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Customer intentions toward the adoption of WhatsApp chatbots for restaurant recommendations

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Abstract

Purpose – Given the importance of chatbots in customer service in tourism, this paper aims to understand the drivers that predispose regular consumers of restaurant recommendation chatbots to continue using them.

Design/methodology/approach – A total of 386 regular consumers of a chatbot via WhatsApp restaurant recommender responded to an online questionnaire (inspired by scales found in the literature on technology adoption). Structural equation modeling was used to test the hypotheses.

Findings – Significant predictors of intention to continue using these chatbots included "effort expectancy (EE)," "hedonic motivation (HM)," "price value (PV)" and "habit (HT)." Specifically, HT still has a long way to go in terms of its performance, and it will be possible to work on it. Furthermore, two variables, EE and HM, act as a bottleneck when it comes to explaining this recurrent usage intention. Factors such as "performance expectancy (PE)," "facilitating conditions (FC)" and "social influence (SI)" did not influence "behavioral intention (BI)." Likewise, the moderating variables, age and gender, are not significant. Finally, the predictive capability of the model is demonstrated. The study findings will enable the development of effective strategies to foster consumer loyalty to this new technology in the restaurant industry.

Originality/value – This study contributes, building on the suitability of the unified theory of acceptance and use of technology 2 model, to explain users' intention to continue using chatbot tourism services in the context of an information search for an unplanned and varied purchase decision, namely, restaurant recommendation services. To the best of the authors' knowledge, this is the first analysis of tourist's intention to reuse a real and fully functional chatbot via mobile instant messaging.

Keywords Chatbots, Restaurant recommendation, UTAUT2, Mobile instant messaging, WhatsApp

Paper type Research paper

消费者对使用WhatsApp聊天机器人进行餐厅推荐的意图研究

摘要

研究目的 – 鉴于聊天机器人在旅游客户服务中的重要性, 本研究旨在了解驱动消费者持续使用WhatsApp餐厅推荐聊天机器人的因素。

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研究方法 – 共收集386名WhatsApp餐厅推荐聊天机器人的常规用户在线问卷数据（问卷设计参考技术采纳相关文献中的量表）。研究采用结构方程模型（SEM）验证假设。

研究发现 – 影响用户持续使用意图的显著预测因素包括“努力期望（EE）”、“享乐动机（HM）”、“价格价值（PV）”和“习惯（HT）”。其中，“习惯（HT）”表现仍有提升空间，而“努力期望（EE）”和“享乐动机（HM）”是解释持续使用意图的瓶颈因素。此外，“绩效期望（PE）”、“促进条件（FC）”和“社会影响（SI）”对“行为意图（BI）”无显著影响。性别和年龄等调节变量同样不显著。研究结果验证了模型的预测能力，能够为餐厅行业制定有效策略以增强消费者对这一新技术的忠诚度提供指导。

研究创新 – 本研究基于UTAUT2模型，首次分析了消费者在餐厅推荐服务中持续使用移动即时通讯（MIM）聊天机器人的意图，为探索非计划性和多样化购买决策背景下的信息搜索服务提供了新见解。

关键词 聊天机器人, 餐厅推荐, UTAUT2, 移动即时通讯, WhatsApp

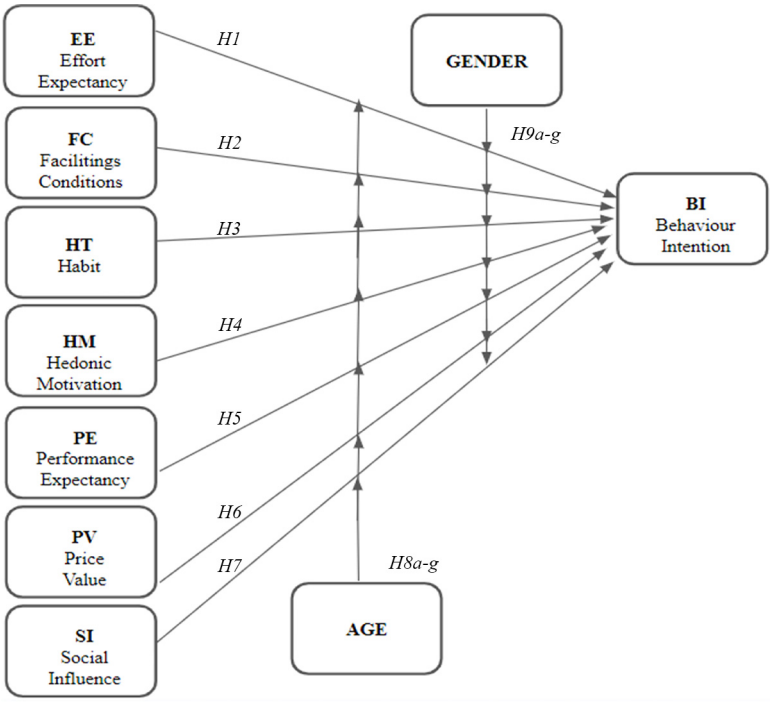
文章类型 研究型论文

1. Introduction

Currently, chatbots are contributing to new forms of interaction between consumers and brands. In the tourism and hospitality sector, their implementation is equally palpable (Paul *et al.*, 2023). Thus, hotels, travel agencies and restaurants offer very diverse customer services through these chatbots, such as responses to messages, quick access for reservations or purchases, takeout orders, customer service and recommendations (Leung and Wen, 2020; Yoon and Yu, 2022). A clear example of success in hospitality are the Ollie (Tripadvisor) and Fliggy and Ctrip chatbots, specialized in recommendations and reservations (Li *et al.*, 2021).

The need for consumers to use a chatbot varies according to the context of the tourism service. This context is defined by the type of service (e.g. hotel, restaurant), the timing of the request (before, during and after the trip), the specific purpose of the interaction (e.g. information search, booking and purchase), and the type of decision inherent to the service (e.g. complex, impulsive and variety-seeking). All these factors influence the pace and perception of waiting time (Noone *et al.*, 2009), consumer engagement (Santos *et al.*, 2022) and the hedonic experience with the service (Maar *et al.*, 2023). For instance, interactions with chatbots for accommodation or airlines are framed within complex shopping behaviors, primarily centered on the trip planning phase. In these cases, the information search is more comprehensive and anticipatory and the decision-making process is more deliberate and prolonged, culminating in booking and purchase (Zhu *et al.*, 2023). In contrast, interactions with chatbots for restaurants tend to be more frequent and rapid, occurring primarily during the trip (Yoon and Yu, 2022), and they are closely aligned with the moment of consumption. This would be a variety-seeking purchase decision (Assael, 1987), characterized by lower personal involvement and risk, where the supply is perceived as differentiated. According to Assael (1987), in such purchases consumers often switch brands frequently without extensively evaluating their decisions, choosing to assess them during the consumption experience. However, the next time, the consumer might seek another alternative, either out of boredom or just to try something different.

This disparity in the use of restaurant chatbots, compared to other tourism services, also affects the factors driving their acceptance by consumers (Figure 1). Despite the significant impact that chatbots are having on restaurant service recommendations (Sano *et al.*, 2018), the literature in this domain remains notably scarce. The limited research on the adoption of chatbots in tourism services has predominantly focused on the pretrip phase, addressing destination selection (Cai *et al.*, 2022) and trip planning activities (Pillai and Sivathanu, 2020), such as their use within travel agencies or hotel booking (Zhu *et al.*, 2023). For this context of complex shopping behavior (Assael, 1987) and prior to the visit, the literature identifies several antecedents for user acceptance, including understandability, reliability,



Source: Authors' own work

Figure 1. Hypotheses model

assurance, interactivity, perceived usefulness or performance expectancy (PE), perceived intelligence and anthropomorphism (Lalicic and Weismayer, 2021; Lei *et al.*, 2023; Melián-González *et al.*, 2021). However, it remains unclear whether these factors are equally explanatory for the acceptance of chatbots in variety-seeking shopping situations (Assael, 1987), such as in the restaurant industry, given that they represent a different consumer context. Only a very small group of authors have recently examined the acceptance of chatbots in scenarios such as home ordering (Leung and Wen, 2021), menu selection (Yoon and Yu, 2022) and scheduling reservations (Maar *et al.*, 2023). These studies suggest that aspects such as effort expectancy (EE) and consumption emotions in the online ordering experience (Leung and Wen, 2021), as well as PE (Yoon and Yu, 2022), are relevant for the acceptance of chatbot use in food service. Consequently, not only is there currently limited scientific evidence but also important scenarios, such as the acceptance of chatbots by consumers for restaurant selection through consultation of recommendations, have yet to be thoroughly investigated. This is particularly significant insofar as it represents one of the most frequently used services in interactions with chatbots by tourists.

Given that restaurant recommendation services provided by chatbots are among the most widely used in the sector, it is essential to consider the intention of their continued use as a key aspect of the study. This channel has become well known and increasingly commonplace for many tourism consumers (Maar *et al.*, 2023; Majid *et al.*, 2024). To date, few studies have

addressed the use of chatbots in tourism services from this perspective, and the specific literature on restaurants primarily considers occasional use rather than recurrent use.

In response to the identified gaps in the literature, this research aims to identify the factors that drive the continued use of chatbots for information search and restaurant recommendation by tourists. This encompasses mixed search purchase behavior and usage close to the point of consumption.

In a marked change of perspective from previous studies, our research posits that the platform on which the chatbot operates is not a trivial issue, insofar as it conditions the waiting time, the manner in which information is presented and the accessibility and location of the consultation. These aspects are of the essence for tourists' decision-making processes. However, there is no empirical evidence supporting the influence of the platform on the acceptance of chatbots. To date, the literature has focused more on aspects such as the anthropomorphism of chatbots (Jin and Youn, 2023) or it has conducted experiments with fictitious chatbots designed exclusively for research purposes, without considering the real context of use (Leung and Wen, 2021; Yoon and Yu, 2022), also ignoring the platform on which the chatbot is presented (Melián-González *et al.*, 2021).

