Artificial Intelligence impacts on hospitality and tourism marketing: exploring key themes and addressing challenges

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Abstract

Understanding how Artificial Intelligence (AI) impacts organizational functions supports stakeholders to prepare accordingly and profit from these developments. Adopting a grounded theory approach, this study uses three interlinked stages (in-depth interviews, focus groups and a questionnaire-based survey) to explore the impact of AI on the marketing function of hotels. The results identify ten trends related to AI's contribution to hotel marketing, clustered in four themes. AI reengineers internal processes and procedures by enabling data and content as catalysts of competitiveness; empowering the augmented worker and performing mass personalization and customization. AI also impacts relationships with stakeholders by determining return on investment; improving sustainability; and governing legal aspects and ethics regarding data use. AI supports networks to which the organizations belong by concentrating and integrating organizations and transforming distribution models. AI transforms customer processes and services by engaging smart and predictive customer care and by employing predictive and augmented product and service design. The study illustrates the changes that AI will likely bring to hospitality and tourism marketing, developing a research agenda and raising discussion points for academic and industry practitioners respectively.

1 Introduction

Artificial Intelligence (AI) is defined as a family of technologies that can recognize, analyze, act, learn and demonstrate advanced features of human intelligence in the process of problem-solving (McCartney & McCartney, 2020). With tourism in the process of digital transformation (Buhalis, 2020), the initial impacts of AI can be found in many facets of the sector (Kong et al., 2022). Recent developments in generative conversational AI demonstrate the opportunities, challenges and implications of AI across all aspects of life (Dwivedi et al., 2023). AI is changing operational and marketing functions for tourist destinations and organizations (Inanc-Demir & Kozak, 2019). AI systems empower personalization and recommender systems, robots, conversational systems (e.g. chatbots and voice assistants), forecasting systems, smart travel assistants, language translation applications, and smart tourism and smart destination systems. The technology is already having an impact on tourism, disrupting functions and reengineering the industry (Buhalis et al., 2019 Buhalis & Moldavska, 2022; Leung, 2020).

With such a rapid pace of change, the question remains as to how AI will further transform organizations. It is possible to find studies about the historical development of AI in general (Lv et al., 2022; Mariani et al., 2022; Saydam et al., 2022; Tussyadiah, 2020), and how it might affect the travel and tourism industry as a whole. These studies are high-level, conceptual and speculative (Kong et al., 2022). With the exception of Grundner and Neuhofer (2021) and Saydam et al. (2022), who examined tourism destinations and hospitality respectively, few studies explain how AI may impact specific sectors or business functions. To derive a deeper understanding of the probable effects of AI and its potential impact on organizations, this three-part study examines the potential impact of AI on the marketing function of hotels; answering Samala et al.'s (2020) call for further research on the concept of AI and its application to the tourism sector.

Based on grounded theory, a three-stage interliked qualitative approach, comprised of structured interviews with AI experts which informed focus groups with tourism marketing experts and a subsequent follow-up survey to reconfirm findings in the light of changing industry priorities due to the COVID-19 pandemic, was used to explore the changes that AI may have on the specific business function of marketing, within the hotel

subsection of tourism. The study examined how AI will affect commercialization and marketing in the longer term at the organizational level from both an internal and an external perspective. It explores the transformations that AI will potentially cause within the marketing function of hotels and illustrates the changes AI will bring to hotel marketing, developing a research agenda and discussion points for academic and industry practitioners respectively.

2 Artificial intelligence in tourism and hospitality marketing: theoretical foundations

2.1 Artificial intelligence

Artificial intelligence is a set of technologies that can imitate human intelligence in order to solve problems. Similar to humans, AI can apply rules, improve over time, learn, and adapt to changes in the environment (Russell & Norvig, 2016). AI has evolved over time, with initially systems only required to have some form of basic intelligence to be tagged as AI (Buhalis et al., 2019). However, requirements have grown and specific autonomous behaviors are now required for systems to be considered intelligent (Sterne, 2017). AI needs to be able to act autonomously, as well as to be self-aware, creative, and social (Kaplan & Haenlein, 2020). Hence, in the context of this research, we define AI systems as those able to autonomously imitate human thinking, make decisions, and perform advanced operations and procedures over large sets of data. Huang and Rust (2022) explain that AI first augments and then replaces human intelligence (HI) at a given intelligence level, whilst AI and HI complement best as collaborative teams.

Bruyn et al. (2020) infer that AI is Machine Learning trained, using three learning paradigms, namely: Supervised Learning, Unsupervised Learning, and Reinforcement Learning. 'In a supervised learning paradigm, a neural network learns from a set of examples (training data) where both inputs (predictors) and outputs (target variables) are known to the analyst, such as the model learns to minimize a loss function (e.g. entropy).' Unsupervised learning identifies patterns in data without pre-existing labels. Reinforcement learning engages agents to learn how to take action in an environment to maximize rewards and minimize penalties over time.

AI is one of the driving forces of the fourth industrial revolution (Schwab, 2017), and it is expected to have similar transformative and substitutive powers to machines or IT (Dwivedi et al., 2021). In association with big data (Stylos et al., 2021), AI is considered

to be the next general-purpose technology (Marinchak et al., 2018) with the potential to have significant impacts on firms (Magistretti et al., 2019). AI solutions are usually cheaper, faster, and less prone to errors than humans (Castelli et al., 2016). They can even provide new outcomes, such as finding patterns in data sets beyond the capacity of humans (Kietzmann et al., 2018).

