

# Antecedents and consequences of travelers' trust towards personalized travel recommendations offered by ChatGPT

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## ABSTRACT

This study examines the influence of relevance, credibility, usefulness, and intelligence of the personalized travel recommendation offered by ChatGPT on travelers' trust and behavioral intentions. First, a lay theory study was conducted to test travelers' intuitive beliefs by collecting data from 102 panelists recruited on Prolific. The second study was based on the data collected from 344 respondents via Amazon MTurk. Findings indicated that ChatGPT personalized travel recommendation's relevance, credibility, usefulness, and intelligence significantly positively influence perceived trust. Moreover, perceived trust has a significantly positive influence on behavioral intentions. It is the first study that has focused on travelers' interaction with ChatGPT by integrating the affordance-actualization theory and the model of ad credibility. Practical implications and relevant future research suggestions are also provided.

## 1. Introduction

Over the last few years, advances in Natural Language Processing (NLP) have led to the emergence of conversational agents that can understand and produce language that resembles human communication (Paul et al., 2023). ChatGPT is among the most sophisticated and flexible language models. It utilizes the GPT-3.5 architecture and has been trained on a massive collection of text data, which enables it to generate logical and contextually suitable responses to various prompts. It has diverse applications, including chatbots, text generation, and language translation tasks. It produces natural and human-like responses in real-time, is flexible to customization, and can adapt to varying user demands (Ali and OpenAI, 2023). ChatGPT had over one million registered users within five days of its launch, and in a month, the number of active users exceeded 100 million (Paul et al., 2023). With ChatGPT's immense popularity, there is an expected surge in the adoption of consumer-facing AI and NLP chatbots (Ahmed, 2023). The deployment of AI and NLP chatbots has recently enhanced consumer marketing and customer service efficacy (Dwivedi et al., 2021).

Chatbots have been implemented in several capacities, such as facilitating customer orders, responding to frequently asked questions, and delivering product recommendations within the hospitality and

tourism industries (Pillai and Sivathanu, 2020). For example, notable companies, like Pizza Hut and Malaysia Airlines, have utilized chatbots by integrating them into widely used chat platforms familiar to users, such as Facebook Messenger, Slack, WhatsApp, and WeChat (Tan and Liew, 2022). Another example is Kayak, which launched a travel planning chatbot on Facebook Messenger in 2016. The chatbot can help users search for flights, hotels, and rental cars, and it can also provide personalized travel recommendations based on the user's preferences (Loureiro et al., 2022). By doing so, these organizations can provide automated personas to receive inquiries and distribute information at any time and location (Kabadayi et al., 2019). In addition, using chatbots, companies can replicate the function of a product advisor by initiating a series of questions about the user's preferences and presenting personalized product recommendations based on their responses.

This study focuses on ChatGPT, which goes beyond a typical chatbot. As quoted in Carvalho and Ivanov (2023), ChatGPT itself states that its "advanced language understanding and ability to generate and process large amounts of data make it a valuable tool for businesses to enhance decision-making and improve overall efficiency." While there are several potential use cases of ChatGPT for travel service providers, its main application lies in using it as a tool for personalized recommendations to

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travelers (Sorrells, 2023). For example, the travel giant – Expedia announced in a tweet about slapping a beta ChatGPT interface into its app. The interface should let users plan their vacation by offering the chatbot their preferences, time of stay, and budget, and the system should create some natural language responses offering hotel or activity suggestions (Barr, 2023). In addition, GuideGeek, a ChatGPT-powered travel assistant from the Matador Network, offers travel tips and live flight and vacation rental data and is accessible via WhatsApp.

