

Insights into Slovenian Hospitality SME Managers' Attitudes toward AI

Saša Planinc

University of Primorska, Slovenia
sasa.planinc@fts.upr.si

Marko Kukanja


University of Primorska, Slovenia
marko.kukanja@fts.upr.si

This study explores the attitudes of Slovenian hospitality SME managers toward artificial intelligence (AI), with a focus on how their demographic characteristics (DC) and the physical characteristics (PC) of SMEs influence these attitudes. The study used a structured questionnaire and convenience sampling. Using data from 288 managers, it identifies both positive and negative perspectives on AI within a sector undergoing digital transformation.

The findings reveal quite balanced attitudes, with both positive and negative experiences being recognized, though there is a slight tendency towards a more negative perspective. Managers' DC play a more significant role in shaping attitudes than SMEs' PC. Younger and less experienced managers tend to be more optimistic and enthusiastic about AI adoption, while older and more experienced managers are generally more sceptical. Family-owned businesses, which represent 61% of the sample, recognize some of AI's potential benefits but primarily express more concerns about its use compared to non-family-owned businesses. SMEs with more employees and those operating in more competitive environments demonstrate a stronger propensity to adopt AI.

This study highlights key barriers to AI adoption in hospitality SMEs, emphasizing the need for targeted education and training programmes, particularly for older managers and those with limited exposure to digital (AI) tools. Promoting awareness of AI's benefits through practical demonstrations and best practice examples can reduce resistance and foster more positive attitudes. By addressing these challenges, the hospitality sector can enhance its digital transformation in an increasingly technology-driven environment.

Keywords: artificial intelligence, attitudes, hospitality, managers, SMEs, Slovenia

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Introduction

Tourism plays a vital role in the European Union's (EU) economy, contributing 10% to its GDP (Pernice & Kuzhym, 2024). Notably, over 99% of businesses in the EU tourism sector are small and medium-sized enterprises (SMEs) (European Court of Auditors, 2021). Similarly, in Slovenia, tourism accounted for 9.2% of the country's GDP in 2023, with SMEs repre-

senting 99.8% of all companies (Republic of Slovenia, 2024). Recognizing the critical role of SMEs in driving economic growth, the EU Commission has prioritized the development of artificial intelligence (AI) skills among these enterprises (European Commission, 2024; Ulrich et al., 2021).

As technology advances, AI is transforming industries, positioning the hospitality sector at the crossro-

ads of tradition and innovation. AI refers to a broad range of techniques and tools that enable intelligent systems to perceive their environments and make informed decisions (Artificial Intelligence Act, 2024; Gimpel et al., 2023). While these advancements open doors to innovation, collaboration, and efficiency, they also bring ethical concerns and highlight the need for responsible governance to ensure equitable benefits (Abaddi, 2023; Soudi & Bauters, 2024). Despite challenges, AI is set to drive significant economic and societal progress, offering businesses opportunities to enhance efficiency, foster innovation, and address complex problems through data-driven solutions (Kelly et al., 2023). For hospitality SMES, AI presents substantial potential to improve service delivery. These businesses, often characterized by flat organizational structures and limited financial resources, can leverage AI to automate tasks such as room bookings, self-check-ins/outs, complaint management, and personalized recommendations (Cai et al., 2022; Citak et al., 2021). Restaurants, for instance, can use AI to manage table reservations, provide menu details, take orders, and process payments, ultimately reducing wait times and enhancing guest satisfaction (Tan & Netessine, 2020; Blöcher & Alt, 2021). AI also aids operational efficiency, inventory management, and guest experience enhancement (Bettoni et al., 2021; Ragazou et al., 2023; García-Madurga & Grilló-Méndez, 2023).

However, its adoption is not without challenges, including fears of job displacement, loss of control, and cybersecurity concerns (Saydam et al., 2022). Numerous studies have examined the barriers to AI adoption among SMES, citing issues such as limited knowledge and awareness (Soudi & Bauters, 2024), inadequate skills (Nannelli et al., 2023), high costs and infrastructure limitations (Oldemeyer et al., 2024), and organizational unpreparedness (Lada et al., 2023). Ethical and data security concerns further complicate the AI adoption process (García-Madurga & Grilló-Méndez, 2023). Understanding these challenges is essential for fostering entrepreneurship and economic growth (Abaddi, 2023).

From a theoretical perspective, attitudes play a critical role in shaping intentions to adopt technology, as highlighted in frameworks like the Techno-

logy Acceptance Model (TAM), the Theory of Planned Behaviour (TPB) model, and the Unified Theory of Acceptance and Use of Technology (UTAUT) model (see also the subsection Theoretical Frameworks for Technology Adoption). These models emphasize how different factors influence attitudes toward technology adoption. Recent research has stressed the importance of understanding determinants for effective AI implementation strategies (Kelly et al., 2023). Factors such as psychological needs (Bergdahl et al., 2023), personality traits (Schepman & Rodway, 2023), and perceived benefits (Ragab & Ezzat, 2021) have been identified as significant. However, Filieri et al. (2021) note a lack of empirical research predicting the specific factors influencing AI adoption in hospitality SMES (see also Table 1).

Research Gap

While prior studies have explored AI adoption in large tourism enterprises (Chen et al., 2023; Ivanov & Webster, 2024; Ozdemir et al., 2023) and general (non-hospitality) SMES, a critical unanswered question remains: How do the demographic characteristics (DC) of managers and the physical characteristics (PC) of SMES influence managerial attitudes toward AI in hospitality SMES? Hospitality SMES operate within unique 'guest-oriented' ecosystems, making it difficult to generalize findings from larger tourism enterprises (Lada et al., 2023; Oldemeyer et al., 2024). Ozdemir et al. (2023) describe AI adoption in hospitality SMES as being in its 'infancy stage', noting that models for AI adoption in these businesses are still underdeveloped. Similarly, Gupta (2024) underscores the importance of identifying key factors that facilitate successful AI integration.