2.2 The impact of AI on marketing

AI has particular applicability in marketing (Davenport et al., 2020), which is typically based on the processing of large amounts of data to find patterns, behaviours, and opportunities (Mustak et al., 2021). Huang and Rust (2021) illustrate the impact of AI on a three-stage framework for strategic marketing planning, namely: mechanical AI for repetitive functions; thinking AI for processing data to arrive at decisions; and feeling AI for analyzing interactions and human emotions. Initial applications have included personalization and recommender systems, conversational systems such as chatbots and voice assistants, prediction and forecasting systems, smart travel assistants, and language translation applications (Buhalis & Moldavska, 2022; Bulchand-Gidumal, 2020; Cheng & Jiang, 2022 Vlačić et al., 2021;). AI has been used in combination with data science for sentiment analysis in online reviews (Antonio et al., 2018; Ma et al., 2018), to improve marketing management and for forecasting (Claveria et al., 2015; Stylos et al., 2021). Huang and Rust (2022) suggest that AI advances marketing from mechanical, to thinking, to feeling, changing how AI should be used in organizations.

Although these highly specific systems have already been implemented, additional real applications are difficult to identify (Theodoridis & Gkikas, 2019). Therefore, the question remains to what extent the marketing function can be truly automated (Sterne, 2017) and how AI will specifically transform marketing processes (Davenport et al., 2020). AI marketing automation is defined as the use of AI to attract customers, optimize the process of searching for potential customers, and develop products adapted to customers' requirements (Grossberg, 2016). AI refines the capacity to choose and target customers and is replacing traditional market analysis research tools (Gordon & Perrey, 2015; Grossberg, 2016; Theodoridis & Gkikas, 2019). AI also reflects a change from a pull customer model to a push customer model (Davenport et al., 2020; Dwivedi et al., 2021) through recommendation and prediction algorithms. It will also help salespeople predict a more accurate customer lifetime value (CLV) (Loring, 2018) by building a more

accurate 360° view of customers and enhancing individual targeting through multiple touch points (Buhalis & Volchek, 2020; Sterne, 2017).

AI is expected to significantly increase the effectiveness of marketing (Dwivedi et al., 2021; Grossberg, 2016). The traditional customer journey may even disappear as customers receive messages specifically targeted to their personalized needs and desires in a real-time context (Buhalis & Sinarta, 2019). Sterne (2017) introduced the concept of programmatic consumption, in which the processes of the customer journey are automated and purchase decisions are made by computers. If this becomes the case, the major question the marketing function will need to address is how to get their product on the list of options considered by the consumer's automatic algorithm. The widespread deployment of AI will cause many firms to introduce similar marketing processes (Dwivedi et al., 2021). The use of big data and analysis tools will become essential marketing competencies (Grossberg, 2016) driving differentiation (Stylos et al., 2021). Companies that can capture data, analyse it instantly and generate actionable insights in real-time that are context-aware and personalized will gain a competitive advantage (Antonio, 2018; Buhalis & Sinarta, 2019). Future AI may assist or even replace human intervention in many tasks (Huang & Rust, 2020). As electronic calculators or spreadsheets augmented human capacities to be able to access mathematical capacities previously unattainable by humans alone, AI will similarly empower unprecedented relational and social capabilities in humans (Davenport et al., 2020; Farrow, 2019).

In the service sector, this combination of humans and AI will allow the deployment of what has been named AI-facilitated service encounters (Li et al., 2021). Li et al. (2021) identified four different ways in which AI enhances service encounters: AI-supplemented, AI-generated, AI-mediated, and AI-facilitated encounters. In AI-supplemented service encounters, employees and AI serve customers separately. In AI-generated service encounters, AI is capable of serving customers without human employees. In AI-mediated service encounters, AI plays a mediator role. Last, in AI-facilitated encounters, AI and employees work together to provide service to the customer. Thus, AI has the ability to augment, complement or substitute humans in the service sector, threatening jobs that were traditionally considered safe from automation (Huang & Rust, 2020). How marketing employees will accept this new environment, and the decisions as to which tasks to automate and which to keep in human hands, are issues

that require further research (Mustak et al., 2021). In addition, the use of AI in marketing faces several relevant key challenges, including in particular incomprehensibility, disconnection and vulnerability (Kozinets & Gretzel, 2021).

2.3 AI and hospitality and tourism marketing

AI has great potential to significantly affect the hospitality and tourism sectors by both enhancing operational efficiency and improving customer service, ultimately leading to higher profitability (Buhalis, 2020; Samara et al., 2020). For example, both Melián-González et al. (2021) and Yun and Park (2022) highlight how AI-powered Chatbots can be used to provide interactive 24/7 customer service by answering common guest queries, providing personalized recommendations, offers, and assistance, and even handling simple booking requests. This can improve customer service and reduce response times, thus enhancing guest engagement, loyalty, and satisfaction (Pereira et al., 2022). Kim et al. (2023) even demonstrate that artificial intelligence is one of the critical dimensions for developing space tourism.

However, key challenges remain in implementing AI systems. These include the need for high-quality data (Paschen et al., 2020), which can be difficult and expensive to generate (Sivarajah et al., 2017), as well as the complexity of finding an appropriate fit between AI systems and human employees (Thiebes et al., 2021). The hotel sector's historical resistance to adopting new and emerging technologies (Chan et al., 2018; Stylos et al., 2021) may also act as a barrier. Goel et al. (2022) illustrate that psychological, social, financial, technical and functional barriers hinder the adoption of artificial intelligence and robots in the hospitality and tourism industry. Growing consumer privacy concerns (Hu & Min, 2023) and apprehension around the rapid development and adoption of AI (Prentice et al., 2020) may act as brakes on the more widespread implementation of further diffusion of AI in the hotel sector. Jabeen et al. (2022) suggest that 'human knowledge, services and robotics applications were the most significant factors influencing automation and AI implementation'.

