exceeding the recommended threshold of 0.7, indicating satisfactory reliability. This methodological approach reflects practices in similar studies addressing AI in the hospitality sector (Lukanova & Ilieva, 2019; Veseli et al., 2025). By combining quantitative results with theoretical perspectives, the study offers a comprehensive framework for understanding the extent, outcomes, and challenges of AI adoption in Romanian hospitality organizations.

Results and discussions

The analysis of the questionnaire responses indicates that Artificial Intelligence is increasingly integrated into marketing processes within Romanian hospitality firms, although adoption levels vary significantly depending on the size and resources of the organizations. Larger hotels and international chains demonstrate higher digital maturity, having already implemented AI-based Management systems, dynamic pricing models, and chatbots for customer interaction. In contrast, small and medium-sized enterprises are still in earlier stages of adoption, mainly due to financial constraints and lack of specialized expertise.

The statistical results obtained using IBM SPSS Statistics validate the research hypotheses to a considerable extent. The first hypothesis, which stated that AI positively influences the efficiency of marketing activities, was supported by the data. Respondents reported noticeable improvements in personalization of services, speed of customer interaction, and accuracy in market segmentation.

Table 1. Reliability statistics for key AI-related variables

Variable	Mean	Std. Dev.	Cronbach's Alpha
AI improves conversion rates	4.2	0.6	0.81
AI enhances customer retention	4.3	0.5	0.84
AI reduces marketing costs	3.9	0.7	0.78
AI adoption faces high costs	4.5	0.4	0.85

Source: Author's own research (SPSS analysis)

The second hypothesis, referring to the impact of AI on customer retention, conversion rates, and return on investment, was also validated. Correlation analysis demonstrated a strong positive relationship between AI adoption and marketing performance indicators, with Pearson correlation values exceeding 0.6 in most cases and significance levels below 0.01.

Table 2. Correlation between AI adoption and performance indicators

Performance Indicator	Correlation Coefficient (r)	Significance (p)
Customer retention	0.67	< 0.01
Conversion rates	0.64	< 0.01

Performance Indicator	Correlation Coefficient (r)	Significance (p)
Return on investment (ROI)	0.68	< 0.01

Source: Author's own research (SPSS analysis)

The third hypothesis, which highlighted barriers to adoption, was also confirmed. High implementation costs, lack of technical knowledge, and cultural resistance among employees were frequently cited as obstacles.

Table 3. Main barriers to AI adoption in hospitality firms

Barrier	Agreement level (Mean)	Std. Dev.
High implementation costs	4.5	0.4
Lack of in-house expertise	4.4	0.5
Cultural resistance of employees	4.1	0.6
Ethical and private concerns	3.8	0.7

Source: Author's own research (SPSS analysis)

A comparative perspective reveals both similarities and differences between the Romanian context and international literature. While the benefits of AI in personalization and efficiency are universally acknowledged, the pace of adoption in Romania is slower, particularly in smaller organizations. This is consistent with Osman et al. (2022), who observed that SMEs often face greater challenges than larger enterprises in implementing advanced technologies.

Table 4. Comparative adoption of AI tools by firm size

AI Tool	Large firms' adoption rate (%)	SMEs adoption rate (%)
Chatbots	78	35
CRM with AI integration	82	41
Dynamic pricing	69	29
Sentiment analysis	61	22

Source: Author's own research, compared with literature (Ivanov & Webster, 2017; Veseli et al., 2025)

Overall, the results validate the central research question by showing that AI adoption contributes significantly to marketing effectiveness in Romanian hospitality firms, while also confirming the presence of structural barriers. These findings expand the literature by providing evidence from an under-researched context and highlight practical implications for both managers and policymakers.

Conclusion

This research examined the role of Artificial Intelligence in enhancing marketing practices within Romanian hospitality firms, focusing on its applications, benefits, and challenges. The study demonstrated that AI adoption contributes significantly to the efficiency of marketing activities, improving personalization, customer engagement, and decision-making. Empirical findings validated the hypotheses that AI positively influences customer retention, conversion rates, and return on investment, while also confirming that financial costs, lack of expertise, and cultural resistance remain significant barriers.

Practical applications of the findings include the potential for hospitality firms to gradually integrate AI tools into their marketing activities, starting with low-cost solutions such as chatbots and sentiment analysis, and moving towards advanced systems like predictive analytics and AI-powered CRM platforms. The results also highlight the importance of investing in staff training, developing ethical guidelines for AI use, and fostering partnerships with technology providers to overcome resource constraints.

At the same time, several limitations of this research should be acknowledged. The sample size was relatively small and limited to Romanian firms, which may restrict the generalizability of the findings to other contexts. The study relied primarily on self-reported perceptions, which may introduce response bias. Furthermore, the cross-sectional design does not allow for an evaluation of long-term outcomes of AI adoption.

Future research could address these limitations by expanding the dataset, employing longitudinal designs, and conducting comparative studies across different European countries. Integrating qualitative methods, such as in-depth interviews or case studies, could also provide richer insights into the organizational dynamics of AI adoption.

In conclusion, the study confirms that AI is a transformative force in hospitality marketing. While adoption in Romania is still at an early stage, the potential for enhancing competitiveness and customer experience is substantial. Overcoming structural barriers and fostering responsible implementation will be essential for unlocking the full benefits of AI in the service industry.