Compared to broader research on AI adoption, studies specifically addressing hospitality SMES are sparse. To the best of our knowledge, no research has comprehensively examined hospitality managers' attitudes toward AI nor the impact of managers' DC and SMES' PC on these attitudes. This study seeks to address this gap by: (1) evaluating the level of managers' attitudes toward AI; (2) investigating how managers' DC influence their AI attitudes; and (3) examining the effect of SMES' PC on managerial AI attitudes. Accord-

dingly, we aim to answer the following Research Questions (RQs):

- RQ1 *What is the level of hospitality SME managers' attitudes toward AI?*
- RQ2 *How do managers' DC influence their attitudes toward AI?*
- RQ3 *How do SMEs' PC impact managers' attitudes toward AI?*

This research contributes to the growing body of literature on AI adoption in hospitality SMEs by emphasizing the influence of DC and PC on managerial attitudes toward AI in the case of Slovenia. Theoretically, it integrates DC and PC to offer a nuanced perspective on AI adoption. Practically, it provides actionable insights for policymakers and industry stakeholders, advocating for targeted educational initiatives to cultivate positive managerial attitudes (see also the Discussion and Conclusion sections). Such interventions are critical to overcoming adoption barriers and accelerating the digital transformation of hospitality SMEs.

Theoretical Background: AI (R)Evolution In Tourism Research

In the past decade, tourism research has experienced a significant surge in studies exploring AI. Much of this work has focused on Robots, AI, and Service Automation (also referred to as RAISA), particularly within the hotel and travel sectors, examining perspectives of both guests and service providers (Ivanov & Webster, 2019; Lukanova & Ilieva, 2019; Saydam et al., 2022). Kırtil and Aşkun (2021) reported an impressive annual growth rate of 8.36% in AI-related tourism research since 2017. This growing interest has spurred systematic reviews and bibliometric analyses on AI in tourism (e.g. García-Madurga & Grilló-Méndez, 2023; Kırtil & Aşkun, 2021; Knani et al., 2022; Law et al., 2023; Nannelli et al., 2023; Saydam et al., 2022).

AI has been defined through various lenses, often emphasizing two primary dimensions: cognition (behaviour) and human performance (rationality) (Kelly et al., 2023). The EU Artificial Intelligence Act, implemented in 2024, defines AI as a 'machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or

decisions influencing real or virtual environments' (Artificial Intelligence Act, 2024). This study adopts this definition as its conceptual framework.

Although AI research in tourism remains somewhat fragmented (Nannelli et al., 2023), five major AI applications have been identified in the hospitality sector: search and booking engines, virtual assistants and chatbots, robots and autonomous vehicles, kiosks and self-service screens, and augmented/virtual reality (AR/VR) devices (Huang et al., 2021). These applications are used to address key objectives such as forecasting, operational efficiency, enhancing guest experiences, and promoting sustainability (García-Madurga & Grilló-Méndez, 2023).

Research on AI adoption has predominantly highlighted its positive impacts. AI empowers tourism businesses to analyse process-generated data, derive actionable insights, and make data-driven decisions, leading to improved operational efficiency (Doğan & Niyet, 2024; Gupta, 2024). By automating repetitive tasks, AI minimizes human errors and boosts productivity. From a business perspective, it drives growth by increasing sales, expanding market share, and boosting revenue (Liu, 2024; Traversa, 2024). At the guest level, AI enhances satisfaction by optimizing experiences and reducing wait times. For example, smart restaurant technologies streamline the dining process, minimizing human interactions and eliminating queues (Talukder et al., 2023).

However, alongside its benefits, AI adoption also presents ethical, legal, social, and economic challenges. These include concerns about job displacement and the transformation of traditional roles as routine tasks become automated. This shift disproportionately impacts guest service and operational positions, increasing unemployment risks (Du, 2024; Tabbassum et al., 2024).

Despite their critical role in the tourism sector, SMEs demonstrate relatively low rates of AI adoption. SMEs face unique challenges in leveraging AI technologies. Blöcher and Alt (2021) studied AI adoption in the EU restaurant sector, revealing a disconnect between academic enthusiasm and practical application, as managers expressed a need for clearer guidance on harnessing AI's potential. Similarly, Ulrich et al.

(2021) found that German SMEs preferred traditional technologies and exhibited limited engagement with AI. These findings highlight the challenges SMEs encounter in translating AI's theoretical advantages into tangible business outcomes.

Given their distinct characteristics, SMEs require focused attention when examining AI adoption. Unlike larger enterprises, SMEs often operate with constrained resources, flat organizational structures, and limited technological expertise. These factors collectively slow AI adoption rates within the sector. Subsequent sections of this study will delve deeper into the specific factors influencing AI adoption in SMEs, emphasizing opportunities to overcome these challenges and unlock AI's transformative potential for the hospitality industry.

Theoretical Frameworks for Technology Adoption

Numerous theoretical models have been developed to explore and explain user acceptance of emerging technologies. Key frameworks include the TPB, the TAM (Davis, 1989), the UTAUT (Venkatesh, 2022), and the Diffusion of Innovations Theory. More recently, AI-specific frameworks such as the AI Device Use Acceptance (AIDUA) model (Gursoy et al., 2019) and the Task-Oriented AI Acceptance (T-AIA) model (Yang et al., 2022) have also been proposed. These models provide diverse perspectives on how and why technologies are adopted across various contexts, often emphasizing the interplay of technological, organizational, and environmental factors.