Hospitality marketing includes a vast array of activities, including segmentation, value proposition, product, and experience design, distribution, pricing, customer relationship management, and reputation management; many of which offer great potential for the application of AI. Existing research on the application of AI to both the hotel sector in

general and hotel marketing in particular, tends to be either descriptive or methodological speculative (Saydam et al., 2022). It largely highlights the origins and potential of AI but fails to examine how these developments impact the sector or its future operations (Knani et al., 2022).

Within the extant research, several prominent research streams can be identified. The potential of AI for personalization (Tomczyk et al., 2022), is one persistent theme, with systems leveraging the rich data pools of past purchases, preferences, and interests often held by hotels. These are used to personalize marketing messages, prices and offerings, leading to higher conversion rates, as well as increased loyalty and lifetime value. Similarly, insights from AI-based data analytics systems can be used to personalize the guest experience by identifying preferences such as room temperature, amenities, or dining options, which if implemented would lead to higher guest satisfaction and loyalty, as well as increased revenue (Iranmanesh et al., 2022).

AI's ability to undertake deeper levels of analysis also offers great potential within hotel marketing. For example, studies by Millauer and Vellekoop (2019) and Viverit et al. (2023) highlight how hotels can use AI and machine learning to forecast occupancy rates and then optimize room rates, based on a much broader range of issues than simply supply and demand. This ultimately leads to more accurate forecasts, thus helping to maximize revenue and profitability. Similarly, AI-based sentiment analysis can be used to better understand customer feedback. By analysing peer-generated user reviews on online platforms (such as Tripadvisor), AI can identify positive and negative aspects of a property's service, highlight areas for improvement, better manage online reputation, as well as inform marketing strategies (Luo & Xu, 2021; Tran et al., 2019; Xia et al., 2019).

Many articles on the nexus of AI and hotel marketing focus on the potential of this developing technology for quantitative marketing. For example, the potential of AI for market segmentation, where the rapidly developing technology can be used to more thoroughly analyze customer data to segment customers based on past purchase behaviour, preferences, and/or demographics, thus helping hotels to target their better marketing campaigns and improve both customer engagement and loyalty (Lv et al., 2022). Several highlight AI's potentials for use in predictive marketing analytics, with advanced machine learning-based systems capable of analysing vast amounts of unstructured guest data (Moro & Rita, 2018). Such functionality can be used to predict future behaviour such as booking patterns, preferences, or spending habits. This can

subsequently be used to anticipate guest needs, tailor marketing campaigns, and optimize revenue management strategies (Sánchez-Medina & C-Sánchez, 2020).

2.4   Research question

The contributions of AI and how it, potentially and in reality, transforms businesses and processes, in general, have been widely discussed in the literature. In contrast, there is limited research addressing how AI impacts specific business functions and its resulting implications for strategy and operations (Brock & von Wangenheim, 2019). For example, Saydam et al. (2022) found that the 123 papers they examined on AI and robotics in tourism and hospitality could be grouped into four main clusters: those that addressed the perspective of employees and customers regarding the implementation of AI and robotics; those that addressed AI and service robots from a theoretical perspective; those that addressed AI and service robots from an empirical approach; and those that analysed anthropomorphism in AI. The objective, therefore, of this study, therefore, is to explore the changes that AI may have on marketing, within the hotel sector as a subsection of tourism. The study investigates how AI will affect commercialization and marketing from both an internal and an external perspective. Being exploratory in nature, the study adopted a grounded theory approach, using multiple interlinked stages to provide insights for both academia and industry on the changes that AI will potentially cause within the marketing function of hotels. The transformation that AI generates in the longer term at the organizational level was also examined.

3   Methodology

The methodology for this study comprised three interlinked stages. Due to the exploratory nature of the study, it employed a grounded theory approach, utilizing a three-stage interlinked qualitative approach to develop and reconfirm its findings (Li et al., 2011). The first stage explored the views of AI experts to delve deeper into the concept, operations, and implications of applying developing AI technology to business problems. Based on these findings, the second stage utilized focus groups to solicit the opinions of hospitality marketing experts to examine issues specific to this sector. In the third and final stage, a quantitative survey was employed to reconfirm prior findings in the light of changed industry priorities brought about by the global COVID-19 pandemic, as well as assess whether the pandemic would delay, accelerate or have no effect on the implementation of the trends identified.

In the first stage, ten IT academic and industry experts in the area of AI were interviewed. This follows Mason et al.'s (2010) recommendations for exploratory tourism research. The aim of these in-depth interviews was to obtain deep and detailed information regarding the evolution of AI. Stage one identified possible future AI developments using in-depth interviews, in line with the suggestions by Yoo et al. (2013). This first stage aimed to conceptualize possible future trends based on the reflections of AI technology experts. Questions asked respondents to imagine possible future situations as AI is implemented, perfected, and deployed. They were also asked to consider how AI will impact both businesses in general as well as the hotel sector. Respondents were not hotel marketing experts but had AI expertise and a comprehensive understanding of the technological opportunities and challenges. Table 1 outlines the profiles of the ten participants, selected based on their expertise in the AI field. All had more than 20 years of experience. The interviews lasted on average 75 min and were supported by a semi-structured interview guide.