Generic literature on chatbots and the specific case studies of ChatGPT in the hospitality and tourism industry indicate several benefits and motivations for using ChatGPT. These include 24/7 availability to respond to customer inquiries, increasing efficiency by handling multiple requests simultaneously, and reducing the cost of customer service by automating routine inquiries (Chui et al., 2022). Nonetheless, the biggest motivation to incorporate ChatGPT for hospitality and tourism service providers is its ability to understand the preferences and needs of individual customers and provides personalized recommendations that meet their specific requirements (Paul et al., 2023). Despite these motivations of ChatGPT, its use to offer personalized recommendations poses several risks (Carvalho and Ivanov, 2023). ChatGPT relies on a knowledge base to provide recommendations. If the data in the knowledge base is accurate or updated, the recommendations may be incorrect and not trustworthy to customers (Carvalho and Ivanov, 2023; Reiss, 2023). Research has revealed that consumers tend to distrust AI's capability to infer their preferences accurately (Kim et al., 2021).

Furthermore, previous studies on customer support have demonstrated that individuals may feel considerable discomfort and perceive risks when interacting with AI robots and recommendation systems (Huang and Rust, 2018). Against this backdrop, creating personalized travel recommendations that are trustworthy and credible is becoming a critical hurdle for travel service providers who want to utilize ChatGPT. Even though several providers have already begun to use ChatGPT, it is still a relatively new technology for providers and consumers. Both practitioners and academics have recognized that the credibility of ChatGPT should be considered in terms of its message effectiveness. However, the factors influencing travelers' trust in ChatGPT's personalized travel recommendations and the consequences of this trust have yet to be investigated.

This study intends to unpack the black box of travelers' trust in ChatGPT's personalized travel recommendations. Affordance-actualization (A-A) theory is the theoretical framework to guide this exploration. Gibson (1986) initially introduced the concept of affordances as objects in terms of their action potential rather than their physical properties. In information systems, affordances are defined as "the possibility for goal-oriented actions afforded to specific user groups by technical objects" (Markus and Silver, 2008; p. 622). Access to affordances does not ensure success, as they only indicate the potential for action rather than the actual results. To turn potential into actual outcomes, individuals must take purposeful actions and use technology to achieve their goals. This process is called 'affordance actualization' (Burton-Jones and Volkoff). Acceptance of personalized travel recommendations by ChatGPT is a process in which its affordances are actualized. This study adopts Choi and Rifon's (2002) model of ad credibility to propose relevance, credibility, usefulness, and intelligence of the personalized recommendation as affordances, leading to trust as an actualization and behavioral intentions.

## 2. Literature review

### 2.1. Chatbots and AI-Based travel recommendation systems

The hospitality industry has been using technology to improve the quality of customer service, enhance operational service and increase revenue. Chatbots and AI-powered travel recommendation systems are rapidly revolutionizing the hospitality industry, providing personalized and efficient experiences to customers (Ashfaq et al., 2020). These

systems are developed as popular ways to provide personalized travel experiences and customer service (Pillai and Sivathanu, 2020). Chatbots are computer programs that simulate text or voice instructions to imitate human communication. At the same time, AI-based travel recommendation systems use artificial intelligence algorithms to offer travel possibilities based on user preferences (Ali, 2023 and Shin et al., 2021). Chatbots can help hotels reduce costs by minimizing the workload of customer service representatives and enhancing the speed with which they respond to consumer inquiries (Buhalis and Cheng, 2020). In addition, chatbots can improve the customer experience by providing 24/7 support and personalization (Hildebrand and Bergner, 2021).

Chatbots and AI-based travel recommendation systems rapidly transform the travel industry (Ivanov, 2019). These systems analyze user data through machine learning algorithms and provide personalized travel suggestions based on their interests, such as favorite activities, cuisine preferences, and spending plans (Gao et al., 2015 and Gavalas et al., 2014). According to Shi et al., (2021), AI-based travel recommendation systems can significantly increase customer satisfaction and loyalty. In addition, these systems save travelers time and money by recommending low-cost lodging and activities (Zhang and Law, 2018). It may also save travel agents' time by automating routine operations such as booking flights and hotels, allowing them to focus on more sophisticated work such as itinerary planning and customer support (Saeed and Shafi, 2021). Overall, chatbots and AI-based travel recommendation systems have the potential to improve customer service and provide personalized travel experiences in the hospitality industry.