A consistent theme across these frameworks is the pivotal role of attitudes in shaping users' behavioural intentions and subsequent adoption behaviours. For instance, the TPB highlights 'attitudes toward the behaviour' as a crucial factor influencing intentions, which ultimately drives actual behaviour. Similarly, the TAM links attitudes to perceptions of usefulness and ease of use, both of which play a significant role in determining an individual's intention to adopt new technologies (Kelly et al., 2023).

Measuring Attitudes Towards AI: Tools and Scales

Attitudes are considered a crucial precursor in the technology adoption process across various theore-

tical models (as presented above). Given that implementation models are still evolving, recent state-of-the-art research instruments have been developed to specifically measure attitudes toward AI. These instruments aim to capture the nuances of how individuals and organizations perceive AI and its potential across different contexts, offering valuable insights into the factors that influence AI adoption. By focusing on attitudes, researchers can better understand the psychological and emotional barriers affecting decision-making, ultimately helping to develop more effective strategies for integrating AI into various industries. As AI adoption models continue to evolve, these tools will play a key role in shaping both theory and practice in the field.

These measurement scales assess attitudes toward AI in diverse contexts and populations, aiming to capture the multifaceted perceptions individuals hold and thereby facilitating a deeper understanding of AI's acceptance and integration.

For example, the ATTARI-WHE scale was developed to assess attitudes toward AI in the workplace, healthcare, and education (Gnambs et al., 2025). Similarly, the ATTARI-12, introduced by Stein et al. (2024), is a psychologically grounded questionnaire that examines attitudes toward AI as a unified construct, independent of specific contexts or applications. The AI Attitude Scale (AIAS-4) is a concise instrument consisting of four items, focusing on general attitudes toward AI and evaluating its perceived utility and societal impact (Grassini, 2023). Additionally, the MAL-L:AI Scale was developed to measure attitudes toward AI in language learning (Yıldız, 2023).

Finally, the General Attitudes towards Artificial Intelligence Scale (GAAIS) is a valuable tool for analysing attitudes toward AI, due to its robust psychometric properties and ability to capture the complexity of public sentiment. This 20-item scale (Schepman & Rodway, 2023) effectively differentiates between positive and negative attitudes, enabling researchers to explore various factors influencing these attitudes (Şahin & Yıldırım, 2024). The GAAIS has also been adapted for use in different cultures, confirming its cross-cultural applicability and relevance in diverse research contexts (Kaya et al., 2024).

The Spectrum of Attitudes Towards AI: Insights from Diverse Research Contexts

Understanding attitudes towards AI is complex, influenced by various factors such as demographics, emotional responses, and individual personality traits. Recent research highlights a wide range of emotions towards AI, with both optimism and scepticism often shaped by personal experiences and perceptions of AI's impact on different aspects of life.

For example, Stein et al. (2024) analysed data from U.S. panel participants and German social science students, focusing on the predictive role of personality traits, such as the Big Five, the Dark Triad, and conspiracy mentality. Their findings indicated that individuals who are more agreeable and younger tend to have more favourable attitudes towards AI, while those with a propensity for conspiracy beliefs tend to view AI more negatively. This underscores the significant influence personality traits have on perceptions of AI.

In addition, Park et al. (2024) investigated the role of perceived human-likeness and concerns about job security. Their study, which surveyed 2,841 participants from various work environments, found that feelings of personal utility and adaptability were crucial in shaping attitudes towards AI in professional settings. These studies collectively highlight the complex relationship between individual differences and broader socio-economic factors in shaping attitudes toward AI, stressing the importance of understanding these dynamics to foster positive engagement with emerging technologies.

Cultural and gender dimensions also emerge as key factors. An extensive survey by Méndez-Suárez et al. (2024) of 20,671 European consumers revealed that men generally hold more favourable views of AI than women. Furthermore, respondents from East Asian countries expressed greater trust in AI management systems compared to those from Western nations, illustrating the influence of cultural contexts on AI perceptions.

Managerial attitudes are also crucial for AI adoption within organizations. Majrashi (2024), in a survey of 330 public sector managers in the United States, found that perceptions of AI's usefulness and ethical con-

cerns, such as transparency and privacy, were pivotal in shaping their intentions to adopt AI technologies. This emphasizes the need to address ethical concerns to build trust in AI systems. Similarly, Brink et al. (2023) examined managerial attitudes across sectors in the Netherlands and identified four key factors influencing AI adoption: demographics, familiarity, psychological traits, and personality. Their study highlighted the importance of transparent communication, tailored training, and user involvement in the design process to enhance AI acceptance.

Addressing anxieties about AI is also essential for improving attitudes. Kaya et al. (2024) found in their study of Turkish respondents that increased familiarity with AI technologies and reduced anxiety significantly predicted more favourable attitudes. These findings suggest that targeted educational initiatives and ethical implementation practices are critical for building trust and acceptance.

Together, these studies illustrate how attitudes towards AI are shaped by a combination of demographic, cultural, and psychological factors.

Factors Influencing AI Attitudes in SMEs: Insights from Recent Studies

The table below presents state-of-the-art research studies examining the primary factors influencing attitudes towards AI in SMEs.

As demonstrated by the table above, the reviewed studies highlight various factors influencing attitudes toward AI adoption in SMEs, but there is limited emphasis on DC and PC. Interestingly, the literature reveals a gap in research focusing specifically on hospitality SMEs, indicating the need for more targeted studies in this area.

