From Browsing to Booking: A Research Agenda for Conversational Generative AI Across the Tourist Journey

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Abstract:

Since the market release of ChatGPT and similar large language models, there has been a notable acceleration in the deployment of conversational agents with generative artificial intelligence (CAs-gAI) in the marketing activities of hospitality and tourism. The scientific community has published a greater number of papers examining the relationship between tourists and these agents. To illustrate and update the structure of research in this field, a semi-systematic literature review is conducted. The main conclusions are: 1) Future studies should focus on transactional travel activities, and 2) comparative studies are required to ascertain the impact of various factors and outcomes across the tourist's journey (pre-trip, in-trip, and post-trip). This will facilitate a more comprehensive understanding of the interaction between CAs-gAI and consumers within the context of tourism. A research agenda with three research directions in the context of hospitality and tourism is proposed.

Keywords: Generative Artificial Intelligence, Tourism, ChatGPT

Track: Tourism Marketing

1. Introduction

Conversational agents powered by generative artificial intelligence (CAs-gAI), including ChatGPT, Gemini, Copilot, and Perplexity, facilitate natural language communication (in text or voice) between companies and consumers. The implementation of CAs-gAI in the hospitality and tourism industry presents a number of advantages and challenges. The integration of CAs-gAI into the marketing process has the potential to enhance business outcomes and optimize the efficiency of marketing operations (Carvalho & Ivanov, 2024; Dwivedi et al., 2024; Gursoy et al., 2023). Indeed, companies such as Expedia, and Kayak have incorporated ChatGPT add-ons within the digital channels, thereby enabling customers to engage with transactional interactions such as online shopping, price comparison, booking airline tickets, hotels, and rentals, reserving a table in a restaurant, and other functionalities (Grisolia, 2023). However, a significant challenge remains in understanding the context of the tourist when interacting with CAs-gAI, including whether this occurs before, during, or after a trip (Gursoy et al., 2023).

In light of the considerable deployment of CAs-gAI by companies, the scientific community of marketing and tourism has been impelled to hasten its pursuit of knowledge on this subject (Gupta et al., 2024). There are efforts to collect, structure and synthesize information regarding conversational agents and the relationship with consumer behavior (Ling et al., 2021; Mariani et al., 2023; Schöbel et al., 2023). However, these studies do not focus on the specific context of tourism, nor do they incorporate insights gained subsequent to the launch of ChatGPT, which was conducted in November 2022 (OpenAI, 2022). This represents a gap in the literature that requires further investigation for two fundamental reasons. First, the accelerated growth of publications related to CAs-gAI in the hospitality and tourism sector has generated a diverse and dispersed body of knowledge. It is therefore important to collect, consolidate, and analyze the knowledge related to the interaction between tourists and CAs-gAI, as well as the activities of tourists before, during, and after the trip. Secondly, to the authors' knowledge, marketing scientists lack a comprehensive overview of an updated research agenda of the interaction between consumers and CAs-gAI, taking into consideration the tourist context.

To address the existing gap, a literature review is conducted. The objective is to propose a research agenda related to the interaction between consumers and CAs-gAI in the context of marketing activities before, during, and after the tourists' trip. The proposed

research directions will allow marketing scientists to contribute to the knowledge base regarding the relationship between consumers and CAs-gAI.

2. Research method

In order to achieve the stated research objective, a literature review was conducted. This methodology allows for the identification of previously studied concepts and relationships, as well as the identification of potential gaps for study (Palmatier et al., 2018). In particular, a semi-systematic literature review was executed with the aim of deepening understanding and proposing future research (Snyder, 2019).