To fill this theoretical void, it is crucial to conduct research with samples of consumers using a real and functional chatbot on a given platform. Specifically, studies on the continued use of chatbots on mobile instant messaging (MIM) platforms are required, as these are, *a priori*, ideally suited to meet the information needs for immediate consumption and variety-seeking behavior due to their accessibility (familiarity with the tool, quick and easy use and consultation in various locations).

This brings us to our main research question:

RQ1. What are the key factors that influence tourists' intention to continue using a chatbot through MIM for restaurant selection?

In the acceptance of the use of chatbots, it is important to consider that hyper-connected "digital natives" appear to differ from other generations of customers, such as "digital immigrants" (Prensky, 2001). If this is true, one cannot suggest a homogeneous behavior by age in their intention to use restaurant services via chatbots (Maar *et al.*, 2023). However, this behavioral heterogeneity has rarely been considered in the uptake of restaurant services, with the exception of the work by Maar *et al.* (2023), which focuses only on generations X and Z. Along with age, gender is another variable that the classic literature on technology adoption identifies as a moderator of technology uptake (Venkatesh *et al.*, 2012), and which has also been highlighted in studies on the adoption of tourism services. However, in the case of tourism chatbots, its moderating effect has not been tested (Zhang *et al.*, 2023).

Taking the above into account, the second research question is proposed:

RQ2. Do age and gender of tourists moderate the intention of continued use of chatbots via MIM offering restaurant recommendation services?

To answer these research questions, we will use the unified theory of acceptance and use of technology 2 (UTAUT2) (Venkatesh *et al.*, 2012). This theory is appropriate for two reasons. First, it is the most referenced, tested and validated in the literature for explaining the acceptance of new technologies by end consumers (Gupta and Dogra, 2017), evolving from the previous (Venkatesh *et al.*, 2003) UTAUT (which was primarily oriented toward companies. Second, this theory encompasses factors noted in the limited literature on the acceptance of chatbot use in restaurant services: EE, emotions and PE (Leung and Wen, 2021; Yoon and Yu, 2022), and considers the need to moderate acceptance by age and

gender. To confirm the utility of the model and provide robust explanations for the "intention to continue using" this technology, a sample of recurrent users of a chatbot service and MIM, specifically WhatsApp, were surveyed. Furthermore, to deepen our understanding of the main factors influencing this intention to use, this model is enriched with a necessary conditions analysis (NCA), allowing us to assess whether there are any bottlenecks in explaining intention to use (Dul, 2021).

Finally, this study offers four important contributions regarding restaurant recommendation chatbots via MIM:

- the suitability of the UTAUT2 model to explain users' intention to continue using chatbot services in the context of an information search for an unplanned and varied purchase decision;
- the strength of hedonic motivation (HM) as a predictor of the intention of continued use;
- two predictors, EE and HM, are identified as necessary conditions to explain the behavioral intention (BI) to continue using this technology; and
- there is no significant difference in the acceptance behavior of this technology by age and gender for restaurant search services.

The development of this research approach represents an opportunity for restaurants implementing chatbots to better understand the factors that affect repeat customers' intention to continue using them. This understanding will enable restaurants to enhance their interaction and loyalty strategies. This is particularly relevant in a context where consumer decisions are increasingly influenced by technology and where restaurants are seeking innovative ways to attract and retain customers.

2. Review of the literature

2.1 Adoption of hospitality and tourism chatbots

As a result of the development of artificial intelligence, an alternative to communication with human interlocutors is proliferating in this sector: chatbots. In this field, the existing literature has paid attention to technological aspects (Adamopoulou and Moussiades, 2020), satisfaction with their use (Jiménez-Barreto *et al.*, 2021), attitude toward their use (Maar *et al.*, 2023) and key factors for adoption (Jha *et al.*, 2023). In particular, tourism literature has mainly explored the intention to use chatbots, with much less emphasis on the continuity of their use.

For the study of the reasons that explain the adoption of chatbots in the tourism sector (Appendix 1), some authors have focused on the anthropomorphic characteristics of chatbots (e.g. Cai *et al.*, 2022 or Pillai and Sivathanu, 2020). Other frequently mentioned factors include perceived usefulness or PE (Majid *et al.*, 2024; McLean *et al.*, 2020; Yoon and Yu, 2022), functionality (Jha *et al.*, 2023; Lalicic and Weismayer, 2021), interactivity (Zhu *et al.*, 2023), perceived intelligence (e.g. Pillai and Sivathanu, 2020) and HM in their use (e.g. Jha *et al.*, 2023). Other less frequent variables include habit of using chatbots (HT), social influences (SI) (Melián-González *et al.*, 2021), trust and ease of use (FC) (Pillai and Sivathanu, 2020) and EE and accessibility (Majid *et al.*, 2024). In the restaurant domain, studies on the causes of intention to use are almost nonexistent. Thus, Yoon and Yu (2022) identify four variables (perceived usefulness, functionality, value and attitude) that influence the intention to use ordering services. On the other hand, Leung and Wen (2020, 2021), approach this intention to use from a reflexive and noncausal model, differentiating the ordering methods (chatbot, mobile and online).

It has been confirmed that the intention of continuity of use with the chatbot for tourism services is associated with customer satisfaction (Dhiman and Jamwal, 2023; Pereira *et al.*, 2022), perceived usefulness or PE (Lei *et al.*, 2023; Zhang *et al.*, 2023), customer satisfaction (Li *et al.*, 2021; Pereira *et al.*, 2022), perceived usefulness or PE (Dhiman and Jamwal, 2023; Zhang *et al.*, 2023). However, each of these studies incorporates other variables, such as predisposition to use self-service technologies, comprehensibility, reliability, security and interactivity (Li *et al.*, 2021); brand attachment (Pereira *et al.*, 2022); ease of use (Lei *et al.*, 2023; Pereira *et al.*, 2022); perceived usefulness (Lei *et al.*, 2023); perceived ease of use, task attractiveness and social attractiveness (Lei *et al.*, 2023); social presence and image processing (Jin and Youn, 2023); and PE, SI, HT, anthropomorphism and personalization (Zhang *et al.*, 2023).

The current literature reveals the heterogeneity of tourist behavior in the acceptance of chatbot use in tourism. Consequently, many studies incorporate moderating variables related to consumption characteristics (e.g. Maar *et al.*, 2023; Zhu *et al.*, 2023), whereas traditional sociodemographic variables are less frequently considered. Only recent work by Maar *et al.* (2023) and Zhang *et al.* (2023) has analyzed the influence of age and gender, respectively. It should be noted that the intention to use chatbots is stronger for Generation X than for Generation Z (Maar *et al.*, 2023) and that there are no significant differences in most of the factors influencing the continued intention to use chatbots between men and women (Zhang *et al.*, 2023).

On the other hand, studies on the adoption of chatbots have primarily focused on the following tourism services: travel planning (e.g. Dhiman and Jamwal, 2023), destination activities (Melián-González *et al.*, 2021) and hotel reservations (Jin and Youn, 2023). However, even though initial evidence is found in the context of hotels, travel and tourist destinations, there is a scarcity of research in one of of the most demanded areas in the hospitality industry, namely, restaurants. Only a very limited number of authors, such as Leung and Wen (2020, 2021) and Yoon and Yu (2022), mention service interactions with consumers focusing on take-away orders, while ignoring significant services such as recommendations for restaurant selection. Furthermore, these studies focus solely on the intention to use chatbots rather than on their continued use.

2.1.1 Adoption of hospitality and tourism chatbots via mobile instant messaging. MIM allows synchronous and symmetrical communication, enhancing the personalization of the tourist experience (Buhalis and Amaranggana, 2015). This enables travelers to communicate their contextual needs ubiquitously (Lamsfus *et al.*, 2014). Recent literature highlights relevant contributions regarding customers' intention to use it in tourism (Lei *et al.*, 2020). The findings indicate that age and perceived usefulness are predictors of continued use intention. Additionally, MIM facilitates value cocreation activities between company and customers (Lei *et al.*, 2020). It is also used by customers before and/or after a stay, primarily for nonurgent issues (Lei *et al.*, 2021). Furthermore, while the literature acknowledges that WhatsApp is among the preferred channels for establishing communications and transactions between employees and customers in the tourism industry (Francis and Jilo, 2021), there are no studies explaining the interest in its adoption.

Although the literature indicates that chatbots and MIM are commonly used communication methods in the hospitality and tourism industry, three key issues arise. First, Lei *et al.* (2023) reveal that users' perceptions of recurrent use intention differ between these communication forms. For chatbots, reuse intention is driven by ease of use and perceived usefulness. In contrast, for MIM, while ease of use is significant, social aspects (task attraction and social attraction) are more decisive. Second, despite the importance of these communication methods separately, there are no studies on the joint intention to use both

technologies such as chatbots via MIM, even though they exist in business contexts and the hospitality and tourism industry. Examples include chatbots via WhatsApp like "Luzia" (www.luzia.com/), "Carina" (https://carina.chat/) or "Ask Vicente" (www.elmundo.es/f5/descubre/2018/04/21/5ad9fcef268e3ef4088b45f2.html) and the chatbot via Facebook Messenger "Victoria la Malagueña" (www.facebook.com/malagabots/). Examples show that restaurant recommendations are among the most demanded chatbot services via MIM in the sector.

On the other hand, tourist literature that addresses factors affecting the recurrent use intention of chatbots or compares MIM and chatbots is mostly experimental rather than based on real use (Lei *et al.*, 2023; Leung and Wen, 2020).

2.2 Theoretical framework and development of hypotheses

To discover the factors that motivate frequent users of a restaurant recommendation chatbot via WhatsApp to continue using it, we used the UTAUT2 technology adoption model (Venkatesh *et al.*, 2012).

2.2.1 Behavioral intention. BI is described as the level at which an individual has consciously made plans to use or not use a specific technology in the future (Venkatesh *et al.*, 2003). Previous research highlights it as the strongest and most immediate predictor of individual behavior (Ajzen, 1991; Davis *et al.*, 1989). Our study aims to understand how BI manifests itself in the context of continued use of our restaurant recommendation chatbot via WhatsApp (Figure 1).