In terms of PC, the studies identify an interplay of various factors, including technical, organizational, and environmental challenges. Technical challenges, such as inadequate infrastructure, are frequently cited as barriers to AI adoption (e.g. Oldemeyer et al., 2024; Vogel et al., 2023). Firm size is another important factor influencing managerial attitudes toward AI adoption. Larger firms often face more complex operational challenges, making AI solutions more attractive for enhancing efficiency and maintaining a compe-

Table 1 Factors Influencing AI Attitudes

Author(s)	Sample	Main findings (influencing factors)
Iyelolu et al., 2024	Literature review study	Resistance to change, lack of technical expertise, and data security concerns, which hinder adoption and innovation.
Wong & Yap, 2024	Respondents from Malaysian MSMES (n = 196)	Compatibility, top management support, alignment with business strategy, organizational resources, competitive pressure, and government regulations.
Schwaewe et al., 2024	Literature review study	A complex interplay of cultural factors, knowledge factors, and competitive pressures.
Badghish & Soomro, 2024	Managers from six different sectors in Saudi Arabia (n = 220)	Relative advantage, compatibility, sustainable human capital, market and customer demand, and government support.
Almashawreh et al., 2024	SME owner-managers in Jordan (n = 364)	Relative advantage, complexity, top management commitment, and organizational preparedness.
Agrawal et al., 2024	Indonesian SMES (n = 292)	Technological, organizational, and environmental factors primarily influence attitudes, shaping their decision-making processes and competitive advantage in the market.
Oldemeyer et al., 2024	Literature review study	Lack of knowledge, costs, and inadequate infrastructure, encompassing social, economic, and technological challenges.
Bak et al., 2024	Literature review study	Strategy and business model, culture and attitude, resources, support, entrepreneurship and innovation, competitive position, and environmental conditions.
Charllo, 2024	SME representatives (n = 498) in the USA. Study results presentation using secondary data.	Lack of expertise, funding constraints, and data privacy concerns hinder.
Lada et al., 2023	Owners or managers of different SMES in Sabah, Malaysia (n = 196)	Top management commitment and organization readiness significantly influences attitudes. In contrast, competitive pressure, employee adaptability, and external support show an insignificant impact.
Rawashdeh et al., 2023	SME owners and managers in the United States (n = 353)	The study identifies technological factors influencing AI adoption, highlighting the mediating role of accounting automation. Key variables include time-saving and efficiency improvements, which significantly impact attitudes.
Vogel et al., 2023	Literature review study	Fear of job loss, lack of AI experience, insufficient infrastructure, and the need for increased understanding of AI contribute to negative attitudes.

Note Summarized by authors from listed sources.

titive advantage (Agrawal et al., 2024). On the other hand, smaller firms tend to exhibit more scepticism toward AI, primarily due to perceived complexity and resource constraints, which inhibit technological advancement and the adoption of new technologies (Ivanov & Webster, 2024). As a result, smaller firms

may lag behind larger firms in utilizing AI for operational improvements.

Despite the rich body of research on factors influencing AI attitudes, the role of managers' DC and SMES' PC, especially in hospitality SMES, remains underexplored. Schwaewe et al. (2024) noted that the

current literature on SMEs presents a fragmented understanding of how these enterprises engage with AI technologies. This gap needs to be addressed in future studies to gain a clearer understanding of the specific barriers faced by hospitality SMEs and to identify ways to overcome them.

Methods

Research Process, Instrument Design, and Data Analyses

The variables included in the research instrument were carefully selected and adapted from prior studies. Considering the topic's novelty and evolving nature, an extensive review of recent literature was conducted using major academic databases. The review focused on tourism and SME-related research over the past five years, employing keywords such as *attitudes*, *AI*, *digitalization*, *hospitality*, and *SMEs*. Attitudes toward AI were measured using the 20-item GAAIS scale (Schepman & Rodway, 2023). The positive attitudes subscale includes 12 items, and the negative attitudes subscale includes 8 items (statements). Responses were recorded on a five-point Likert-type ordinal scale, ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*), with reverse scoring applied to negative subscale items to ensure consistency in analysis (see Table 2).

To provide insights into AI adoption, managers' demographic characteristics were collected using variables such as age, gender, education, years of experience in the industry, and managerial function (Kukanja et al., 2023). Additionally, physical characteristics of SMEs were collected using variables such as years of business activity, number of employees, family business status, number of competitors, capacity (number of seats/beds), and potential rent payments. These variables were introduced from previous studies (Planinc et al., 2022; Kukanja et al., 2023).

The data were analysed using IBM SPSS 29.0, with descriptive statistics (M – mean value, and SD – standard deviation) employed to summarize the key characteristics of the sample and variables, and bivariate analysis conducted to explore the impact of DC and PC on AI attitudes. Based on the type of variables and the data distribution, we applied appropriate statistical tests: Spearman's rank correlation coefficient to assess the relationships between two ordinal variables

or a combination of ordinal and numerical variables, the Kruskal-Wallis test (H test statistic) to compare differences in ordinal data across more than two independent groups, and the Mann-Whitney test (U test statistic) to compare differences in ordinal data between two independent groups. This comprehensive approach ensured a robust statistical analysis of the relationships between attitudes, managers' DC, and SMEs' PC.

Sample Description and Data Collection Process

The sample for this study comprised SMEs operating in the Republic of Slovenia. These were specifically classified under the EU's standard NACE categories I55 (accommodation) and I56 (food and beverage service activities). According to the official business register (AJPES, n.d.), there were 8,303 businesses in these categories as of 2023.