Table 1. Profile of interviewees in stage 1

Role	Research area/Business sector	Years of experience	Years working with AI
Professor	Telecommunications	20+	5-10
Associate Professor	Software development	20+	3-5
Associate Professor	IT	20+	3-5
CEO	Telecommunications	20+	3-5
Professor	IT & tourism	20+	3-5
CEO	Digital content	20+	5-10
Professor	Bioengineering	20+	10+
CIO	Logistics & transportation	20+	<3
CTO	Information systems	20+	<3
Associate Professor	AI	20+	10+

The validity, reliability, and objectivity of this stage were ensured by implementing triangulation in the research design. Specifically, two types of triangulation were implemented: data triangulation and investigator triangulation. Prior to the interviews, the researchers analysed multiple data sources related to the current and expected use of AI, following Linneberg and Korsgaard (2019). The main items highlighted by the interviewees were then validated against the literature and media. Interviews were digitally recorded, and two researchers were present at each interview taking notes. After each interview, the researchers used their notes and recordings to prepare independent

summaries of the main conclusions and common themes. The summaries were compared, with the researchers agreeing on a final version. Once the interviews were completed and summarized, an inductive coding process was developed and the results of the interviews were used to identify the main themes mentioned (Thomas, 2006). The process of analyzing intercoder reliability and searching the agreement was developed following Campbell et al. (2013). The themes identified through the codes were used as a foundation for discussion in the focus groups.

In the second stage, following the approach of Yin (2016), two focus groups were carried out with hotel marketing practitioners, using the findings of the first stage as a basis for discussion. Practitioners were asked to reflect on how their roles might be affected by AI (Li et al., 2011). Members of the focus group were able to explore arguments based on each other's thoughts and ideas, with a lively discussion collaboratively establishing likely possible future situations. Given the subsequent COVID-19 pandemic that massively affected most business sectors, participants from the focus groups were re-contacted to explore what impacts the global pandemic had on the findings from the focus groups. The focus groups were designed following the recommendations of Catterall and Maclaran (2006). Each was designed to last 90 min, with eight relatively homogeneous participants, avoiding the participation of acquaintances. The objective of the focus groups was to understand how the trends identified in the first stage would likely affect hotel marketing. One focus group included top-level marketing executives and the other technical marketing staff. The focus groups were conducted in July and October 2019 and lasted approximately 120 min. While the duration exceeded Catterall and Maclaran's (2006) recommendations, the focus group dynamics were congenial and encouraged in-depth discussion.

Participants in the two focus groups were not experts in the AI field (see Table 2). Therefore, the focus groups began with a brief explanation of AI, clarifying that the aim was not to discuss what AI is or is not but to encourage participants to consider the term as broadly as possible. The conclusions from stage 1 were presented to participants. Each participant was asked to consider the marketing function from a global perspective. Each focus group was structured into five blocks. The first block addressed changes in pre-trip marketing due to AI from the perspective of the tourist, the tourism firm, and the channels. The second and third blocks explored similar perspectives, but from a perspective of the during – and post-travel phases. The fourth block explored the readiness of participants'

organizations and external barriers to the implementation and deployment of AI in the marketing function. The last block addressed the specific issues that emerged in Stage 1 that were not captured in other blocks.

Table 2. Profile of the participants in stage 2.

Number	Role	Company	Years of Experience
FOCUS GROUP #1			
1	Chief Marketing Officer	Independent hotel	10-15
2	Head of Sales	Hotel management group	10-15
3	Chief Marketing Officer	Local hotel chain	15+
4	Chief Marketing Officer	Local travel agency chain	15+
5	Regional Marketing Manager	Large international hotel chain	10-15
6	Chief Marketing Officer	Large international hotel chain	10-15
7	Chief Marketing Officer	Local hotel chain	15+
FOCUS GROUP #2			
1	Marketing Consultant	Medium-size hotel chain	15+
2	Experience and Product Manager	Large international hotel chain	15+
3	Sales Executive	Independent luxury hotel	10-15
4	Head of Sales	Large international hotel chain	10-15
5	Regional Manager	IT and online marketing startup	10-15
6	Head of e-Commerce and Revenue Management	Small hotel chain	10-15
7	Marketing Consultant	Large international hotel chain	15+

As with the interviews, the focus groups were digitally recorded. After each focus group, the researchers prepared an independent summary of the main issues discussed based on the notes they took during the meeting and the available recordings. Both summaries were compared, and a final list of themes was agreed. To this aim, the same principles used for coding the in-depth interviews were used (Linneberg & Korsgaard, 2019). Inductive coding was also used in this case (Thomas, 2006). The summaries from both groups were compared, sorted, and then grouped into a list of outcomes, each corresponding to a trend. A total of ten trends were identified. The trends were then grouped into categories. During this process, a third researcher participated and suggested alternatives. After several rounds of discussion, four summative blocks were chosen: internal processes, customer

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processes, organizational networks, and stakeholders. The findings were then sent to participants, as agreed during their participation in the focus groups, and their feedback was sought. Minor suggestions were provided, which were incorporated into the results.

The first two stages were undertaken prior to the COVID-19 pandemic outbreak, which has had a disruptive effect on many business processes (Bu et al., 2021; Gössling et al., 2020). The researchers considered it necessary to revisit focus group participants to assess whether they thought COVID-19 would impact the trends previously identified. A short follow-up questionnaire was sent to participants. This sought input on how the COVID-19 pandemic might impact the trends previously identified, using a Likert scale from 1 to 5. On the Likert scale, 1 meant the pandemic would significantly delay the implementation of the change, and 5 meant that the pandemic would significantly accelerate the implementation of the change. Participants were also given the opportunity to further comment on anything they considered relevant regarding the issues under discussion.

4   Findings

Artificial intelligence themes and impacts of AI on tourism and hospitality marketing

Stage 1 was composed of in-depth, semi-structured interviews with subject experts on Artificial Intelligence. Using a thematic analysis approach, the issues identified were classified into four main themes, namely technology, the transformation of the experience, the transformation of the intermediation process and management of the destination, and barriers and challenges. Each theme included four to nine specific impacts of AI in hotel marketing. The list of these impacts is presented in Table 3.