2.2.2 Effort expectancy. EE is defined as the evaluation of the effort required to complete a task using a specific technology (Venkatesh *et al.*, 2003, 2012). This factor is grounded on Davis *et al.* (1989) perceived ease of use and has been generally validated to be a strong predictor of BI (Chopdar *et al.*, 2018).

Previous tourism studies show a debate on the influence of EE on the intention to use technology. Some authors assert the presence of a positive relationship (Baydeniz *et al.*, 2024), while others find it nonsignificant (Gupta *et al.*, 2018). For instance, Majid *et al.* (2024) evaluated the relevance of this factor in tourism chatbots. However, no work has specifically addressed its impact on recurrent use, particularly in the field of restaurant services.

As a result, our hypothesis is that:

H1. Effort expectancy positively influences the behavioral intention to continue using a chatbot service for restaurant recommendation via WhatsApp.

2.2.3 Facilitating conditions. Facilitating conditions encompass users' perception of the level of operational and technological support provided by the systems (Venkatesh *et al.*, 2003). The literature indicates that FC significantly impact both the intention to use and user behavior across a wide range of technologies (Macedo, 2017).

However, similar to what occurs with EE, the relationship between FC and technology use intention in the tourism context is not always positive. While most studies, such as those by Jeon *et al.* (2019) and Chaw *et al.* (2023), report a positive relationship, some authors question this link (Wu and Lai, 2021). Regarding tourism chatbots, only Pillai and Sivathanu (2020) highlight the relevance of FC for usage intention, though their study focuses solely on travel agency and hotel services.

Therefore, we propose the following hypothesis:

H2. Facilitating conditions positively influence the behavioral intention to continue using a chatbot service for restaurant recommendation via WhatsApp.

2.2.4 Habit. Venkatesh *et al.* (2012) assert that habit is the result of previous experiences, as well as how those experiences can motivate the use of new technologies (Ajzen, 1991). Subsequent studies have demonstrated the influence of HT on BI toward adopting new technologies (e.g. Wu and Kuo, 2008). In the tourism sector, existing studies on the adoption of smartphone apps by tourists have also highlighted the significant effects of HT on BI and actual usage (Escobar-Rodríguez and Carvajal, 2014; Gupta and Dogra, 2017).

In the context of chatbot literature in tourism, HT appears less frequently compared to other variables and is typically examined in services other than restaurants. Specifically, studies by Melián-González *et al.* (2021) and Zhang *et al.* (2023) identify a positive relationship between HT and the intention to use and recurrent use, respectively, in the broader context of travel and tourism.

We postulate the following hypothesis:

H3. Habit positively influences the behavioral intention to continue using a chatbot service for restaurant recommendation via WhatsApp.

2.2.5 Hedonic motivation. HM has been defined by Venkatesh *et al.* (2003) as the pleasure a user derives from using technology. Researchers consistently indicate that intrinsic motivation is crucial for technology use and it determines users' continued engagement (Gupta, 2018). Studies also highlight the rewarding experience associated with the use of technology, such as the generation of positive feelings (Chung *et al.*, 2018) and enjoyment during interaction (Gupta, 2018). This driver, as noted by Ashfaq *et al.* (2020) and Aslam *et al.* (2022), significantly influences the intention to use these services. Similarly, in tourism related literature, it is a relevant factor in explaining usage intention (Gupta and Dogra, 2017).

Regarding chatbots in tourism, the evidence suggests that HM positively affects users' intention to use chatbot services, although specific usage and service contexts are not extensively covered (Jha *et al.*, 2023; Melián-González *et al.*, 2021).

Therefore, the resulting hypothesis is:

H4. Hedonic motivation influences the behavioral intention to continue using a chatbot service for restaurant recommendations via WhatsApp.

2.2.6 Performance expectancy. PE refers to the extent to which technology usage aids users in performing their tasks (Venkatesh *et al.*, 2003). It has consistently been validated as a robust predictor of BI (Macedo, 2017).

In the domain of tourism, the link between PE and BI has been well-documented, particularly in the context of e-commerce websites for both product purchases and tourism services bookings (Chung *et al.*, 2018; Escobar-Rodríguez and Carvajal, 2014). In the context of adopting chatbots for tourism services, there are still few recent studies that explore this positive relationship. This despite the fact that it is the most well-established variable for both examining usage intention (Majid *et al.*, 2024; Yoon and Yu, 2022) and studying continued use (Dhiman and Jamwal, 2023; Lei *et al.*, 2023; Zhang *et al.*, 2023).

We formulate the following hypothesis:

H5. Performance expectancy positively influences the behavioral intention to continue using a chatbot service for restaurant recommendations via WhatsApp.

2.2.7 Price value. Venkatesh *et al.* (2012) argue that price value rises as consumers seek greater perceived benefits compared to monetary sacrifice. This has been consistently documented in the literature on technology adoption (Chopdar *et al.*, 2018). In tourism,

several authors assert the positive influence of this predictor on the intention to use tourism technologies, such as augmented reality apps for gastronomy (Calderón-Fajardo *et al.*, 2023) and mobile applications such as Airbnb for booking accommodations (Nathan *et al.*, 2020).

In the context of tourism chatbots, this factor has been identified as relevant, particularly for restaurants, in influencing the intention to use and place orders (Yoon and Yu, 2022). Because of this, we formulate the following hypothesis:

H6. Price value influences the behavioral intention to continue using a chatbot service for restaurant recommendations via WhatsApp.

2.2.8 Social influence. SI is the degree to which an individual perceives that important people (e.g. friends and family) believe they should use an innovative technology (Venkatesh *et al.*, 2003), often predicting acceptance. However, some studies, for instance, Ozturk *et al.* (2021) show that SI is not significant for mobile app usage intentions. Conversely others, such as Kuberkar and Singhal (2020), do find a significant relationship.

In tourism, Melián-González *et al.* (2021) and Zhang *et al.* (2023) claim that SI explains the intention to use chatbots and recurrent usage, though not specifically in restaurants. Due to the limited evidence, we propose the following hypothesis:

H7. Social influence influences behavioral intention to continue using a chatbot service for restaurant recommendations via WhatsApp.

2.2.9 Moderator variables. The UTAUT2 model (Venkatesh *et al.*, 2012) includes three moderator variables: age, gender and experience. Since our study focuses on the recurrent use intention of a real chatbot, the experience variable is irrelevant because users already have prior experience. Therefore, only age and gender are considered. These variables are also noted in the technology acceptance literature in tourism, though not specifically in restaurants. Maar *et al.* (2023) show that Generation X has stronger usage intentions than Generation Z, while Zhang *et al.* (2023) find that gender differences do not always explain continued use intentions.

H8a–g. Age moderates the influence of UTAUT2 factors (EE, FC, HT, HM, PE, PV and SI) on the behavioral intention to continue using a chatbot service for restaurant recommendations via WhatsApp.

H9a–g. Gender moderates the influence of UTAUT2 factors (EE, FC, HT, HM, PE, PV and SI) on the behavioral intention to continue using a chatbot service for restaurant recommendations via WhatsApp.

3. Methodology

3.1 Data collection process

To measure the intention of recurrent use of a restaurant recommendation chatbot service and address the methodological weakness of previous studies with nonrepresentative samples (Leung and Wen, 2020), a sample was drawn from consumers using a real and fully functional chatbot via MIM. The chosen chatbot was AskVicente, a free service available on WhatsApp MIM. The reasons for selecting this chatbot were:

- It is the first gastronomic chatbot in Spain aiding in restaurant recommendations through questions and answers (Bermejo, 2018);
- It had surpassed 30,000 unique users within five months of its launch, indicating a consistent user base; and

- It operates on WhatsApp, the world's most popular MIM application with two billion active monthly users (Statista, 2024).

A sample of the 537 most frequent users, defined as those with an average usage of twice a month over the past year, was selected. A questionnaire, pretested among three researchers and 30 users, was administered to these 537 individuals. A total of 400 responses were received, 14 of which were discarded due to incomplete data. Thus, 386 valid questionnaires were analyzed, yielding a sample error of 95%. The age distribution was as follows: 27.72% aged 18–25; 31.08% aged 26–35; 18.39% aged 36–45 and 22.79% over 46. Gender distribution was 52.84% female and 47.15% male. Notably, 25.5% of regular consumers did not respond. Nonresponse is a type of nonsampling error, indicating an expected margin of uncertainty (Azorín and Sánchez-Crespo, 1986). Despite the difficulty in addressing this error, our research confirmed that there was no behavioral or sociodemographic bias among nonrespondents. The data collection process was conducted in two waves through the AskVicente chatbot, inviting active users to participate voluntarily to minimize nonresponse.

3.2 Data analysis

We utilized partial least squares structural equation modeling (PLS-SEM) to test the proposed hypotheses and NCA to identify potential bottlenecks among the independent variables (Dul, 2021). While other statistical methods could have been applied, PLS-SEM was selected due to its provision of latent variable scores essential for subsequent NCA analysis (Sarstedt *et al.*, 2022). Both PLS-SEM and NCA analysis were conducted using SmartPLS 4.0 (Ringle *et al.*, 2024).

To address measurement bias and following (2015) recommendations, we incorporated the latent variable of common method bias as a dependent variable with specific indicators. This allowed us to evaluate all variance inflation factors, with values consistently below 3.3, confirming the absence of such bias in the model.

4. Results

To address the hypotheses, we first estimated the measurement model using the PLS-SEM statistical procedure to assess the reliability and validity of the measurement scales. Subsequently, we estimated the structural model to verify the study's hypotheses and evaluated the overall adequacy of the model, abiding by the criteria established by Hu and Bentler (1999).

4.1 Measurement model

Following the guidelines of Roldán and Sánchez-Franco (2012) and Henseler *et al.* (2015), the loadings of each construct must exceed the threshold of 0.7 to assess the reliability and validity of the measurement model. The results (see Appendix 2) meet this criterion, demonstrating the discriminant validity of the scales. The model exhibits strong reliability in both constructs and indicators, as well as convergent and discriminant validity, ensuring that the factors are statistically distinct and suitable for evaluating the structural model.