Given the diverse nature of SMEs, which often engage in multiple business activities and span various subcategories, direct comparisons can be challenging. To address this, the study focused on SMEs whose operational revenue was exclusively derived from I55 and I56 activities. The selected sample emphasized businesses with similar operational characteristics, such as those providing 'traditional' bed accommodations (e.g. hotels, motels, and bed & breakfasts) and table service facilities (e.g. restaurants, inns, and snack bars). This approach ensured a more uniform sample, enabling more accurate comparisons within the targeted sector.

Due to the absence of detailed official data on the characteristics of hospitality SMEs, a convenience sampling method was employed, as explained later in the study. Data collection took place between January and July 2023. The process began by pre-screening public records to identify eligible SMEs, excluding those that did not meet the inclusion criteria of I55 and I56 classifications.

As in previous studies (e.g. Lada et al., 2023; Planinc et al., 2022; Kukanja et al., 2023), the respondents selected were managers or owner-managers, as they are the primary decision-makers regarding technology adoption. Respondents were required to confirm that their businesses primarily operate in the food

Table 2 Mean Values for GAAIS Items

Item code	Attitude towards AI	M	SD
A14	There are many useful applications of AI (+)	3.36	1.142
A03	Organizations use AI unethically (-)	3.17	1.141
A19	People like me will suffer if AI use increases (-)	3.16	1.314
A08	AI is sinister (-)	3.15	1.219
A05	I am excited about what AI can do (+)	3.06	1.318
A15	I get chills thinking about AI use in the future (-)	3.03	1.313
A17	Society will benefit from AI in the future (+)	2.98	1.148
A20	AI is used for spying on people (-)	2.98	1.331
A12	AI is exciting (+)	2.97	1.157
A02	AI can provide new economic opportunities (+)	2.94	1.237
A09	AI could take control over people (-)	2.94	1.418
A10	I think AI is dangerous (-)	2.91	1.288
A06	AI systems make many mistakes (-)	2.90	1.113
A11	AI can positively impact people's well-being (+)	2.88	1.054
A07	Interest in using AI in daily life (+)	2.55	1.232
A16	AI systems can perform better than humans (+)	2.48	1.226
A04	AI systems can help people feel happier (+)	2.43	1.209
A13	AI would be better than employees (+)	2.43	1.320
A18	I would like to use AI at work (+)	2.35	1.249
A01	I prefer using AI systems over humans (+)	1.98	1.265
Average		2.83	1.281

Note Positive and negative items are marked with the positive (+) or negative (-) sign. Prior to processing, the negative GAAIS items were reverse-scored (1 = Strongly agree; 5 = Strongly disagree). Thus, higher scores on each subscale represent more positive attitudes. Items are sorted by mean values in descending order.

(I55) or accommodation (I56) service sectors and generate the majority of their operating revenue from these activities. If a facility failed to meet the inclusion criteria or if a manager declined to participate, interviewers moved on to the next eligible facility.

By the conclusion of the data collection period, the study had sampled 288 SMEs, representing 3.46% of the total population in the I55-56 classifications. While this sample size offers a solid foundation for analysis, it may limit the generalizability of the findings to the broader population of hospitality SMEs (see also the Conclusion section).

Results

Sample Characteristics

The demographic data reveal that 66% of respondents (Slovenian hospitality SME managers) were men, and

the majority had completed at least secondary education (56%), with an additional 42% having attained an even higher level of education. The average age of the respondents was 44.53 years ($SD = 10.31$). In terms of experience in the hospitality industry, respondents had an average of 21.06 years of experience ($SD = 10.86$).

Regarding SMEs' PC, the average duration of business activity was 23.37 years ($SD = 27.78$). A significant proportion of SMEs (70%) are managed by managers who are also their owners, indicating a strong entrepreneurial spirit. Additionally, 61% of all SMEs are family-owned businesses. The average number of employees was 14.10 ($SD = 31.33$), the average number of competitors was 3.96 ($SD = 4.74$), the average number of seats/beds was 101.39 ($SD = 116.14$), and 43% of respondents reported paying rent, while the remaining 57% did not.

Table 3 Statistical relationships between managers' demographic characteristics and their AI attitudes

Item	Age		Gender		Education		Years of exp.		Managerial function	
	r_s	Sig.	U	Sig.	H	Sig.	r_s	Sig.	U	Sig.
A01	-0.117	0.048	8776.5	0.519	2.028	0.363	-0.165	0.005	7809.5	0.170
A02	-0.092	0.122	7538.0	0.011	1.452	0.484	-0.110	0.064	6823.5	0.004
A03	-0.024	0.682	8507.5	0.367	0.049	0.976	0.024	0.687	8021.0	0.455
A04	-0.100	0.094	7980.5	0.085	6.445	0.040	-0.131	0.028	7821.0	0.250
A05	-0.196	0.001	8187.0	0.130	4.479	0.107	-0.232	0.000	6315.5	0.001
A06	0.020	0.734	8730.0	0.583	1.491	0.474	0.021	0.724	7265.5	0.036
A07	-0.101	0.088	8038.0	0.080	8.080	0.018	-0.165	0.005	6634.0	0.001
A08	-0.050	0.403	9055.0	0.919	3.932	0.140	-0.037	0.537	8427.0	0.817
A09	-0.142	0.016	9131.5	0.955	3.209	0.201	-0.134	0.024	8353.0	0.679
A10	-0.132	0.026	8732.0	0.597	1.935	0.380	-0.111	0.062	8212.5	0.613
A11	-0.094	0.112	7333.5	0.005	5.039	0.081	-0.137	0.022	7245.0	0.033
A12	-0.066	0.266	8562.0	0.381	0.597	0.742	-0.080	0.179	6777.5	0.004
A13	-0.084	0.158	7865.5	0.050	4.819	0.090	-0.072	0.230	8331.5	0.767
A14	-0.142	0.017	8493.0	0.400	4.063	0.131	-0.144	0.015	7225.5	0.041
A15	-0.156	0.008	8271.0	0.164	2.858	0.240	-0.120	0.043	7767.0	0.174
A16	-0.100	0.093	6856.5	0.001	4.349	0.114	-0.047	0.437	8265.0	0.789
A17	-0.028	0.635	8575.0	0.388	6.316	0.043	-0.077	0.194	8035.0	0.381
A18	-0.139	0.019	8398.5	0.230	13.596	0.001	-0.158	0.007	7682.5	0.132
A19	-0.086	0.147	9154.0	0.983	0.169	0.919	-0.040	0.502	7382.0	0.048
A20	-0.125	0.034	8116.5	0.117	1.879	0.391	-0.085	0.153	7551.0	0.099