### 2.2. Theoretical framework: affordances and actualization theory

Affordance and Actualization (A-A) Theory is a theoretical framework developed by Gibson in 1977. According to Gibson (1977), the term "affordances" was introduced and derived from the verb "to afford," signifying the capacity to enable, handle, or tolerate something (Stofregen, 2018). Affordance has several definitions depending on the context in which it is used. It has been defined in various ways across different fields. It proposes that objects and environments offer individuals opportunities for action, which are perceived based on their abilities, goals, and experiences (Lee et al., 2014).

On the other hand, actualization pertains to how individuals perceive and utilize affordances to accomplish their objectives. This process entails a combination of perception, cognition, and action (Bernard et al., 2013). The theory attempts to describe how people perceive and interact with their environment and are characteristics or attributes of an object that signal or suggest possible actions to be taken with that object. These cues serve as prompts that guide users in engaging with various technologies and other objects (Shin and Park, 2019).

This theory has been proven by examining how the attributes of technologies interact with the qualities of users and in similar contexts in which they are used (Shin, 2022; Waizenegger et al., 2020; Pozzi et al., 2014). Leonardi (2011) has explored the relationship between affordances and actualization in the field of information systems (IS). He suggested that individuals evaluate technology based on how they perceive its potential to aid or hinder their goals. The perceived benefits of technology are determined by its affordances, which reflect the extent to which users can recognize and utilize the available action possibilities (Gupta and George, 2016; Lehrig et al., 2017). When users recognize the potential actions that technology enables, it can increase usage and improve performance. Especially when it comes to new technologies, it is crucial to conduct user research and explore potential novel uses to unlock their full potential (Ali, 2023; Liang et al., 2015). According to Seidel et al. (2013), perceiving affordances involves identifying how technology features can be utilized in each context for the user's specific purposes. This recognition of how novel technologies can facilitate new actions can result in new intentions regarding information systems and may lead to transformative change (Pentland et al., 2022). However, it is

essential to note that the mere recognition of affordances does not lead to actual outcomes; instead, it is through the user's interaction with technology, as they take advantage of one or more affordances to achieve a concrete outcome in support of their motivations, that actualization occurs. This process is iterative, as the actions of actualization lead to outcomes that create new affordances. As users actualize these affordances, they gain new abilities and perform specific actions (Shin, 2022).

In this study, affordance and actualization frameworks were anchored in the objective to explore understanding affordance and actualization of the personalized travel recommendations offered by ChatGPT. We adopt the affordance definition presented by Strong et al. (2014) to elucidate the concept. According to this definition, an affordance signifies the inherent capacity for actions aimed at achieving immediate tangible results, originating from the interaction between a designed object and a purpose-driven individual or group. While this definition was initially conceived to facilitate the analysis of affordance theory in scenarios involving groups of actors engaging with complex objects, its relevance extends to our current investigation despite our focus on an individual user and a singular technological object i.e., personalized travel itineraries offered by ChatGPT. In this context, the affordance pertains to the potential provided by ChatGPT, while the desired outcome and utilization intentions stem from the interplay between the technological artifact and the goal-oriented user – the traveler. We ground this research in the theory of affordance and actualization to test whether the relevance, credibility, usefulness, and intelligence of the personalized travel recommendation as affordances lead to trust and behavioral intentions as actualization.

### 2.3. Trust

Trust refers to a person's confidence in the behavior of others, which is based on their expectations (Gu et al., 2009). It is defined as the capacity of an individual to be open and exposed to the actions or decisions of another party without fearing negative consequences (Cheng et al., 2022). Lewicki and Wiethoff (2000) also defined trust as an individual's confidence in and readiness to act based on another person's words, deeds, and choices. Traditionally, trust has been associated with human relationships, and there is debate about whether trust can be attributed to the relationship between humans and technology (Przegalinska et al., 2019). Nevertheless, trust is essential in technology adoption (Johnson et al., 2008). The studies focusing on trust in technology, where the object of trust is a technological device such as an information system or a recommendation agent, show that trust in this context has been described as similar to trust between individuals in that it refers to the extent to which the person who trusts is willing to rely on a software program to carry out a specific task. Theories about trust and technology acceptance have been utilized to understand how humans perceive and interact with recommendation agents in technology (Lankton et al., 2014; Li et al., 2008).