The reliability of the factors was assessed using composite reliability indicators and Cronbach's alpha. All indicators exceeded the 0.7 threshold proposed by Nunnally (1978). Convergent validity was confirmed by analyzing the average variance extracted (AVE), where all values exceeded 0.5, in accordance with Straub *et al.* (2004) (Table 1).

To confirm discriminant validity, the heterotrait-monotrait ratio was used, ensuring all results were below 0.9 (Henseler *et al.*, 2015), as shown in Table 2. Additionally, the correlation between variables was calculated, with none yielding significant results.

Table 1. Composite reliability and convergent validity

Factors	Cronbach alfa	Spearman's correlation coefficient (rho_A)	Composite reliability (CR)	Average variance extracted (AVE)
BI	0.897	0.901	0.924	0.709
EE	0.772	0.782	0.852	0.590
FC	0.718	0.734	0.840	0.636
HT	0.929	0.932	0.947	0.781
HM	0.884	0.887	0.912	0.633
PV	0.741	0.743	0.885	0.794

Source: Authors' own work

Table 2. Discriminant validity (ratio heterotrait-monotrait-HTMT)

Variables	BI	EE	FC	HT	HM	PE	PV	SI
BI								
EE	0.589							
FC	0.467	0.501						
HT	0.633	0.399	0.398					
HM	0.726	0.725	0.554	0.581				
PE	0.223	0.348	0.281	0.249	0.309			
PV	0.633	0.526	0.381	0.378	0.603	0.339		
SI	0.325	0.264	0.381	0.448	0.307	0.249	0.178	

Source: Authors' own work

To assess model fit, we used the standardized square root residual criterion. The obtained value was 0.0624, which is below the 0.08 threshold proposed by Henseler *et al.* (2015).

Additionally, to ensure a good model fit, we assessed endogeneity. Following the process outlined by Hult *et al.* (2018) and applying the Cramér-von Mises test, we found that the test conditions were met and that the latent variables are not normally distributed. Subsequently, the Gaussian copulas test was applied to all relationships between independent and dependent variables. All copulas were nonsignificant, indicating that the model lacks endogeneity.

Furthermore, the model explains 56% (R^2) of the variance in BI ($R^{2)}$ (Table 3), exceeding the minimum threshold of 0.10 suggested by Falk and Miller (1992).

4.2 Structural model

To evaluate the structural model, we applied a bootstrapping technique with 10,000 subsamples to assess the reliability of the hypothesized relationships. The hypotheses that were rejected (Table 3) involved SI, PE and FC. In contrast, hypotheses related to EE, HT, HM and price value (PV) were accepted, demonstrating a significant influence on the intention to continue using a WhatsApp chatbot for restaurant recommendations.

Regarding the moderator variables (age and gender), the analysis results indicate that they are not significant in predicting the intention for recurrent use. Although age and gender influence FC, PE and HT, they do not moderate the relationship in the context of continued use intention.

Table 3. Summary of test results for the structural model

Hypothesis	Path	Coef path	*p*-values	Support? <0.05	Factor	*R*-squared	*R*-square adjusted
H1	EE→BI	0.117*	0.021	*Yes*	*BI*	0.564	0.556
H2	FC→BI	0.05	0.358	NS			
H3	HT→BI	0.297***	0.000	*Yes*			
H4	HM→BI	0.296***	0.000	*Yes*			
H5	PE→BI	−0.072	0.068	NS			
H6	PV→BI	0.0238***	0.000	*Yes*			
H7	SI→BI	0.027	0.439	NS			

Notes: ***$p < 0.001$; **$p < 0.01$ and *$p < 0.05$. (It is based on a one-tail test and Bootstrap with 10.000 subsamples); Nonsignificant (NS)
Source: Authors' own work

Furthermore, the model's predictive power was assessed using Stone-Geisser Q^2 values. The obtained Q^2 values (Table 4) are greater than zero, indicating that the model has predictive capability. This finding supports the model's ability to make meaningful predictions based on the data.

4.3 Advanced issues with partial least squares: importance-performance map analysis and necessary condition analysis

To assess the results, an importance-performance map analysis (IPMA) was conducted, enabling a detailed examination at the variable and indicator levels based on the model outcomes (Ringle and Sarstedt, 2016). This analysis gauges the importance and performance of constructs and indicators that influence a particular construct. The target construct for this analysis was BI. The IPMA of the model revealed the outcomes depicted in Figure 2.

NCA uses the necessity effect size (d) and its significance to determine whether a variable is a necessary condition. This effect size is calculated by dividing the area without observations by the total area, yielding a range of $0 \leq d \leq 1$. Effect sizes are categorized as small ($0 < d < 0.1$), medium ($0.1 \leq d < 0.3$), large ($0.3 \leq d < 0.5$) and very large ($d \geq 0.5$) (Dul, 2016). A common threshold for necessity hypotheses is $d = 0.1$. Statistical significance, assessed through NCA's permutation test (e.g. $p < 0.05$), is essential for validating a necessity hypothesis in addition to the practical significance of the effect size. Results for this test are presented in Table 5, showing that EE and HM have minimal and significant effects.

5. Discussion and conclusions

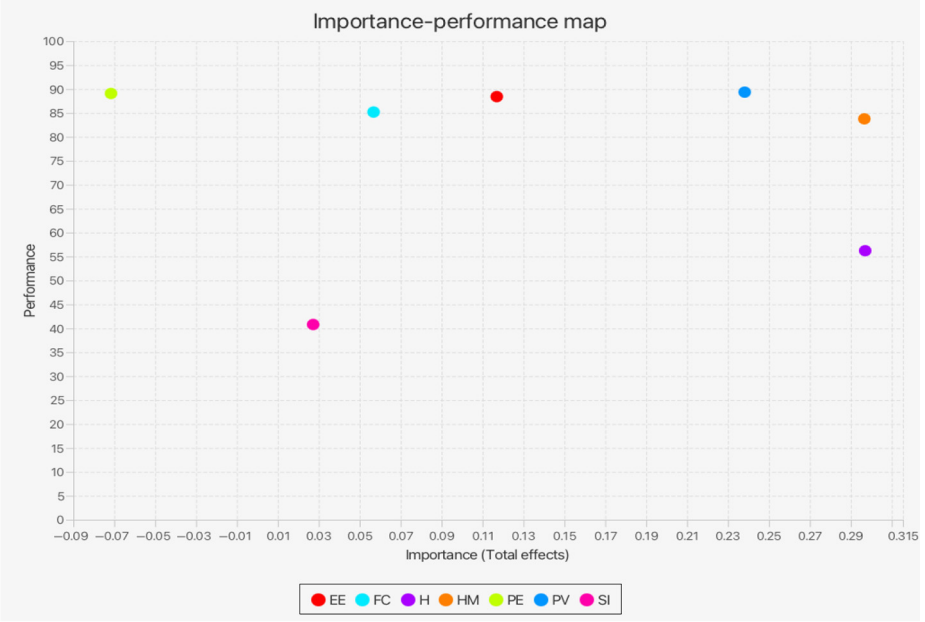
5.1 Conclusions

The primary aim of this study was to identify the key determinants of continued usage intention among recurrent users of a restaurant recommendation chatbot service via MIM. This research validates the UTAUT2 model as a relevant theoretical framework within the

Table 4. Q^2 predict

Variable	Q^2 predict	RMSE	MAE
BI	0.533	0.690	0.510

Source: Authors' own work



Source: Authors' own work

Figure 2. IPMA analysis

Table 5. NCA permutation values

Latent variables	95.0%	Permutation *p*-value
LV scores- EE	0.204	0.000
LV scores- FC	0.098	0.000
LV scores- HT	0.002	0.000
LV scores-HM	0.135	0.000
LV scores-PE	0.123	0.233
LV scores-PV	0.090	0.000
LV scores-SI	0.000	1.000

Source: Authors' own work

context of hospitality and tourism services, aligning with its application in other purchase behavior (Assael, 1987) and technology contexts (Gentner *et al.*, 2020). Specifically, it examines a search purchase decision made by tourists during their travel experience.

Our findings confirm that EE, HT, HM and PV positively influence consumers' intentions to use chatbots. These results are consistent with previous studies highlighting the significant impact of these factors (Aslam *et al.*, 2022; Chung *et al.*, 2018; Baydeniz *et al.*, 2024; Jha *et al.*, 2023; Melián-González *et al.*, 2021; Yoon and Yu, 2022). Despite the prevalence of free chatbots, regular users consider PV important due to the premium services offered,

indicating a trend toward paid versions that provide more comprehensive services (Fernández, 2023). Notably, HM and, at lesser extent, HT emerged as crucial variables for explaining the intention to continue using chatbots via MIM. Additionally, EE and HM are identified as bottlenecks in explaining recurrent usage intention. The model's predictive capability is confirmed by a Q^2 value greater than 0 and a good fit.

Our analysis shows that FC, SI and PE did not significantly impact the continuance intentions in these habitual consumers. FC's lack of significance may be attributed to the intrinsic ease of use of smartphones that support this technology, as noted by Ho *et al.* (2021). The familiarity and simplicity of WhatsApp chatbots render FC less relevant for regular users. On the other hand, although previous research identified significant relationships between SI and AI chatbot usage (Kuberkar and Singhal, 2020), as well as in tourism services (Melián-González *et al.*, 2021; Zhang *et al.*, 2023), SI does not appear to predict the continued use of restaurant recommendation chatbots. This discrepancy in our study may be due to the specific context and population of recurrent users who are less influenced by external factors and are familiar with WhatsApp interface. Additionally, while PE is a well-established factor in the continued use of chatbots for travel planning (Lei *et al.*, 2023; Zhang *et al.*, 2023), it is not significant for ongoing use of chatbots for variety-seeking purchases, such as restaurant recommendations, during and before travel.