2.1. Data collection

The Elsevier Scopus and Clarivate Web of Science (WoS) databases were utilized as they are considered the most comprehensive for conducting a literature review in the social sciences (Zupic & Čater, 2015). The search was conducted in October 2024. A protocol was established to guide the data collection process: <u>CAs-gAI brands</u> (*chatgpt, bard, gemini* or *copilot,* and <u>Generic terms</u> (*chatbot, voice assistant, conversational agent, conversational* assistant or *virtual assistant)*. It must also contain *generative artificial intelligence* or *large language model*, and <u>Consumers</u> (*consumer, customer, user, tourist or traveler) and* <u>Hospitality and tourism sector</u> (*tourism, travel, hospitality* or *hotel*).

The "*" option was used to find documents with plural forms of these terms. The terms were combined using Boolean operators. Documents published as of January 2023 were considered, with the date of ChatGPT's market launch serving as the reference point. Furthermore, articles in English were selected. The queries were executed in Scopus and WoS. Forty-five documents were obtained from Scopus and 44 from WoS. Duplicate records were eliminated, resulting in 51 records for the analysis.

2.2. Data analysis

As Snyder (2019) notes, a semi-systematic review is an effective method for identifying themes, theoretical approaches, and commonalities within a given area of study. The objective of this type of review is not to encompass all empirical evidence, but rather to analyze relevant literature within a defined scope in accordance with the objectives of the review. Accordingly, an examination of the abstracts of each article was conducted, revealing that 20

articles were not pertinent to the study topic. Consequently, 31 articles were selected for a comprehensive literature review.

3. Major results

Gursoy et al. (2023) in a theoretical study highlight that ChatGPT can be used in all three phases of a trip: pre-trip, in-trip and post-trip. In another theoretical study, Wong et al. (2023) develop the capabilities of ChatGPT to facilitate tourists' decision making in all three phases of travel. Based on the aforementioned studies and the theoretical review of the other studies, Table 1 shows the marketing activities where there is an interaction between the consumer (tourist) and the CAs-gAI, grouped into the three trip phases. The final column of the table denotes the degree of transactionality within the activity. Values indicated by "+++" signify a considerable volume of transactions, encompassing the reservation of accommodations, dining establishments, or recreational activities, as well as the acquisition of airline tickets through CAs-gAI. In contrast, values marked with "+" represent activities where CAs-gAI offer information, such as assisting in the selection of a destination or providing real-time travel updates.

Phase	Tourist and CA-gAI interaction activity	Transactional Intensity
Pre-trip	Define travel destination	+
	Trip planning	++
In-trip	Personalized travel information	+
	Activities and restaurants reservations	+++
	Cross-selling and up-selling offers and promotions	+++
Post-trip	Complaints and claims management	++
	Share feedback and recommendations	+

Note: +++ More transactional intensity, + Less transactional intensity

Table 1. Use of CAs-gAI in marketing activities of hospitality and tourism companies.

Figure 1 shows the distribution of empirical studies on a heat map, with the number of studies represented by color intensity. The red area indicates the activities with the highest number of studies, while the green area represents the least researched activities. As evidenced by the data, the studies focus on activities where CAs-gAI provide relevant, timely, and personalized information. However, there is a notable absence of research on

transactional activities, such as booking a hotel, restaurant, tourist activity, or purchasing an airline ticket via CAs-gAI.
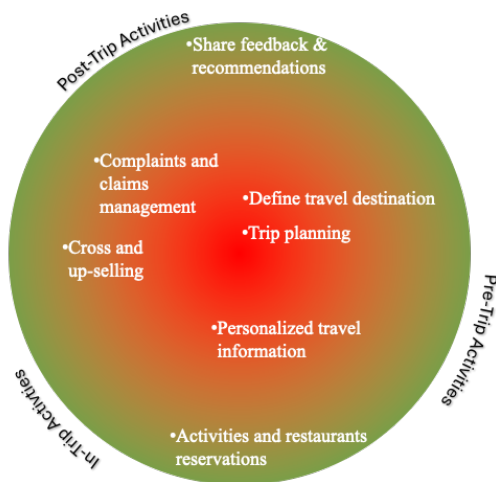

Figure 1. Heat map of the trip activities studied in the empirical studies.