Table 3. Main AI impacts on tourism

Technology
• Recognition systems and voice assistants
• Recommendation systems
• Generalization of intelligent robotics
• Machines and robots that will travel (alone or accompanied)
• AI as a means of transparency for companies (resource management)
• Teletransportation possibilities (tourist really feels like being somewhere else)
Transformation (Guest experience)
• Hyper-personalization non-invasive and automatized
• Augmented employee
• Environment at a hotel as at home (streaming services, temperature, humidity, etc.)
• AR/VR/AI-based experiences
• Inverse AI: guest chooses the firm by hyper-recommendation

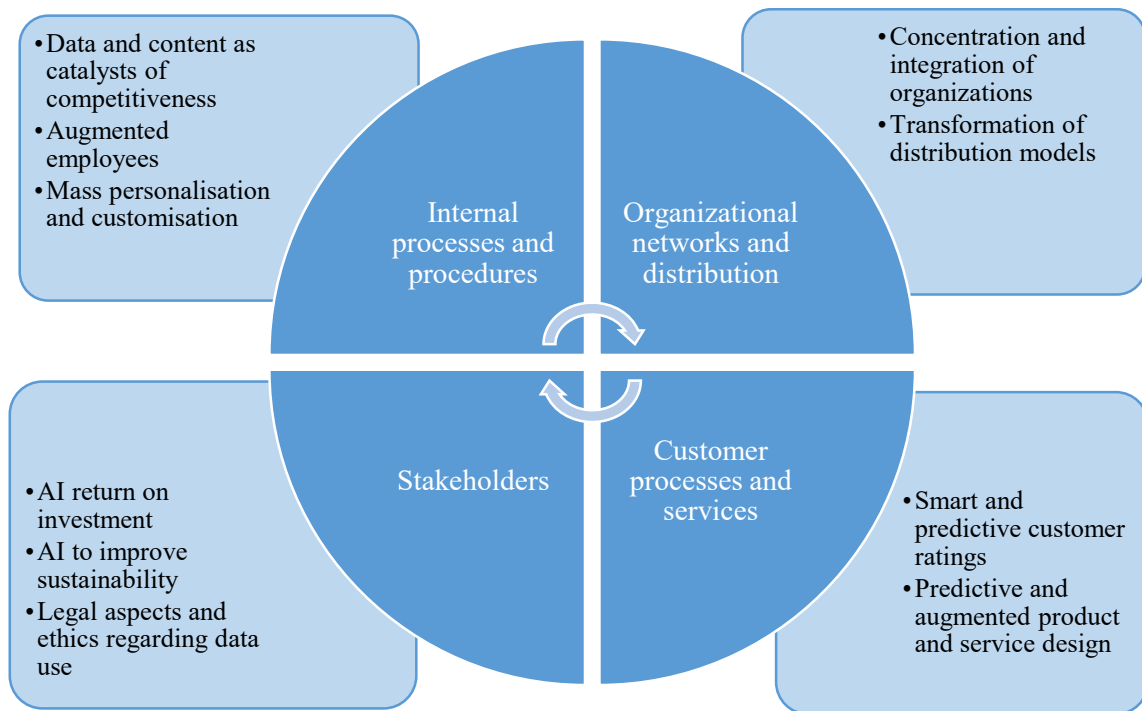| |
| --- |
| • Local environment based on IT and AI in which the tourist can live a global experience |

Transformation (Intermediation and Destinations)
• Autonomous trade
• Hyper-mediation and hybridization
• Delocalization and transport
• Connection to local and external systems – Consulate, health systems, etc.
• Machines as autonomous intermediaries that optimize outcomes for the guest and the hotel
• Groups of consumers that have a bot that negotiates in their name
• Increased precision in location, behavior, and satisfaction levels
• Automated with dynamic information in real-time
• Big data integration between agents

External Barriers
• Legal and administrative
• Bandwidth consideration, outside and inside the hotel
• Interconnection to external systems (outside the tourism sphere)
• Possible collision between systems trying to achieve different objectives

Stage 2 of the study involved two focus groups with industry professionals to explore how the trends identified in Stage 1 affect hospitality and tourism marketing. Analysis of the focus group discussions revealed ten AI trends. Using thematic analysis, these trends were classified into four blocks, namely: A) internal processes and procedures, B) organizational networks and distribution, C) stakeholders, and D) customer processes and services. Figure 1 shows how the 10 trends identified are clustered in 4 main blocks. Although the AI trends are clustered into four blocks, most have impacts across all blocks. The trends identified are now explained in more detail.

Figure 1. AI trends for tourism management and marketing

- Data and content as catalysts of competitiveness
- Augmented employees
- Mass personalisation and customisation

Internal processes and procedures

Organizational networks and distribution

- Concentration and integration of organizations
- Transformation of distribution models

Stakeholders

Customer processes and services

- AI return on investment
- AI to improve sustainability
- Legal aspects and ethics regarding data use

- Smart and predictive customer ratings
- Predictive and augmented product and service design

4.1   Internal processes and procedures

Data and content as catalysts of competitiveness

Participants agreed on the importance of data but also explained that few companies in the hotel sector have the capacity to generate big data. They identified large technology operators (such as Google, Amazon or Facebook), GDSs (such as Travelport or Amadeus), and online travel agencies (such as Expedia and Booking.com) as the proprietors of big data. Participants also explained that companies in the hotel sector have exclusive access to data as they know their clientele intimately (e.g. tourist behaviors while inside the hotel). Respondents suggested that alliances between companies might be necessary to generate joint databases sufficiently large and detailed enough to allow AI algorithms to function properly. Participants in the first focus group indicated that commercialization and marketing departments need to focus on content generation and analytical development, as most distribution in the future will be performed using technology-based channels. Participants in the second focus group (technical staff) were especially concerned with the fact that too often it is thought that capturing and filtering data is a simple and automatable task, which is often not the case. They also suggested that generating and accessing high-quality data is costly.