On the other hand, the adoption of chatbots is influenced by user profiles, as highlighted by the UTAUT2 model, which considers demographic variables such as age and gender. Our results show no significant variation in continued use intention by age or gender, contradicting recent studies addressing these variables (Zhang *et al.*, 2023; Maar *et al.*, 2023).

In summary, answering our research questions, the key factors that influence tourists' intention to continue using a chatbot for restaurant selection vary by technology and usage stage. For tourism chatbots, particularly restaurant recommendation chatbots via MIM, HM, HT and EE positively influence continued use, highlighting their integration into daily routines and enjoyable interactions. Additionally, EE and HM are necessary conditions to correctly explain the recurrent use intention.

5.2 Theoretical implications

This study contributes to expanding knowledge in the field of tourist technology adoption, particularly by addressing the gap in the literature regarding the differential treatment required for restaurant services via chatbots compared to other tourism services. Specifically, it focuses on the most demanded and used service by tourists: seeking restaurant recommendations. Restaurants require differentiated attention from researchers due to the contextual differences in which they operate, primarily the type of purchase involved and the timing of its use. Our work provides four contributions related to the context of tourists' behavior concerning the continued adoption of these chatbot services. First, it validates the suitability of the UTAUT2 model to explain users' intention to continue using chatbot services in the context of information searches for unplanned purchase decisions and variety-seeking behavior. This context is characterized by proximity to the consumption moment and a lower consumer risk perception, such as in restaurant recommendations via MIM. This contribution addresses a gap in the literature that has thus far focused primarily on the use of chatbots in complex purchase decision contexts, particularly during the travel planning phase. Such contexts involve more extensive and advanced information searches, leading to a more deliberate and prolonged decision-making process, which culminates in reservations and purchases. Second, similar to other contexts (Wu and Kuo, 2008), this study confirms the predictive power of the model, showing that, in the restaurant services industry, chatbots

have the potential to become integrated into users' routines. Third, being perhaps the most significant contribution, this research identifies two key predictors – EE and HM – that are necessary to explain the BI to continue using chatbots via MIM. These predictors are critical in understanding BI. Finally, unlike other UTAUT2 models applied to technology adoption in tourism services, the variables of gender and age do not moderate recurring usage behaviors for restaurant selection services.

5.3 Practical contributions

The results of this research provide valuable guidance for both mobile app developers to develop more attractive apps for customers and for restaurants to acquire more customers and serve them better. In this regard, this work focuses on four key factors to ensure tourists' continued intention to use chatbots for obtaining recommendations. First, this study proves to developers that they must first minimize the effort required from users, which is achieved by ensuring a high level of familiarity with the platform. Second, they should enhance the enjoyment, social empathy and overall pleasantness of the chatbot experience. HT is just as important as HM in explaining BI but has not performed as well in explaining it, so there is a lot of work to be done in encouraging the habit to achieve this improvement and could help integrate chatbot use into users' routines, not only before but especially during the tourist's trip. In summary, our findings can help companies develop more effective design strategies by creating more intuitive chatbots, without the need to differentiate their services by gender or age at this stage, to foster greater interactivity and habituation in user consultations. As acceptance of this technology for recurring use increases with respect to the aforementioned factors (EE, HM and HT), developers or companies might even consider offering premium "paid" versions of recommendation services. This consideration is supported by the study's findings, which reveal that regular consumers view the PV ratio of restaurant recommendation services as a positive factor influencing their intention to continue using the service.

Considering the previous practical implications and the increasing mediation of consumer decisions by technology, society will gain a new way to enhance confidence in the use of these chatbots via MIM in information search processes for unplanned purchase decisions and variety-seeking behavior, closer to the consumption moment and with lower consumer risk perception. In this regard, considering these four adoption factors – EE, HM, HT and PV – could be essential for enhancing the adoption of chatbots via MIM in the interactions between various industries and their consumers, extending beyond the hospitality and restaurant sectors.

5.4 Future research and limitations

Although this work on chatbot via WhatsApp is a novelty, the focus on a specific MIM channel limits the generalization of its results to other platforms. In this regard, replicating the outcome of the study on different platforms could provide valuable benchmarking across various channels.

Also, the selected sample was limited to recurrent consumers of a specific chatbot via WhatsApp. Expanding the study population to include regular users of other similar chatbots offering restaurant recommendation services could provide a broader understanding of this sector and service across various MIM platforms. Additionally, other moderating factors could be tested.

Finally, this research was quantitative and lacked the nuanced insights that qualitative inquiries can provide. Future research could benefit from mixed methods approaches.

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Further reading

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Appendix 1

Table A1. Literature on user technology acceptance in hospitality and tourism services and research gaps addressed by current study

Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
Leung and Wen (2020)	Placing restaurant takeout orders via different methods (phone, online or chatbot)	None	Restaurant type	Social presence attitudes satisfaction behavior	Apply the contingency theory as the theoretical foundation to explore the fits between restaurant types (i.e. quick-service, full-service) and ordering methods	How chatbots can be added to the current digital ordering system to provide improved customer experiences	*RQ1:* How similar and different are the perceptions and behaviors of customers when using three different ordering methods	Compare the performance and customer perceptions of chatbots with other restaurant takeaway ordering methods based on social presence theory	Experimental design No real chatbots Structural equation modeling (SEM)	Restaurant	The phone and online ordering methods were both better than the chatbot method both in terms of satisfaction and behavior	The first attempt to examine consumers' interactions, attitudes and behaviors when using chatbots in food ordering processes
McLean *et al.* (2020)	Perceived usefulness of live chat communication	Attitudes toward the website Trust toward the website	Human warmth of the online travel representative Human safety of the online travel representative Human personalized content of the online travel representative Human attentiveness of the online travel representative	Intention to use (purchase)	The study aims to investigate the influence of perceived usefulness of live chat services and of their unique human attributes on customer attitudes, beliefs and behaviors in the context of online travel shopping	There are no empirical studies examining the variables that influence consumer attitudes, trust and purchase intent with the live chat experience, despite the growth of live chat at the expense of telephone sales and support. There is little research on the role of human elements in live chat communication and their impact on consumer perceptions and behavior	*RQ1:* How does the perceived usefulness of live chat communication influence customer attitudes toward the website, trust in the website and purchase intention? *RQ2*: How do human attributes (warmth, safety, personalization and attentiveness) moderate the effect of perceived usefulness of live chat on customer trust in the website, attitude toward the website and purchase intention?	Social presence theory	Quantitative Structural equation modeling (SEM)	Travel agencies	The perceived usefulness of live chat communication positively influences customer attitudes toward the website, trust in the website and purchase intent. The human attributes (warmth, safety, personalization and attentiveness) of the live chat assistant positively moderate this effect, strengthening the relationship between perceived usefulness of live chat and consumer responses	Provides empirical evidence on the impact of human communication via live chat on travel consumers' attitudes, trust and purchase intent. Extends social presence theory to the context of live chat services in the travel industry
Pillai and Sivathanu (2020)	Perceived ease of use Perceived usefulness Perceived trust Perceived intelligence Anthropomorphism Technological anxiety	None	Stickiness to traditional travel agents/ planners	Adoption intention Actual usage	To investigate the factors influencing the adoption intention and actual usage of artificial intelligence (AI) powered chatbots in the hotel and tourism industry in India. The study seeks to extend the technology acceptance model (TAM) with	To address the lack of research on the adoption of AI-based chatbots in the hospitality and tourism industry, especially in emerging economies such as India. The study also seeks to better understand how factors such as trust, perceived intelligence and	*RQ1:* What are the antecedents of the adoption of AI-based chatbots by consumers for tourism?	TAM along with human–robot interaction (HRI) variables – ANM, perceived intelligence, technology anxiety and perceived trust	Mixed	Travel agencies	Predictors of intention to adopt chatbots are: perceived ease of use, perceived usefulness, perceived trust, perceived intelligence and anthropomorphism. Technology anxiety does not influence intention to adopt chatbots.	The study extends the TAM to provide better explanatory power in the context of human-robot interaction by including specific constructs such as perceived trust, perceived intelligence, anthropomorphism and technological anxiety

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Table A1. Continued

Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
					context-specific variables	anthropomorphism influence the adoption of chatbots in this specific context					Preference for traditional human travel agents negatively moderates the relationship between adoption intention and actual chatbot use in tourism	
Lalicic and Weismayer (2021)	Values: openness to change, including stimulation and self-direction. Context-specific factors that motivate consumers to use AI-enabled travel service agents, such as personalization, convenience, ubiquity and superior functionality. Barriers and concerns that deter consumers from using AI chatbots, such as usage barriers, technology anxiety, privacy concerns and the need for personal interaction	Perceived value of cocreation: consumers' assessment of the value they derive from interacting and cocreating value with AI chatbots in the context of travel planning	None	Behavioral intentions: the likelihood that consumers will adopt and use AI-enabled travel service agents in the future	To examine the factors that influence consumers' attitudes toward AI-enabled travel service agents (perceived value cocreation) and their intentions to adopt these services. To understand consumers' reasoning for adopting AI-enabled travel service agents by analyzing the relationships between consumers' context-specific reasons and variables such as values, attitudes toward the service and perceived value cocreation	Lack of research on how new operational resources, such as AI chatbots, influence consumer perceptions of service processes. Need for context-specific variables to understand levels of consumer acceptance and perceived value cocreation in AI-enabled service encounters. The question of what reasons influence consumer perceptions of innovative service adoption remains unanswered	RQ1: How do values influence consumers reasoning process for adopting or not adopting AI-enabled service encounters? RQ2: What reasons affect the perceived value cocreation of AI-enabled service encounters, ultimately leading to usage intentions?	Behavioral reasoning theory (BRT) Service domain logic (S-D)	Fuzzy set comparative qualitative analysis (fsQCA)	Travel planning phase	The results mainly support hypotheses based on behavioral reasoning theory (BRT). It reveals four complex causal combinations of consumers' reasons and their intention to use AI-enabled services	Insights into a new area of consumer behavior and acceptance of AI-enabled service encounters. Identifies relevant reasoning processes and sheds light on perceived value cocreation and behavioral intentions. Provides a more detailed understanding of consumers' cognitive decision pathways that influence whether and how they will interact with innovative service encounters
Leung and Wen (2021)	Ordering method (chatbot, mobile, online)	Emotion	Restaurant type (full service, quick service)	Internal responses (satisfaction, behavioral intention); External behaviors (other items, other amounts)	Examine the role of consumption emotion in the digital food-ordering experience by comparing the performances of the three digital ordering methods in	Concern over declining service quality associated with the reduced interaction between customers and restaurant staff. Research is needed to examine and compare consumers'	*RQ1:* Differences between internal and external responses resulting from digital ordering experiences using online, mobile and chatbot ordering. *RQ2:* Identify the	Feelings-as-information (FaI) theory Expectancy-disconfirmation theory	Experimental design Structural equation modeling (SEM)	Restaurant	The online ordering method worked the best for quick-service restaurants, whereas the mobile ordering method was most suitable for full-service restaurants. Both positive and	First study that attempts to explore and compare consumers' emotional responses resulting from restaurant digital ordering experiences in the context of the three