Note Statistically significant relationships ($p \leq 0.05$) are marked in bold.

Statistical Analyses to Answer Research Questions

The results presented in Table 2 provide the answer to RQ1. The study evaluated the values for GAAIS items by calculating mean values and standard deviations. Negative attitudes were reverse scored. The overall mean score for attitudes indicated a slightly negative, yet close to neutral managerial attitude towards AI ($M=2.83$), with quite a few differences between managers' opinions ($SD=1.28$).

The Slovenian hospitality SME managers mostly agreed ($M=3.36$) that there are many useful applications of AI (A14). On average, they agreed slightly less that organizations use AI ethically (A03), that people like them will not suffer if AI use increases (A19), and that AI is not sinister (A08). On the other hand, they least agreed ($M=1.98$) that they prefer using

AI systems over humans (A01) and slightly more ($M=2.35$) that they would like to use AI at work (A18).

In general, negative items (reverse scored) achieved slightly higher average ratings ($M=3.03$, $SD=1.27$) than positive items ($M=2.70$, $SD=1.21$). The highest-rated positive item was A14 ('There are many useful applications of AI') and the highest-rated negative item was A03 (reverse statement: 'Organizations use AI ethically'). In contrast, the lowest-rated positive item was A01 ('I prefer using AI systems over humans') and the lowest negative item was A06 (reverse statement: 'AI systems make few mistakes').

Next, statistical relationships between managers' DC and AI attitudes were calculated to answer RQ2.

The results presented in Table 3 demonstrate that managers' attitudes towards AI are significantly influ-

Table 4 Statistical relationships between SMEs' physical characteristics and managers' AI attitudes

Item	Years of busin. activ.		No. of employees		Family business		No. of competitors		Capacity		Rent	
	r_s	Sig.	r_s	Sig.	U	Sig.	r_s	Sig.	r_s	Sig.	U	Sig.
A01	-0.036	0.545	0.167	0.005	8777.0	0.122	0.020	0.744	-0.066	0.270	9969.0	0.906
A02	-0.063	0.292	0.115	0.055	7947.5	0.007	0.037	0.544	-0.001	0.984	9304.0	0.270
A03	0.032	0.592	-0.004	0.949	9245.5	0.613	0.086	0.154	0.037	0.535	9732.5	0.774
A04	-0.065	0.280	0.006	0.923	8629.5	0.136	0.065	0.278	-0.125	0.037	9456.5	0.484
A05	-0.058	0.329	0.167	0.005	8427.5	0.048	0.043	0.476	0.022	0.717	8945.0	0.105
A06	0.008	0.888	0.021	0.724	8489.5	0.083	0.161	0.007	-0.011	0.850	9849.5	0.936
A07	-0.036	0.549	0.162	0.007	8108.0	0.014	0.118	0.050	0.056	0.350	9206.5	0.214
A08	0.042	0.481	0.132	0.028	9097.0	0.392	0.125	0.038	0.071	0.240	8959.0	0.124
A09	0.011	0.853	0.082	0.174	9327.0	0.533	0.121	0.044	-0.056	0.351	9581.0	0.495
A10	0.004	0.946	0.087	0.149	8444.0	0.079	0.155	0.010	0.010	0.864	9405.5	0.443
A11	-0.088	0.142	-0.069	0.255	8817.0	0.219	0.027	0.655	-0.036	0.551	8706.0	0.061
A12	-0.112	0.060	0.003	0.955	9475.5	0.781	0.045	0.457	-0.023	0.704	8785.0	0.072
A13	-0.068	0.255	0.092	0.127	8469.5	0.070	0.056	0.352	0.003	0.965	9335.0	0.332
A14	-0.011	0.850	0.079	0.190	8537.5	0.102	-0.036	0.549	0.040	0.503	7319.5	0.000
A15	-0.009	0.875	0.166	0.006	8096.0	0.013	0.098	0.103	0.015	0.804	8468.0	0.019
A16	-0.080	0.179	-0.028	0.646	8796.0	0.249	-0.071	0.241	-0.014	0.812	9088.5	0.244
A17	-0.039	0.510	-0.026	0.671	8671.5	0.129	0.034	0.576	-0.023	0.698	9226.5	0.252
A18	-0.041	0.487	0.127	0.034	8052.5	0.010	0.102	0.088	-0.050	0.404	9509.5	0.424
A19	0.060	0.311	0.125	0.038	8419.5	0.046	0.124	0.038	-0.026	0.665	9471.5	0.396
A20	0.043	0.467	0.125	0.038	8390.5	0.054	0.117	0.053	-0.016	0.788	9075.5	0.175

Note Statistically significant relationships ($p \leq 0.05$) are marked in bold.

enced by DC. Nearly all items are affected by at least one DC. Some DC, such as age, years of experience, and managerial function, have a more pronounced impact. On the other hand, each DC influences only certain items, but not more than half of them.