3.1. Research focused on pre-trip activities

Christensen et al. (2024) focus on vacation planning. They investigate the effect of ChatGPT hallucination on recommendations of places to visit in Paris, compared to other sources of information (TripAdvisor, official government website and social media influencers). Similarly, Kim et al. (2023) explore the impact of ethical and quality issues of CAs-gAI on travel decisions. Shi et al. (2024) also study tourists' attitudes and intentions towards using ChatGPT to access tourist information, influenced by perceived risk. Ali et al. (2023) examine the influence of the relevance, credibility, usefulness and intelligence of the personalized travel recommendation offered by ChatGPT on travelers' trust and intention to use it. Finally, Shin et al. (2023) conducted a study to examine the satisfaction of travelers and their intention to visit a destination when ChatGPT reduced the number of travel options.

3.2. Research focused on in-trip activities

Pham et al. (2024) conducted face-to-face surveys in major destinations in Vietnam. The study does not specify the type of recommendations for travel activities; however, the questionnaire asks about recommendations for travel services provided by ChatGPT. One of the aims of the study is to investigate the influence of ChatGPT anthropomorphic stimuli on trust and attitude towards the use of this technology. Finally, the study by Limna & Kraiwanit (2023) explores the experiences and perceptions of hotel employees who have used ChatGPT in their interactions with customers. In other words, ChatGPT supports hotel staff in handling

guest requests. On the other hand, from a sales perspective, Remountakis et al. (2023) explore the potential of integrating ChatGPT with persuasive technologies to automate and improve hotel recommendation systems. In the pilot, personalized offers for additional hotel services generated by ChatGPT were presented to customers when they connected to WIFI. An additional capability of ChatGPT used in this experiment was the generation of messages in different languages, adapting the text to the language of the guest.

3.3. Research focused on post-trip activities

Koc et al. (2023) investigated the potential use of ChatGPT to respond to online customer complaints and grievances in an efficient and effective manner. A panel of experts compared actual hotel responses to ChatGPT-generated responses. This study helps managers and customer service representatives respond appropriately to guest complaints and grievances. In the study, ChatGPT even generated responses based on the customer's level of severity and anger as reflected in the text of the complaint.

4. Discussion and implications

The findings suggest that research on tourist engagement with CAs-gAI predominantly focuses on interactions where agents offer relevant, timely, and personalized information. However, transactional activities have yet to be empirically investigated. This situation persists in academic research, despite the fact that one of the primary advantages of utilizing CAs-gAI is linked to enhanced business outcomes, including customer satisfaction, brand engagement, and increased sales (Carvalho & Ivanov, 2024; Dwivedi et al., 2024; Gursoy et al., 2023; Wong et al., 2023). Conversely, the studies analyzed revealed that all studies focus on a single travel activity. Moreover, a synthesis of existing literature (Ling et al., 2021; Mariani et al., 2023) and the findings of this literature review revealed three research directions that encompass the factors and outcomes influencing the interaction between tourists and CAs-gAI. These include: (1) the characteristics of communication, (2) the characteristics of agents and usage, and (3) the outcomes of the interaction between tourists and CAs-gAI.

Figure 2 illustrates the research agenda, which is centered on conducting comparative studies between the various phases of the tourist's journey. It is recommended that each research direction be related to the identification and comparison of similarities and