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Table A1. Continued

Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
					an experimental design	food-ordering experiences on these platforms, including restaurant websites, mobile apps and smart speakers/ chatbots. No prior research has specifically examined consumers emotional responses when placing digital orders at restaurants	role of consumption emotions on the relationship between digital ordering methods and consumers' responses. *RQ3*: Explore whether there are differences in the above-mentioned relationships between the two types of restaurants (quick service vs full-service				negative emotions (comfort and annoyance) significantly mediated the relationships between the ordering method and internal responses (satisfaction /BI). Only one negative emotion (anger) significantly mediated the relationship between the ordering method and order amount	food-ordering methods. Developed a theoretical framework based on both the FaI theory and the expectancy-disconfirmation theory
Li *et al.* (2021)	Understandability Reliability Responsiveness Assurance Interactivity	Confirmation satisfaction	Technology anxiety (TA) taken positively	Use continuance	This study examines how users view chatbot services in OTAs by investigating the moderating role of technology anxiety	To identify five quality dimensions of chatbot services and investigate their effect on user confirmation, which, in turn, leads to use continuance	*RQ1:* The relationships between chatbot quality dimensions and postuse confirmation	Depending on how users see the chatbot-enabled services with different levels of TA, either as human-like agents or as another new type of technology-self-services, the way they assess their postuse confirmation against the service quality dimensions should be different	Quantitative Structural equation modeling (SEM)	Travel agencies	Understandability, reliability, assurance and interactivity are antecedents for user's postacceptance confirmation, as well as by proposing technology anxiety toward chatbots as a moderating factor for these relationships	Technology anxiety positively moderates the relationships between chatbot quality dimensions and postuse confirmation, suggesting some users may treat chatbot services as human-like agents
Melián-González *et al.* (2021)	Performance expectation Effort expectation Social influence Hedonic motivations Habit Perceived innovation Attitude toward self-service technologies Inconveniences Anthropomorphismautomation	Attitude toward self-service technologies (SSTA) mediates the relationship between perceived innovation and intention to use chatbots	None	Chatbots usage intention (CUI): The extent to which individuals plan to use chatbots in the future	Predict the intention to use chatbots for travel and tourism by examining the factors that influence consumers' willingness to interact with this technology	The study seeks to fill the research gap in the factors that explain why consumers are willing to interact with chatbots in the context of tourism, despite their increasing implementation in the industry	*RQ1:* What factors influence consumers' intention to use chatbots for travel and tourism? *RQ2:* How do performance expectations, ease of use, social influence, hedonic motivations, habitus, perceived	UTAUT2, a model widely used to explain the adoption of new technologies. It incorporates other factors relevant to the context of chatbots, such as attitude toward self-service technologies, inconvenience,	Quantitative Structural equation modeling (SEM)	Travel and tourism	Intention to use chatbots is positively influenced by: performance expectancy, usage habit, hedonic motivation, SI, Anthropomorphism, belief that chatbots will replace jobs (contrary to expectation). Intention to use	The usefulness of the UTAUT2 model in explaining the adoption of chatbots in the travel and tourism context. Additional chatbot-specific factors, such as inconvenience, anthropomorphism and automation, are used to better

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Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
							innovativeness, attitude toward self-service technologies, inconvenience, anthropomorphism and automation affect intention to use chatbots?	anthropomorphism and automation			chatbots is negatively influenced by: perceived inconvenience of using chatbots. Perceived innovation indirectly influences intention to use through attitudes toward self-service technologies. Effort expectancy has no significant effect on intention to use chatbots	understand usage intent. The positive relationship between automation and usage intent suggests that consumers may value the benefits of chatbots more than the potential job losses
Cai *et al.* (2022)	Social presence cues (human avatar, human name, use of client's name, detailed self-presentation) Emotional message cues (humor, empathy, emotional expressions with emoticons)	Perceived trustworthiness Perceived intelligence Perceived enjoyment	None	Usage intention (UI), intention to use online travel agency (OTA) chatbots	Explore the perceived signs of anthropomorphism in chatbots and their effects on customers' intention to use them in the context of online travel agencies (OTAs)	Lack of comprehensive research on customer and business concerns regarding the anthropomorphism of chatbots in the context of online travel services. Little research on the mechanisms that convey the impact of various anthropomorphic chatbot signals	*RQ1:* What are the main anthropomorphic signals of interest to customers and companies when using chatbots in the context of online travel services? *RQ2:* How do anthropomorphic signals (social presence and emotional messages) affect customers' intention to use chatbots? *RQ3:* What are the mechanisms underlying these effects?	The study is based on the theory of uncertainty reduction. Emotion theory as social information – the theory of emotions as social information. The study combines these theories with the technology acceptance model (TAM)	Mixed	Travel agencies	Social presence signals (use of human avatar, mention of customer's name) and emotional messaging signals (humor, empathy and emoticons) are the main anthropomorphic signals of interest to customers and companies. Perceived trust, perceived intelligence and perceived enjoyment mediate the effect of anthropomorphic cues on intention to use	The study contributes to the literature on chatbot anthropomorphism by providing a holistic understanding of multiple anthropomorphic design cues and their effects on customers' usage intention. Demonstrates that emotional message cues are more important than social presence cues in influencing chatbot usage intent. Clarifies the mechanisms through which perceived anthropomorphism influences customers' intention to use OTA chatbots

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Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
Pereira *et al.* (2022)	Information quality Service quality Perceived usefulness Perceived enjoyment Ease of use	Satisfaction Brand attachment	Need for employee interaction (NFI-SE): The extent to which a person prefers to interact with a human employee rather than an automated system	Continuous intention to use	Analyze the relationship between the dimensions of the technology acceptance model (TAM) and the information systems success model (ISS) with the intention of continuous use of chatbots in the context of tourism. The study also seeks to understand the role of satisfaction and brand attachment as mediators, and the need for employee interaction as a moderator	The study seeks to address the lack of research on the factors that contribute to consumers' intention to continue using chatbots, especially in the tourism sector. It also seeks to better understand the role of brand attachment in this context and how the need for human interaction may moderate the relationships between the variables	*RQ1:* How do information quality, service quality, perceived usefulness, perceived enjoyment and perceived ease of use influence user satisfaction with chatbots in the context of tourism? *RQ2:* How do user satisfaction and brand attachment influence the intention for continued use of chatbots? *RQ3:* How does the need for employee interaction moderate the relationships between ease of use, perceived usefulness, perceived enjoyment and user satisfaction, as well as the relationship between satisfaction and brand attachment?	Technology acceptance model (TAM) Information systems success model (ISS)	Quantitative Structural equation modeling (SEM)	Travel planning	Information quality, perceived usefulness, perceived ease of use and perceived enjoyment positively influence user satisfaction with chatbots. User satisfaction positively influences brand attachment and continued usage intention. Brand attachment positively influences continuous usage intention. The need for employee interaction moderates the relationship between satisfaction and brand attachment, so that this relationship is stronger for users with a greater need for human interaction	The study extends the literature on the intention to continuously use chatbots by integrating the TAM and ISS models and incorporating brand attachment as a mediator. It provides empirical evidence that the need for employee interaction may moderate the relationship between satisfaction and brand attachment in the context of chatbots. It contributes to the understanding of the factors that drive the continued use of chatbots in the tourism sector, which may be useful for companies and developers seeking to improve customer experience and foster loyalty
Rafiq *et al.* (2022)	Perceived usability Interactivity Perceived intelligence Anthropomorphism	Cognitive attitude Affective attitude	None	Adoption intention	Identify the key factors influencing consumer attitudes toward the adoption of AI chatbots in tourism. Determine how consumer attitude influences their response (adoption intention) toward AI chatbots in tourism	The study aims to fill the gap in research on the adoption of AI chatbots in tourism, especially in developing markets. It addresses the lack of studies using the stimulus-organism-response (S-O-R) theoretical	*RQ1:* What are the key attributes that determine attitudes toward the adoption of AI-based chatbots in tourism? *RQ2:* To what extent do consumer attitudes influence their responses to tourism chatbots?	Stimulus-organism-response (S-O-R) theoretical framework	Quantitative Structural equation modeling (SEM)	Travel agencies	The S-O-R theoretical framework is suitable for assessing intentions to adopt chatbots in tourism. Perceived usability, interactivity, perceived intelligence and anthropomorphism	The study extends the literature on the adoption of AI chatbots by applying the S-O-R theoretical framework in the context of tourism. It provides empirical evidence that both rational (cognitive attitude)