Negative correlations (r_s) across all eight statistically significant items related to age, clearly indicate that attitudes towards AI are inversely proportional to experience. Results reveal that younger managers express greater enthusiasm, willingness and optimism regarding the use of AI (A01, A05, A09, A10, A14, A15, A18, A20), while older respondents are more sceptical about its benefits. However, the strength of these correlations is relatively weak, although they remain statistically significant.

Regarding years of experience, all statistically significant correlations are also negative, indicating that managers with shorter tenure are more positive towards AI (A01, A04, A05, A07, A09, A11, A14, A15, A18). The strength of these correlations is, again, relatively weak.

Regarding managerial function, the tests reveal statistically significant differences for certain items. Additional analysis of the average ranges across groups (detailed data are omitted due to space constraints) shows that managers who are also SME owners exhibit a somewhat more conservative approach towards the use of AI (A02, A05, A06, A07, A11, A12, A14, A19) compared to managers hired as external professionals.

Regarding gender and education, statistically significant differences are less pronounced. However, some differences are still present, and in those cases, further analysis of the average ranges across groups reveals that women express less agreement regarding the positive effects of AI usage than men (A02, A11, A13, A16), and higher education is associated with greater confidence in the potential of AI and recognition of its benefits (A04, A07, A17, A18).

In the last step, to answer RQ3, statistical relationships between attitudes and PC of hospitality SMEs were calculated.

From Table 4, it is evident that PC variables generally have a less pronounced influence on shaping managers' attitudes compared to DC variables. Some PC variables have no impact at all (years of business activity), others affect only one or two items (capacity and rent), while some do exhibit influence, but not on more than half of the items.

Positive correlations (r_s) for statistically significant items related to the number of employees and the number of competitors clearly indicate that managers in companies with a larger number of employees are more willing to adopt AI (A01, A05, A07, A08, A15, A18, A19, A20), and similarly, managers in SMEs operating in more competitive environments are also more willing to adopt AI (A06, A07, A08, A09, A10, A19). However, the strength of these statistically significant correlations is relatively weak.

Regarding company ownership, the tests reveal statistically significant differences for certain items (A02, A05, A07, A15, A18, A19). Further analysis of the average ranges across groups (detailed data are omitted due to space constraints) shows that managers from family-owned businesses exhibit a more conservative approach towards AI adoption compared to those from non-family-owned businesses.

Discussion

Our findings provide valuable insights into the adoption of AI within hospitality SMEs, a sector undergoing rapid digital transformation. Despite the potential of AI to enhance guest experiences and streamline operational processes, adoption rates among these

businesses remain notably low, highlighting persistent challenges in integrating AI technologies.

The analysis of Slovenian hospitality SMEs managers' attitudes toward AI (see Table 1) revealed a fragmented understanding and insufficient theoretical frameworks tailored to hospitality SMEs. The scarcity of research focusing on hospitality SMEs limits the applicability of broader SME studies' results to this unique ecosystem. Accordingly, this study aimed to examine hospitality managers' attitudes toward AI, exploring how DC and PC influence these attitudes.

Our research results show that managers' attitudes toward AI are slightly negative, yet close to neutral. This highlights the pressing need for industry-specific education and capacity-building efforts. Our results contrast with Schepman and Rodway (2023), who reported more favourable attitudes toward AI in a broader SME context. While direct comparisons are limited by the lack of existing studies specific to hospitality SMEs, our findings emphasize the critical role of attitudes in AI adoption (see also the subsection Theoretical Frameworks for Technology Adoption). The observed negative attitudes highlight a need for targeted interventions, such as education, best-practice showcases, and emphasizing AI's benefits, to foster more positive perceptions (see also the Conclusion section).

DC emerged as a more important factor, having a greater statistically significant influence on the items related to attitudes toward AI. Younger managers tend to be more receptive to AI than older, more experienced counterparts, especially those who do not own the business. This hesitancy among older managers may stem from entrenched management practices and values, such as the mindset of 'we have always done it this way'. Cultural and managerial factors, including a prioritization of personalized guest service over technological innovation, might further exacerbate this resistance. Our findings also suggest that women are less likely to agree on AI's benefits. Additionally, industry-specific challenges – such as the labour-intensive nature of hospitality, reliance on a seasonal and less-educated workforce, and operational complexities – may amplify these negative attitudes. Our research shows that higher education levels seem to

contribute to more favourable attitudes toward AI. Educational initiatives could promote a more positive stance toward AI.

The influence of PC is less pronounced than that of DC. Nonetheless, larger SMEs and those operating in more competitive environments show greater awareness of AI's potential. On the other hand, managers of family-owned businesses, which comprised 61% of our sample, exhibit caution in adopting AI, potentially reverting to traditional hospitality approaches.