differences between each travel phase. Consequently, subsequent research should encompass more than a single activity, with the aim of providing a comprehensive understanding of the factors and outcomes. Table 2 presents the research questions grouped according to the three research directions.
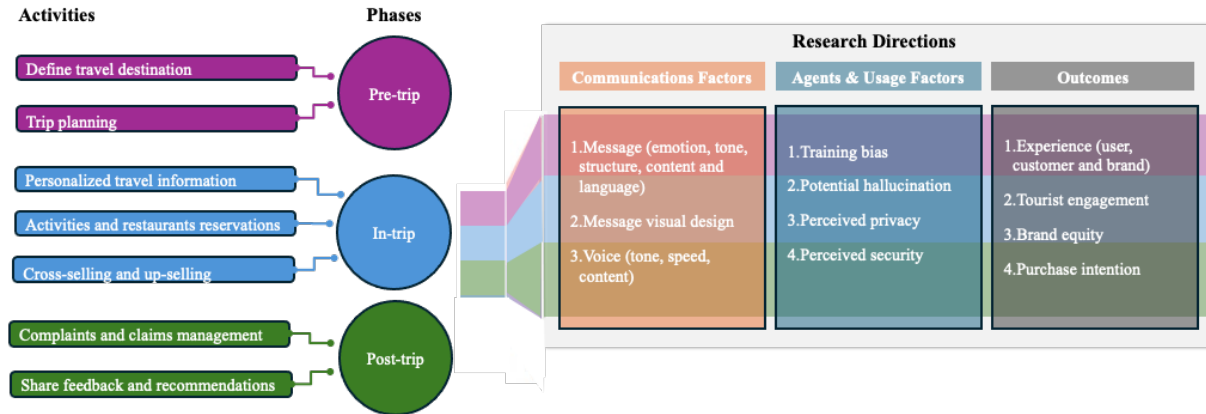

Figure 2. Tourist and CAs-gAI interaction research agenda

Factor	Research question
Research direction on communication characteristics	
Message	How do the emotion, tone, structure, content and language of CAs-gAI messages influence tourists?
Design	What characteristics should be considered when designing a CAs-gAI, considering the amount of information to be displayed in a reduced space?
Voice	How are the characteristics of communication through voice (tone, speed, content) of CAs-gAI determined?
Research direction related to agent characteristics and usage-related factors	
Bias	What is the influence of CAs-gAI bias levels on ethical and philosophical aspects?
Hallucinations	What is the impact of self-generated content of CAs-gAI on tourists' perceived truthfulness and consistency?
Privacy	Does the perception of information privacy influence the use of CAs-gAI for information seeking vs. consumer transactions;?
Security	Why is perceived security one of the main barriers to the use of CAs-gAI?
Research direction on the study of the tourist-agent interaction outcomes	
Experience	What is the level of user experience with conversational agents, customer experience with services and brand experience when using CAs-gAI?

Engagement	What is the effect of usage-related factors, user characteristics and CAs-gAI features on tourist engagement?
Brand equity	How do CAs-gAI influence the brand equity of a hospitality company?
Purchase intent	What is the influence of usage-related factors, user characteristics and CAs-gAI characteristics on tourists' purchase intention?

Table 2. Tourist and CAs-gAI interaction research questions

5. Main conclusions

The objective of this research is to propose a future research agenda related to the interaction between consumers and conversational agents with gAI, in the context of marketing activities within the hospitality and tourism sector. To identify potential research gaps, a semi-systematic literature review was conducted. This approach enables the objective analysis of previous studies, thereby reducing the subjectivity of the researcher and facilitating the formulation of a research agenda (Snyder, 2019).

The accelerated use of generative artificial intelligence and natural language processing has enabled hospitality and tourism companies to integrate these capabilities into marketing processes, thereby empowering conversational agents with the interpretation of the tone and emotions of customer messages. This allows companies to engage in personalized and timely communication, tailored to the context of consumers. Therefore, in an accelerated or gradual manner, tourists will utilize CAs-gAI as personal assistants before, during, and after their trips. In this regard, the study reaches two significant conclusions. (1) Future studies should focus on those activities where there is a transactional element, rather than solely on measuring the acceptance of this technology or where agents provide information to users. (2) Comparative studies are required to ascertain the impact of various factors and outcomes at different stages of the tourist's journey (pre, in, or post the trip). This will facilitate a more comprehensive understanding of the interaction between CAs-gAI and consumers within the context of tourism.

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