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Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
						framework to analyze the influence of AI chatbot characteristics on adoption intention					positively influence consumers' attitudes toward the adoption of AI chatbots. Cognitive and affective attitudes positively influence consumers' intention to adopt AI chatbots	and emotional (affective attitude) factors are important in predicting AI chatbot adoption intention. The study validates the relevance of the S-O-R model for understanding the adoption of emerging technologies such as AI chatbots in the tourism industry
Yoon and Yu (2022)	Findable Usable Desirable Valuable Accessible Attitude	Attitude	None	Utilization intention	Measures the characteristics of consumer chatbot experiences and analyzes their impact on future acceptance intentions through their attitudes toward the RMC chatbot service	There is a lack of research on the attitudes and intentions regarding chatbot using services in the actual dine-out process	*RQ1:* What are the antecedents of possible dine-out consumers' restaurant-menu curation (RMC) chatbot services acceptance?	Morville'sUX honeycomb model (2007) may affect future use intentions or attitudes toward new technology such as chatbots	Experimental design (Chatbot prototype) Structural equation modeling (SEM)	Restaurant	All experience characteristics, except usable facets, had a significant positive impact on attitudes toward the chatbot. Three experience characteristics, usable, usefulness and valuable, revealed a significant positive effect on intention of use. Attitudes also significantly affected intention of use	Evaluate the introduction of curation chatbot services in the restaurant sector, by developing and testing the dining-out curation service protocol to help customers' smart choices in the information technology environment
Dhiman and Jamwal (2023)	Task characteristics Technology characteristics	Task-technology fit Confirmation Perceived usefulness	None	Satisfaction Intention of continued use	Investigating the factors triggering customers to continue to use chatbots in a travel planning context	The study seeks to address the lack of research on why people continue to use chatbots despite existing concerns such as misinterpretation of language, privacy concerns and chatbot performance. It also seeks to	*RQ1:* How do task and technology characteristics influence perceived task-technology fit in chatbot users? *RQ2:* How does task-technology fit affect confirmation of expectations, perceived usefulness, satisfaction and	Task-technology fit model (TTF). Expectation confirmation model (ECM)	Quantitative Structural equation modeling (SEM)	Travel agencies	User expectations are confirmed when they believe that the chatbots' technology features meet their task-related characteristics. Task-technology fit and expectation confirmation have a positive impact on the perceived usefulness of	The study contributes to the literature on AI technology by identifying potential determinants of the continued use of chatbots. It provides an alternative explanation of the factors that drive the continuous usage

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Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
						address the lack of research explaining how customers perceive chatbot services in relation to their various task requirements	intention for continued use of chatbots? *RQ3:* What are the main predictors of satisfaction and intention for continued use of chatbots in the context of travel planning?				chatbots. Perceived usefulness and confirmation positively influence customers' satisfaction with chatbots. Customer satisfaction is the predominant predictor of their intention to continue using chatbots	intention of AI-based chatbots. It offers an integrated model (TTF and ECM) for understanding the continuous usage intention of chatbots, which can serve as a guide for future research in similar contexts
Jha *et al.* (2023)	Motivated consumer innovativeness (MCI): it consists of four dimensions: fMCI (functional) hMCI (hedonic) sMCI (social) cMCI (cognitive)	Attitude Trust	None	Intention to use	Examine how the four dimensions of the ICM influence consumers' attitude and trust toward chatbots. Analyze how attitude and trust affect consumers' intention to use chatbots in the travel and tourism sector	The lack of studies examining ICM in the context of chatbots: previous research has mainly focused on models such as the technology acceptance model (TAM) and the performance expectancy model (PEM), but has not explored in depth how consumer motivation influences chatbot adoption. Little research on the impact of ICM on chatbot usage intention in the travel and tourism sector: this study seeks to fill this gap by investigating how different dimensions of ICM affect attitude, trust and ultimately, chatbot usage intention in this specific sector	*RQ1:* How do functional, hedonic, social and cognitive dimensions of ICM influence consumers' attitudes toward chatbots? *RQ2:* How do the functional, hedonic, social and cognitive dimensions of ICM affect consumers' trust in chatbots? *RQ3:* What is the impact of attitude and trust on consumers' intention to use chatbots?	Motivated consumer innovation theory (MCI). Theory of reasoned action (TRA)	Mixed	Travel and tourism	All dimensions of the ICM positively influence attitude: consumers who are motivated by functional, hedonic, social and cognitive factors have a more positive attitude toward the use of chatbots. Only the functional and cognitive dimensions of the ICM positively influence trust: consumers who seek utility and intellectual stimulation from chatbots are more likely to trust them. Attitude and trust positively influence intention to use: consumers with a positive attitude and trust in chatbots are more likely to use them in the future	Expands the literature on chatbot adoption: applies ICM theory to the context of chatbots and provides empirical evidence of its impact on attitude, trust and intention to use. Introduces a dual mediation model: examines the mediating role of both attitude and trust in the relationship between ICM and intention to use, providing a more complete understanding of the drivers of chatbot adoption

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Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
Jin and Youn (2023)	Anthropomorphism (human-likeness, animacy and intelligence)	Social presence Imagery processing	None	Psychological ownership of the products/ services promoted by AI-chatbots. AI-chatbot continuance intention	Examine the associations among AI-powered chatbots' anthropomorphism, social presence, imagery processing, psychological ownership, and continuance intention in the context of Human-AI-Interaction	No prior research has examined feelings of social presence and imagery processing as variables correlated with continuance intention toward AI-chatbots in the fashion/tourism marketing context. There is a dearth of empirical research on users' psychological ownership in the emerging context of human-AI-interaction	*RQ1:* How do the dimensions of anthropomorphic chatbots (human-likeness, animacy and intelligence) affect consumers' feelings of social presence and imagery processing? *RQ2:* How do social presence and imagery processing influence psychological ownership and continuance intention of AI-chatbots?	The study draws on the literature on AI-chatbots, consumer psychology and theories of social presence. It is based on the premise that anthropomorphic chatbots can induce feelings of social presence and imagery processing, which, in turn, can lead to psychological ownership and continuance intention	Quantitative Structural equation modeling (SEM)	Fashion and tourism industries	Perceived human-likeness of AI-powered chatbots is a positive predictor of social presence and imagery processing. Imagery processing is a positive predictor of psychological ownership. Social presence and imagery processing are positive predictors of AI-chatbot continuance intention	Adds original theoretical propositions about the association between anthropomorphic AI, social presence and imagery processing to the human-AI-interaction literature. Provides empirical evidence for the positive impact of anthropomorphism, social presence and imagery processing on chatbot continuance intention
Lei *et al.* (2023)	Perceived ease of use Perceived usefulness Media richness Social presence Task attraction Social attraction	The user's trust in the chatbot	None	Reuse intention	To investigate the determinants of customers' intention to reuse chatbots and instant messaging (IM) in the context of the tourism and hospitality industry, integrating three theoretical perspectives: the technology acceptance model (TAM), computer-mediated communication (CMC) theories and interpersonal communication theories	Previous research on conversational agents has mainly focused on physical bots rather than chatbots. There is a lack of empirical evidence on what factors determine customer adoption of chatbots, and understanding of chatbots has been limited to research dominated by a single theoretical perspective, primarily TAM, which ignores the social and relationship-building aspects of communication technologies	*RQ1:* How do perceived ease of use, perceived usefulness, media richness, social presence, task attractiveness and social attractiveness influence trust and intention to reuse chatbots? *RQ2:* Are there differences in the effects of these factors between chatbot users and instant messaging (IM) users with human customer service representatives?	TAM CMC theories Theories of interpersonal communication	Quantitative Multigroup structural equation modeling	Tourism and hospitality services	Interpersonal attraction theory-related variables (task attraction, social attraction) have the largest effects on customer trust and reuse intention for conversational agents. For chatbot users, TAM-related variables (perceived ease of use and perceived usefulness) are significant predictors of trust and reuse intention. For IM users, social presence and task attractiveness are important determinants of reuse intention	The study provides empirical evidence on the relevance of different theoretical perspectives (TAM, CMC and interpersonal attraction) in explaining the reuse intention of chatbots and IM in tourism and hospitality. It highlights the interpersonal attraction factors in the formation of trust and reuse intention of chatbots. Provides insights into the differences in factors influencing the reuse of chatbots compared to IM with human customer service representatives

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Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
Maar *et al.* (2023)	Customer generation (GenX, GenZ); Chatbot communication style (warmth chatbot; chatbot competences); Service context (medical or restaurants)	Warm chatbot and chatbot competence) customers' chatbot-related attitudes	Service context and customer generation	Customers' chatbot-related attitudes Chatbot-related usage intention	Analyze customers' chatbot-related attitudes and usage intentions in service retailing (restaurant and medical services)	The increasingly relevant segments of hyperconnected digital natives seem to differ from the older digital immigrant customer generations (Prensky, 2001) in terms of chatbot acceptance. Few studies on chatbot communication style that focus on specific age groups or settings	*RQ1:* How service retailers can overcome the limited chatbot acceptance of their customers by shedding greater light on how a chatbot's communication style, the customer's generation and the service context affect the attitude toward and ultimately the intention to use chatbots	Reasoned action perspective with the key dimensions (i.e. warmth and competence) of the stereotype content model (SCM)	Experimental design	Restaurant	GenZ shows more positive attitudes toward chatbots than GenX, due to higher perceptions of warmth and competence. While GenZ has similar attitudes toward chatbots with a communication style that is high or low in social orientation, GenX perceives chatbots with a high social orientation as warmer and has more favorable attitudes toward chatbots. Furthermore, the positive effect of chatbot-related attitudes on usage intentions is stronger for GenX than for GenZ. These effects do not significantly differ between the considered contexts	To provide first insights into the extent to which service retailers need to consider differences between these segments when designing chatbots. Examine specific user groups accounting for generational differences. Warmth and competence as mediators to better understand the underlying processes that shape a customer's chatbot-related attitude. The use of chatbots for routine tasks in medical and restaurant settings. Medical and restaurant
Meng *et al.* (2023)	A double-sided message strategy. Double-sided messages	Perceived authenticity	Types of customer demand: inquiries (questions about information) versus complaints (expressions of dissatisfaction)	Intention of use with chatbot	Examine how a two-sided message strategy (as opposed to one-sided positive messages) can increase customers' willingness to communicate with AI chatbots after disclosing their nonhuman identity. Investigate the	Lack of research on how to increase the acceptance of AI chatbots after identity disclosure. Need to understand the underlying mechanisms: more research is needed to understand the psychological processes (such as perceived	*RQ1:* Do bilateral (versus unilateral positive) messages increase customers' willingness to communicate with AI chatbots after revealing their nonhuman identity? *RQ2*: Does perceived authenticity mediate the relationship	Inoculation theory	Experimental design	Hotel reservations and travel agencies	Study indicates that the adoption of a two-sided message strategy can be effective in inoculating customers against negative perceptions. Results indicate that the two-sided message strategy may be more	Demonstrates how and what actions can be taken to mitigate the potential negative effects of nonhuman identity disclosure of AI chatbots. Extends the application of inoculation theory to tourism, particularly in the