AI, however, does not need to disrupt the provider-guest relationships. Instead, it can enhance them through tools like Customer Relationship Management (CRM), which personalize guest experiences, improve efficiency, and enable data-driven decision-making (Dwivedi et al., 2023; Ozdemir et al., 2023). AI's role in fostering a 'hybrid intelligence' ecosystem – where humans and AI collaborate – offers a promising pathway for the hospitality sector (García-Madurga & Grilló-Méndez, 2023; Kirtıl & Aşkun, 2021). However, achieving such an ecosystem will require greater investments in employee training and strategic alignment of AI tools with hospitality goals. As Nannelli et al. (2023) note, AI presents vast opportunities, but training is essential to avoid falling behind industry trends as the technology evolves.

Our findings diverge from Ivanov and Webster (2024), who examined attitudes toward AI in the Bulgarian hotel industry. They concluded that demographic and property characteristics did not significantly influence preferences for AI in decision-making, emphasizing instead that general attitudes toward AI were the strongest predictors of adoption. This contrast underscores the complexity of factors affecting AI adoption and the need for further exploration, as cultural and regional factors may also play a role in shaping AI attitudes.

As a relatively under-researched area, further studies are required to deepen our understanding of both attitudes and actual AI implementation in hospitality SMEs. This aligns with Mogaji et al. (2024), who stress the importance of developing nuanced conceptual frameworks in AI research. Importantly, integrating AI into hospitality requires a digitally skilled workforce capable of effectively utilizing and managing these

technologies. Managers, therefore, must focus on empowering their employees with the necessary digital competencies.

This study highlights the relatively low and predominantly negative attitudes toward AI among hospitality SME managers and the significant influence of DC, and partially PC, on these perceptions. Promoting positive attitudes toward AI is crucial for successful adoption. Achieving this will require targeted education, practical demonstrations of AI benefits, and tailored approaches that address DC and PC influences.

As the hospitality industry continues to evolve, managers must adapt by embracing digital transformation and equipping themselves and their employees with the skills necessary for AI integration. We can assume that the dual focus on AI and traditional skills will be critical for SMEs to sustain their competitiveness and meet the expectations of increasingly tech-oriented guests. Doing so will not only enhance their competitiveness but also ensure their long-term sustainability in an increasingly digitalized world.

Conclusion

At the beginning of this paper, we set out to examine managerial attitudes toward AI (RQ1) and assess the impact of DC and PC of SMEs on these attitudes (RQ2 and RQ3). To achieve these objectives, we conducted a comprehensive literature review to identify key factors influencing AI attitudes in SMEs. Using data collected from 288 respondents (Slovenian hospitality SME managers), we analysed both positive and negative managerial attitudes and tested the relationships between the exogenous variables (DC and PC) and these attitudes.

Our findings indicate that managerial attitudes toward AI are generally slightly negative. We also demonstrated that DC – particularly age, years of experience, and managerial function – and PC – including the number of employees, number of competitors, and the company ownership (family business) – significantly influence these attitudes. Given the specific characteristics of the hospitality sector, our study suggests that improving managerial attitudes toward AI could, in line with the TAM model, enhance AI adoption. Addressing DC and PC factors can help mana-

gers better appreciate the benefits and challenges of AI implementation in SMEs.

Theoretically, this study contributes to the growing body of research on AI in SMEs. Within the relatively underexplored hospitality sector, it provides insights into how DC and PC shape managerial attitudes toward AI. By examining the interplay between family business dynamics, ownership-managerial roles, and attitudes, our research also enriches the literature on digital entrepreneurship in emerging hospitality studies. Furthermore, it underscores the need for a nuanced understanding of how cultural and regional factors might influence these dynamics, particularly in Slovenia, where specific market conditions may shape AI attitudes differently from broader global trends.

Practically, these findings offer actionable recommendations for hospitality managers. Managers must recognize the advantages of digitalization and adopt new technologies to improve both financial and non-financial performance. Addressing the prevailing slightly negative attitudes is critical for fostering a culture of innovation. For instance, educational programmes tailored to older managers or those with limited exposure to digital tools could facilitate more positive perceptions of AI. Encouraging peer-to-peer learning and sharing success stories from early adopters could further reduce resistance to change.

This study also highlights implications for government policy. The significant influence of age, experience, and gender differences on AI attitudes underscores the need for targeted educational initiatives aimed at specific demographic groups of managers. Policymakers and industry stakeholders, in collaboration with academia, should address gaps in AI knowledge and develop a supportive ecosystem to accelerate AI adoption within the sector.

However, this study has several limitations that future research should address. The sample size may restrict the generalizability of the findings, and the use of convenience sampling could affect the representativeness of the sample. Furthermore, the demographic profile of respondents – predominantly men, at least secondary-educated, aged 35–55, with a large proportion of family businesses and owner-managers (70%) – may have influenced the results. The relian-

ce on self-reported data poses another limitation, as survey responses may not fully capture actual behaviours or attitudes. Future research should also explore the potential long-term impact of AI adoption on SME competitiveness, particularly as digital transformation accelerates across industries.

Future research could benefit from broader, more diverse samples and alternative methodologies, such as mixed-methods approaches or case studies, to provide deeper insights. Studies incorporating triangulation among managers, guests, and employees could enhance understanding, especially in a sector where balancing digital and human interactions remains a challenge. Exploring generative AI applications, which are increasingly accessible online, could further illuminate how managers experiment with and perceive AI. Additionally, examining factors that influence AI attitudes across different industries, as identified in prior studies, could help contextualize the unique challenges and opportunities within the hospitality sector.

Finally, future research should address industry-specific factors such as guest orientation and resistance to change, which could significantly shape attitudes toward AI in hospitality SMEs. These efforts align with the EU Commission's initiatives to enhance AI-related skills and digital literacy among SMEs, paving the way for broader adoption and innovation within the sector.

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