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Augmented workers

The concept of augmented workers emerged in both focus groups. These participants predicted that AI would provide workers with augmented capabilities (e.g. seeing, and hearing), allowing them to better understand and anticipate the needs and wishes of customers proactively and reactively. As a result, they mentioned that employees would need the capacity to integrate technology into production processes in order to complement human capabilities. This concept was discussed primarily by participants with relatively strong technological backgrounds.

Mass personalization and customization

Mass personalization was a concept frequently mentioned by focus group participants. Participants suggested that technology, particularly AI, will facilitate mass personalization, which previously was very costly and unaffordable. However, participants noted that the type and depth of adaptation were less clear. When adaptation does not require additional infrastructure and expenditure (e.g. the music in the room and temperature), it may be possible to achieve personalization and/or customization. Where personalization requires significant infrastructure adaptation or expenditure (e.g. changing the color of a wall), the level of personalization may be superficial, take longer to implement, or will necessitate a surcharge.

4.2   Organizational networks and distribution

Concentration and integration of organizations

Participants in the first focus group agreed that the global competitive environment requires organizations to generate more intelligence, data, and predictive capabilities. This requires technological expertise, equipment, and substantial investment. They suggested that the only way that organizations can achieve new capabilities is through concentration and integration. Cases such as Marriott Hotels International and Airbnb were mentioned. It was recognized that this concentration process would also become evident in other sectors such as transportation, travel retailing, and within MICE companies.

Transformation of distribution models

Participants in both groups agreed that radical changes in the way customers are acquired within the online environment would also take place. From the traditional keyword model, they expected that there would be a movement towards a model based on intelligence, with strong conversion capabilities. Instead of customers looking for information, AI will fetch context-based information and services and push it to potential consumers. Traditional tourism distributors may disappear, leaving only a few AI algorithm-enabled platforms. The use of predictive programmatic advertising will likely become more generalized. Participants also suggested that technology companies, such as Amazon, Google, and Facebook, will have the potential to expand services within travel and tourism.

4.3 Stakeholders

AI return on investment

Return on investment related to AI was a concept discussed extensively in both focus groups. The discussion was led by participants from large hotel chains. It was argued that the tourism sector is highly competitive and key organizational indicators focus on revenue, as sustained profitability is critical for shareholders. For AI investment to occur, an established connection between implementation and increased revenue and profitability is critical. Partnerships were also perceived as critical for competitiveness.

AI as a tool to improve sustainability

Both focus groups had extended discussions related to sustainability. Participants agreed that AI would allow companies to offer customers more detailed information about their organizational footprint, inducing consumers to reduce or compensate for consumption. Customers may also be charged according to their environmental footprint. Participants imagined a system where the service may compensate for negative externalities, introducing sustainability from product conceptualization.

Legal aspects and ethics regarding data use

Participants in both focus groups complained that many stages of implementing and deploying AI, from the collection and processing of data to the transformation of jobs are complicated by legal and ethical issues. Legacy legislation was blamed for failing to provide a productive legal framework that is suitable for the AI-advanced industry. Participants argued that users were overly alarmed by regulators and the media. It was

further indicated that the European and Spanish data protection and privacy laws (e.g. European General Data Protection Regulation [GDPR]) were excessively restrictive.

4.4 Customer processes and services

Smart and predictive customer ratings

There was general agreement among participants that AI-empowered data analysis will allow organizations to assign a dynamic value to each client. AI applications will empower new CRM and revenue management capabilities and will revolutionize the way in which customer value is focused and analyzed. Participants in the first focus group (top-level executives) understood that this way of assigning value to customers will generate structural changes in the sector. These will allow different agents and other stakeholders to decide which guests best fit their value proposition.

Predictive and augmented product and service design

Participants in both focus groups considered that, based on prior knowledge of clients' tastes and behaviors, AI will help design products and services in a predictive, dynamic, and adaptive manner. This could mean developing customized products and services oriented to satisfy specific customer needs. Participants mentioned that the digitalization of physical environments was likely and would enable richer and more realistic remote experiences.

4.5 The impact of COVID-19 on AI for tourism and hospitality marketing

Stages 1 and 2 of this study were carried out before the 2020 global COVID-19 pandemic. Given that this exceptional event has had a revolutionary effect on digitization and many aspects of business, a follow-up study was carried out to assess its potential impact on the trends identified. This was sent to the 14 participants of the original focus groups, of which 13 answered. Based on a Likert scale, with 1 meaning the pandemic would significantly delay the implementation of the trend and 5 that the pandemic would significantly accelerate the implementation of the trend, Table 4 shows the average and standard deviation of responses. Values closer to 1 suggest that the participants felt the trend would take longer to occur than previously expected. Values closer to 5 imply that the participants felt the trend would be accelerated by COVID-19.

Table 4. Effect of COVID-19 on the trends of Step 2

Trend	Mean	Standard deviation
Internal processes and procedures		

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Data and content as catalysts of competitiveness	2.31	0.63
Augmented employees	3.69	0.85
Mass personalization and customization	4.62	0.65
Impacts related to stakeholders		
AI return on investment	2.38	0.77
AI to improve sustainability	4.08	0.76
Legal aspects and ethics regarding data use	3.00	1.00
Networks to which the organizations belong and distribution		
Concentration and integration of organizations	3.69	0.75
Transformation of distribution models	1.77	1.01
Customer processes and services		
Smart and predictive customer ratings	4.23	0.60
Predictive and augmented product and service design	4.38	0.65

Survey participants were also encouraged to express additional thoughts they may have with respect to the impact of COVID-19, and the issues under discussion, and provide a rationale for their responses. Several issues were repeatedly mentioned.