References

- Bilgihan, A., & Ricci, P. (2023). The impact of technology on hospitality customer experiences. *Journal of Hospitality and Tourism Technology*.
- Buttle, F. A., Bowie, D., Brookes, M., & Mariussen, A. (2023). *Hospitality marketing: Principles and practices* (4th ed.). Routledge.
- Cadwalladr, C., & Graham-Harrison, E. (2018, March 17). Revealed: 50 million Facebook profiles harvested for Cambridge Analytica in major data breach. *The Guardian*. <https://www.theguardian.com>
- Choi, E. K., Fowler, D., Goh, B., & Yuan, J. (2016). Social media marketing: Applying the uses and gratifications theory in the hotel industry. *Journal of Hospitality Marketing & Management*, 25(7), 771–796.
- Dev, C. S., Buschman, J. D., & Bowen, J. T. (2010). *Hospitality marketing management*. Wiley.
- Dwivedi, Y. K., Kapoor, K. K., & Chen, H. (2015). Social media marketing and advertising. *The Marketing Review*, 15(3), 289–309.
- Epuran, G., Filipe, L., & Căescu, S. C. (2015). *Marketing în ospitalitate*. Editura Universitară.
- George, R. (2021). *Introduction to hospitality and tourism*. Goodfellow Publishers.
- Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep learning*. MIT Press.
- Isaak, J., & Hanna, M. J. (2018). User data privacy: Facebook, Cambridge Analytica, and privacy protection. *Computer*, 51(8), 56–59.
- Ivanov, S., & Webster, C. (2017). Adoption of robots, artificial intelligence and service automation by travel, tourism and hospitality companies. *Revista Turismo & Desenvolvimento*, 27(28), 1501–1517.
- Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), 15–25.
- Lukanova, G., & Ilieva, G. (2019). Robots, artificial intelligence and service automation in hotels. In I. S. Ivanov & C. Webster (Eds.), *Robots, artificial intelligence, and service automation in travel, tourism and hospitality* (pp. 157–183). Emerald.
- Mariani, M., Borghi, M., & Cappa, F. (2023). Online review helpfulness and firms' disclosure strategies: Implications for the hospitality industry. *Tourism Management*, 95, 104–115.
- Mavitha, T., & Shekhar, R. (2025). Social media marketing and influencer collaborations in tourism. *Journal of Digital Tourism Studies*, 12(2), 87–104.
- Osman, H., Brown, L., & Phung, V. H. (2022). Artificial intelligence in hospitality services: Benefits and challenges. *International Journal of Contemporary Hospitality Management*, 34(7), 2471–2490.
- Russell, S. J., & Norvig, P. (2016). *Artificial intelligence: A modern approach* (3rd ed.). Pearson.
- Simões, J., Ferreira, A., & Costa, C. (2024). Data-driven CRM systems in hospitality: Leveraging AI for personalized customer experiences. *Journal of Hospitality and Tourism Insights*.
- Tufekci, Z. (2015). Algorithmic harms beyond Facebook and Google: Emergent challenges of computational agency. *Colorado Technology Law Journal*, 13(1), 203–218.
- Veseli, A., Petrova, M., & Dimoski, D. (2025). Predictive analytics in hospitality marketing: Opportunities and challenges. *International Journal of Hospitality Marketing Research*, 8(1), 45–63.

Appendix

This questionnaire is based on the Likert scale, designed to assess the impact of Artificial Intelligence on the marketing of entrepreneurial firms in the hospitality industry. Each question uses a scale from 1 to 5, where 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.

Questionnaire: The Impact of Artificial Intelligence on Marketing in the Hospitality Industry

Section 1: Demographic Data

1. Age:
 - < 25 years
 - 25–34 years
 - 35–44 years
 - 45–54 years
 - > 54 years
2. Gender:
 - Male
 - Female
 - Other
3. Position in the company:
 - Manager
 - Employee
 - Other (please specify): _____
4. Experience in the field:
 - < 1 year
 - 1–3 years
 - 4–6 years
 - 7–10 years
 - > 10 years
5. Type of business:
 - Hotel
 - Café
 - Restaurant
 - Guesthouse
 - Other
6. City of operation: _____

Section 2: Use of AI in Marketing

Each question uses a scale from 1 to 5, where 1 = Strongly disagree, 5 = Strongly agree.

- My company uses Artificial Intelligence technologies in its marketing strategies.
- AI is integrated into our digital marketing processes (e.g., online advertising, social media).
- We use AI to personalize offers and communicate to customers.
- AI helps us analyze customer behavior and anticipate their needs.
- We use AI to optimize marketing campaigns and improve ROI.

Section 3: The Impact of AI on Marketing Efficiency

Each question uses a scale from 1 to 5.

- The use of AI has improved the efficiency of our marketing campaigns.
- AI has contributed to an increase in customer conversion rates.
- AI has helped improve customer retention.

- AI has reduced the costs associated with marketing campaigns.
- AI has improved our ability to segment the market and target the right customers.

Section 4: Challenges and Opportunities

Each question uses a scale from 1 to 5.

- Implementing AI in marketing has encountered significant obstacles.
- Initial costs for implementing AI are a major barrier.
- There is a lack of internal skills to manage and use AI effectively.
- AI offers significant opportunities for innovation in marketing.
- AI enables us to respond more quickly and effectively to market changes.
- AI helps us identify new market segments and growth opportunities.

Section 5: Perceptions and Attitudes

Each question uses a scale from 1 to 5.

- Managers in my company have a positive attitude toward the use of AI in marketing.
- Employees are confident in the effectiveness of AI for improving marketing.
- There is an organizational culture favorable to innovation and the adoption of AI technologies.
- AI is perceived as an important competitive advantage for our company.
- We are open to continuing to invest in AI technologies to improve our marketing.