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Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
					mediating role of perceived authenticity in this relationship. Explore how customer demand types (inquiries versus complaints) moderate the effect of messaging strategy on willingness to communicate	authenticity) that explain why certain strategies work. Limited exploration of moderating effects: it is unclear whether the effectiveness of messaging strategies varies across different types of customer interactions	between message strategy and willingness to communicate? *RQ3*: Does customer demand type (query versus complaint) moderate the effect of message strategy on willingness to communicate?				effective than the one-sided positive message strategy for inquiries, but not for complaints	context of the interaction between AI chatbots and customers. Explains the relationship between a two-sided messaging strategy and customers' willingness to communicate with AI chatbots
Zhang *et al.* (2023)	Time risk Performance expectancy Effort expectancy Social influence Hedonic motivation Habit Anthropomorphism Personalization	None	Gender	Continuance intention to use	Predicting continuance intention to use AI-based chatbots for tourism	Lack of research on the determinants that explain why customers continuously use chatbots for tourism	*RQ1:* Identify the potential predictors for the use of chatbots for tourism and examine the moderating role of gender differences in the integrated model	Unified theory of adoption and use of technology 2 (UTAUT2). The theory of perceived risk (TPR), anthropomorphism and personalization	Quantitative Structural equation modeling (SEM)	Travel agencies	Positive effects of performance expectancy, social influence, habit, anthropomorphism and personalization. Time risk and privacy risk have negative influences. Although the moderating test did find two differences due to gender, many other relationships showed no differences between male and female customers	First to construct an integrated model in the context of chatbot use through integration of UTAUT2 and TPR. Contrary to Melian-González *et al.* the influence of hedonic motivation in this research was insignificant associated with customers' continuance intention to use chatbots for tourism. This study is one of the earliest attempts to explore the moderating role of gender differences in continuance intention of chatbots for tourism

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Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
Zhu *et al.* (2023)	Interaction (control, responsiveness, personalization) Quality of information	Perceived usefulness Perceived usefulness of the AI chatbot	Familiarity with the product	Customer confidence Purchase intention Customer trust	Investigate how customers' perceptions of AI chatbots in online travel agencies (OTAs) influence their cognitive and emotional states, ultimately impacting their trust and purchase intentions, with a focus on the moderating role of product familiarity	The study addresses the knowledge gap on how the characteristics of AI chatbots influence consumer responses. Despite the growing use of chatbots in tourism and hospitality, there was a lack of research on how the interaction and quality of information provided by chatbots affecting customer trust and purchase intent. In addition, the study extends previous research by considering the moderating role of product familiarity in these relationships	*RQ1:* What characteristics of AI chatbots in OTA environments influence the attitude and cognitive behavior of potential tourists? *RQ2:* How do potential tourists with different levels of product familiarity respond to AI chatbots on perceptions of usefulness, trust and purchase intent in OTAs?	This study integrates the stimulus-organism-response (SOR) framework with cognitive consistency theory to explain how AI chatbot features, perceived usefulness and product familiarity influence customer trust and purchase intent	Quantitative	Travel agencies	AI chatbot interactivity (control, responsiveness and personalization) and information quality significantly influence customer trust and purchase intent. Perceived usefulness mediates the relationship between interactivity, information quality and customer trust/ purchase intent. Product familiarity positively moderates the relationship between perceived usefulness and customer trust. However, it does not moderate the relationship between perceived usefulness and purchase intention	Validates the application of the SOR framework to the context of AI chatbots in OTAs. Expands understanding of the mechanisms of human-computer interaction influence and information quality on customer responses to AI chatbots. Highlights the importance of considering product familiarity when designing and implementing AI chatbots services in OTAs

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Table A1. Continued

Study	Independent variables	Mediator	Moderator	Dependent variables	Research focus	Research gaps	Research questions	Theoretical rationale	Methodology	Hospitality and tourism services	Mayor findings	Theoretical contributions
Majid *et al.* (2024)	Performance expectation Expectation of effort Customization Credibility Privacy control Habit Timeliness Accessibility Efficiency (cost, effort and time) Government support Income Educational level Location	Use of chatbots (adoption and continued use)	Past behavior Environmental identity Environmental values Environmental awareness	Spillover of pro-environmental behavior in the use of environmentally friendly transport	Conceptualize a chatbot designed to facilitate pro-environmental behavior (PEB) transfer among domestic tourists in the Gili Islands, Indonesia. The study focuses on how nudges delivered through the chatbot can encourage tourists to continue green transportation practices after their trip	Limited research on the use of chatbots for prosocial nudging, particularly in the context of tourism and transfer EBP	*RQ1:* How can a chatbot be designed to facilitate proenvironmental transfer behavior among tourists? *RQ2:* What factors enable and hinder the effectiveness of chatbot-based nudges to promote transfer EBP?	Nudging theory with the EBP theory of transfer. Theories of technology acceptance to identify factors influencing the adoption of chatbots	Exploratory design Structural equation modeling (SEM)	Sustainable tourism	The study conceptualizes a chatbot designed to interact with tourists via WhatsApp, providing personalized messages and information about their sustainable travel behavior on islands. It identifies several factors that may influence chatbot adoption (e.g. performance expectation, effort expectation, personalization, credibility, privacy control, habit and temporality) and transfer EBP (e.g. accessibility, efficiency, government support, income, education level and location). The findings suggest that the chatbot is best implemented by the Indonesian central government in collaboration with regional governments and tourism stakeholders	Provides a framework for developing and implementing chatbots for prosocial nudging in tourism, particularly related to transfer EBP. Contributes to the limited literature on the use of chatbots to facilitate behavior change with a proenvironmental focus. Offers insights on the potential of AI and chatbots to transform tourism experiences and shape lasting responsible behaviors

Source: Authors' own work

Appendix 2

Table A2. Questionnaire, reliability and validity test results

	Factors and items	CCR loadings (SMC)
EE	*EFFORT EXPECTANCY adapted from Venkatesh et al. (2012)*	
EE1	The operation of a chatbot that recommends bars and restaurants via WhatsApp is easy to learn	0.733
EE2	Using a chatbot to recommend bars and restaurants through WhatsApp is intuitive	0.777
EE3	The recommendations of a chatbot recommending bars and restaurants via WhatsApp are clear and understandable	0.796
EE4	The chatbot recommending bars and restaurants through WhatsApp allows me to be more qualified to suggest where to eat	0.764
FC	*FACILITINGS CONDITIONS adapted from Venkatesh et al. (2012)*	
FC1	The chatbot that recommends bars and restaurants through WhatsApp has a personalized service	0.790
FC2	The chatbot that recommends bars and restaurants via WhatsApp provides truthful recommendations	0.772
FC3	The chatbot that recommends bars and restaurants via WhatsApp is safe	0.830
HT	*HABIT adapted fromVenkatesh et al. (2012)*	
HT1	It is very natural for me to use Chatbot via WhatsApp to ask for recommendations in general	0.839
HT2	To get recommendations on where to go to eat I frequently use Chatbot via WhatsApp	0.912
HT3	It's a habit for me to ask where to go to eat via WhatsApp	0.895
HT4	Using Chatbot on WhatsApp to decide where to go to eat has become natural for me	0.924
HT5	If I want to eat well, I use the chatbot to recommend bars and restaurants via WhatsApp	0.843
HM	*HEDONIC MOTIVATION adapted from Venkatesh et al. (2012)*	
HM1	Using a chatbot to recommend bars and restaurants through WhatsApp is fun for consulting where to go to eat	0.770
HM2	The use of a chatbot to recommend bars and restaurants through WhatsApp is fun to consult where to go to eat	0.845
HM3	The use of a chatbot to recommend bars and restaurants through WhatsApp is entertaining	0.776
HM4	The use of a chatbot to recommend bars and restaurants through WhatsApp is enjoyable to consult where to go to eat	0.825
HM5	I find using a bar and restaurant recommendation chatbot on WhatsApp more fun, enjoyable, etc., than my usual search options	0.798
HM6	Using a chatbot to recommend bars and restaurants on WhatsApp seems to me more enjoyable, etc., to find a restaurant faster	0.754
PE	*PERFORMANCE EXPECTANCY adapted from Venkatesh et al. (2012)*	
PE4	What I expect when consulting a restaurant and bar recommendation chatbot is to find an establishment more adapted to the price I want to spend	0.812
PV	*PRICE VALUE (adapted from Venkatesh et al. (2012)*	
PV1	You use a bar and restaurant recommendation chatbot via WhatsApp because it is a free service as you only need to have a data or WIFI connection	0.578
PV2	The value for money of the WhatsApp bar and restaurant recommendation chatbot is better than other search options	0.544

(*continued*)

Table A2. Continued

	Factors and items	CCR loadings (SMC)
SI	*SOCIAL INFLUENCE adapted from Venkatesh et al. (2012)*	
SI1	When using a bar and restaurant recommendation chatbot on WhatsApp AskVicente is influenced by people who think I should use a chatbot to receive restaurant recommendations	1.000
BI	*BEHAVIORAL INTENTION adapted from Venkatesh et al. (2012)*	
BI1	I will recommend others using chatbots via WhatsApp to find a restaurant or bar	0.219
BI2	I will use chatbots via WhatsApp to recommend me where to go to eat	0.211
BI3	Chatbots on WhatsApp will be one of my favorite channels to find a restaurant to eat	0.245
BI4	I will continue to use chatbots on WhatsApp as it is faster than searching the internet	0.247
BI5	I will use it in the future	0.266

Source: Authors' own work

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