First, the impact of the NextGenerationEU program was frequently cited. This plans to invest more than €800 billion between 2021 and 2027 to accelerate digitalization, fight climate change, and accelerate recovery from the pandemic (European Commission, 2021). Therefore, it was considered that AI implementation would be accelerated, especially on issues related to sustainability. There was also an expectation that ROI on AI implementation would be lower under the planned investment. Acceleration in digitalization by consumers was also perceived to be a strong driver of the identified trends. Respondents also felt that the concentration and integration of organizations would be accelerated due to the weakness of many firms as a result of the pandemic. However, the implementation of new distribution models would be slowed due to alternative, more pressing, issues in the relaunch of the sector following the crisis.

5 Discussion and contributions

While many of the issues mentioned in the literature were discussed extensively in the in-depth interviews and in the focus groups, others were not considered to be as important by the participants. For example, the regulation of AI has been mentioned in the literature (e.g. Haenlein & Kaplan, 2019), but was not a topic that raised concern within the focus groups. It seems that the regulation of AI is a technical matter, and practitioners are not so worried about it.

Instead, issues that were given much more importance in the focus groups than in the literature are the cost and ROI issues related to AI (Samara et al., 2020). ROI was a

significant concern for focus group participants and was seen as a major barrier to AI deployment especially for smaller players in the marketplace. The need for commercial businesses to guarantee returns to shareholders was the driver of this concern. However, in the European context, it was mentioned that large public investments aimed at stimulating recovery from the COVID-19 pandemic may help reduce such concerns.

Participants also indicated that complex organizational change would be required to implement AI. One of the few available guidelines on the implementation of AI projects stresses the need to avoid big and costly projects and focus instead on small feasible projects (Brock & von Wangenheim, 2019). This suggests a potential conflict between the intrinsic transformative nature of AI projects and research findings that suggest keeping projects as small as possible.

Regarding the effect on organizational competencies (enhancing vs. destroying), results suggest that enhancement is more likely, where augmented workers take advantage of AI and AI-facilitated service encounters taking place. It was suggested that a new marketing function should be developed, which would result in a significant change within the hotel sector. This new form of marketing would be based on the use of data platforms and AI-enabled decision-making. It would be oriented to the contextual, intelligent, and dynamic distribution of content, with close-to-perfect effectiveness with guest requirements. The new marketing function should be able to leverage the hotel sector's intimate customer knowledge to generate extensive personalized experiences that require augmented services developed by the integration of humans and machines (Davenport et al., 2020).

Participants believed that the effectiveness of the collection and conversion actions in direct or intermediary channels will continue to increase. This implies that the fight for data access will force a strong concentration on a few actors with sufficient data and customer trust. This will create barriers to entry and change the marketplace radically.

Experience design will also support mass personalization as data drives individualized experiences. Experiences will be co-created dynamically by a set of algorithms that will adapt to each client, at the right time and with the right emotion, although the basis of the physical resource will remain the same. Ambient intelligence will be used for customers to co-create their own experiences, on-demand and in real-time, with the integration of multiple actors within the network (Buhalis & Sinarta, 2019).

Service development will diminish the existing dichotomy of automation or customized service whilst hybrid services will expand. This will not be a fight between machine and human contributions as it will no longer be human touch vs high tech. Instead, services will be co-created on a balance between technology and data-enabled empathy, with in effect the machine proposing customized offerings. In doing so, machines will augment and enhance service to levels previously unimaginable. Marketing will change progressively from a dynamic model in digital platforms to an AI-empowered, automated, dynamic, personalized, intelligent model that adapts constantly to the customer context in real-time.

Thus, the implementation and deployment of AI in hotel marketing will introduce disruptions that organizations and societies must manage. First, users who resist sharing their data due to a fear of surveillance (Gretzel, 2011; Tussyadiah & Miller, 2019) will potentially generate an AI divide. Both legislation and technology should be able to create solutions to address these issues. For example, several privacy-oriented browsers already help users with data privacy. However, such users will not be able to fully benefit from effective personalized marketing offers or enjoy participation in the co-creation processes. Even if users are not opposed to sharing data, privacy issues and legal requirements within regions and countries will also need to be taken into account. For example, the European General Data Protection Regulation (GDPR) is restrictive in relation to how data can be collected and used (an issue frequently mentioned in both focus groups).

The AI expert interviewees suggested that hotels will have to provide new services to guests travelling with robots, suggesting the creation of new products and services around robots and other technological advancements. As AI changes hospitality and tourism marketing, perfect price discrimination will be possible through price personalization (Tomczyk et al., 2022). However, a question remains as to whether consumers will accept such hyper-personalization. Based on current research, it is not well understood whether users will be willing to pay different prices depending on their personalized variables under one-to-one marketing.

Although there appears to be a prevailing narrative regarding how COVID-19 will cause the acceleration of digitally related trends, this was not reflected in responses to the follow-up survey. Of the trends identified, experts believed that COVID-19 would accelerate four out of the ten (mass personalization and customization, AI as a tool to

improve sustainability, predictive and augmented product and service design, and smart and predictive customer ratings). It will slightly accelerate or maintain momentum for three (concentration and integration of organizations, augmented workers, and legal aspects and ethics regarding data use), and slow the remaining three (AI return on investment, data and content as catalysts of competitiveness, and transformation of distribution models).

5.1 Theoretical contributions

By establishing the potential impact of AI on the marketing function of hospitality and tourism marketing, this study offers several theoretical contributions. First, while previous studies have discussed how AI will impact organizations and marketing as a whole (Dwivedi et al., 2021; Grossberg, 2016; Stylos et al., 2021), this study delves deeper to explore the effects AI will have on the marketing function of hospitality and tourism and how this function may change as a result. Ten trends (data and content as catalysts of competitiveness; augmented workers; mass personalization and customization; concentration and integration of organizations; transformation of distribution models; AI return on investment; AI as a tool to improve sustainability; legal and ethical aspects; smart and predictive customer ratings; predictive and augmented product and service design) grouped under four themes (internal processes and procedures; organizational networks and distribution; stakeholders; and customer processes and services) were identified. This highlights the need for a new potential configuration of the hospitality and tourism marketing function. Based on access to high quality and quantity of data, a more precise and complete lifetime value of the customer, and higher conversion rates supports the development of hyper-personalized experiences in co-creation with customers.

The study illustrates that data access may become one of the drivers behind organization concentration. AI needs accurate, reliable and mass data on which to operate, making access to data the key strategic issue as we enter an era in which AI becomes more critical to organizational success. Hotels with their close contact and intimate understanding of customers, are well-positioned to capitalize on this trend. However, the tripartite relationship between owners, operators and brands, and their misaligned interests about who should control customer data, may limit this advantage in the short run (Piccoli et al., 2003).

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The study also introduces the concept of augmented workers in hotels: employees that use AI-powered technologies to perform tasks better. As machines will cause automation and worker displacement, augmented workers and augmented humans will be able to provide better value services. This has significant implications for the education sector as universities and hotel schools need to educate graduates on the potential and utilization of AI. This will prepare them for careers in a sector where technology will undoubtedly be deeply ingrained in all aspects of management and operations (Yang et al., 2020).

Last, practitioners expect a connection between AI and developing more sustainable products. However, this is a link that needs further exploration and more detailed study. The connection between digitalization and sustainability has been subject to ample discussion in the literature, with studies calling for more research (Filipiak et al., 2020; Gössling, 2020). It is clear that AI will be developing intelligence across all actors and will be propelling the adoption of tools such as ChatGPT for practical benefits at a large scale.

5.2 Managerial implications

The study's findings offer several practical implications for hospitality and tourism marketing. Firstly, the study provides a guide to the issues that need to be considered in the process of implementing and deploying AI in hotel organizations. Figure 1 provides tourism and hospitality managers with an overview of the main changes that they will need to face in the marketing area in the next years. The possible substitution of humans by technology and the development of AI-based services are probably the most relevant topics. The opportunities that AI provides to deliver a much more personalized CLV can significantly improve conversion rates (Loring, 2018). This study suggests that generating high-quality complex datasets will become a key competitive factor (Paschen et al., 2020). Data will become a key source of differentiation (Grossberg, 2016), with firms developing advanced algorithms to exploit them in unique ways, then generating competitive advantage. Currently, only large digital firms (such as Google, Facebook, Amazon.com or Booking.com) can generate such datasets. This suggests that alliances or other forms of innovative partnerships should be taken into consideration by managers to create smart ecosystems. However, in line with Sivarajah et al. (2017), there was general agreement on the high costs associated with big data for organizations, which was seen as a barrier to entry.

The role of AI-enhanced personal assistants or 24/7 digital butlers/concierges to augment human performance and improve the tourism experience was perhaps the most anticipated disruption (Loureiro et al., 2020 Pereira et al., 2022;). However, the study also suggests that AI could have a negative impact on job satisfaction, engagement and turnover intention of hotel employees (Koo et al., 2021; Kozinets & Gretzel, 2021).

Reflecting the literature (Li et al., 2019), employee training was considered critical during the transition period. This should help employees work more effectively with AI and avoid negative impacts. However, our study shows that the challenges mentioned by Kozinets and Gretzel (2021) will become relevant as AI becomes more pervasive in hotel marketing departments, as the way in which AI works will be increasingly more difficult for marketers to understand. Therefore, managers should consider new types of training that not only show how to use technology but go deeper and allows trainees to understand how the technology works. Managers should consider incorporating technical staff into their marketing function to support the deployment of AI.

5.3 Limitations and future research

As with all research, this study has several limitations, some of which provide directions for future research. The experts interviewed in stage 1 were mostly technical academics and did not have detailed tourism or hotel marketing-specific knowledge. Future research may benefit from the involvement of AI experts with a greater understanding of this sector. Developing focus groups in other markets with different AI penetration will also explore cultural and AI-diverse issues. In addition, employing a Delphi method with marketing professionals may also lead to further valuable insights that might expand the findings.

6 Conclusions

This paper examines how the deployment of AI impacts tourism and hospitality marketing. Evidence illustrates that for AI to be beneficial in tourism and hospitality there is a prerequisite for both organizational and technological integration and synergies. Rather than being based exclusively on technology and marketing platforms, AI innovation and impact will be generated through the integration of data, content platforms and algorithms. Marketing functions will gravitate towards mathematical and visual analysis techniques associated with content to generate value from data. Segmentation will be numerically based on personalization, as AI allows companies to co-create value

and respond to individualized segments. Integrating ambient technologies and understanding individual needs and relevant contexts in real-time will empower value co-creation. CLV will include emotional and sustainability variables and predictions will be made based on individual preferences with a high degree of effectiveness. As a result, travellers will enjoy personalized value and co-created experiences, with services developed dynamically by technology and/or AI-augmented humans.

Disclosure statement

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