Trust in AI agents, such as chatbots, can be viewed as an extension of interpersonal trust, referring to the degree to which a consumer feels assured and prepared to act upon the actions or advice provided by an AI agent. Trust in AI is considered as the belief that a vendor's services and/or reported results are reliable and trustworthy, and that the vendor will fulfill obligations in an exchange relationship with the user (Shin, 2021). Additionally, the consumer's level of trust in AI agents is viewed as the primary indication of acceptance (Wang et al., 2023). Previous research has indicated that placing trust in AI can result in favorable outcomes, including a greater dependence on AI agents, a heightened perception of AI performance, and increased trust in purchasing decisions (Cheng et al., 2022). Several factors can influence trust in chatbots, including their resemblance to human-like visual appearance, conversational content, and conversational performance, such as the chatbot's capacity to avoid communication breakdowns (Law et al., 2022). Eventually, trust can be built through the cognitive process of evaluating benefits,

and the capabilities of chatbots play a critical role in delivering these benefits (Wang et al., 2022). Folstad et al. (2018) indicated that the trust in chatbots for customer service is influenced by factors related to the chatbot itself, such as its ability to interpret requests and provide advice, its degree of human-likeness, its presentation style, and its professional appearance. Additionally, trust is impacted by contextual factors surrounding the service, such as the brand of the chatbot host, the level of perceived security and privacy offered by the chatbot, and the user's general risk perceptions regarding the topic of their request.

### 2.4. Hypotheses development

Chatbots rely on user data to enhance the design and delivery of personalized products and customized services. Algorithmic trust is a perception of how users perceive such algorithms as a more reliable mechanism of their data than operations managed by humans (Shin, 2022). Algorithmic trust helps ensure that firms will not be exposed to the risk of losing the trust of their users and customers, which in turn endows reliability to the chatbot. In this way, reliability is viewed as synonymous with believability, and its assessment will govern the persuasiveness (or relevance) of the source/message (O'Riley et al., 2016). For any source, such as a chatbot, to be reliable, research suggests it to be relevant, credible, useful, and intelligent (Jahn and Weber, 2021; Pillai and Sivathanu, 2020).

Relevance can be a crucial aspect of chatbot intelligence as it determines the effectiveness and usefulness of the interactions between the chatbot and the user (Adamopoulou and Moussiades, 2020). Relevance can be defined as the ability of a chatbot to generate responses or take actions that are pertinent and appropriate to the user's queries and the context of the conversation. A relevant response is one that directly addresses the user's query or request and provides useful and accurate information or assistance (Folstad and Taylor, 2021). Relevance has been identified as an essential factor in developing trust between users and chatbots. For example, in a study by Sharma and Ahmad (2020), the participants interacted with a chatbot that provided personalized news articles. The results showed that the perceived relevance of the articles significantly affected users' trust in the chatbot. Similarly, Alkhodairi and Basu (2021) found that perceived relevance was one of the critical factors influencing users' trust in the chatbot.

Moreover, credibility can be defined as the degree of believability. Credible information is believable information (Tseng and Fogg, 1999). Sources that are considered credible are often described as "trustworthy" and possessing "expertise." The credibility of a message is commonly believed to be the result of the interaction between characteristics of the source (such as expertise and trustworthiness), characteristics of the message itself (including factors such as plausibility, internal consistency, and quality), and characteristics of the receiver (Wathen and Burkell, 2001). Cheung et al. (2020) found that the perceived credibility of the chatbot significantly affected users' trust in the chatbot and their willingness to follow its advice. Sharma and Ahmad (2020) and Alkhodairi and Basu (2021) stated that the perceived credibility of the chatbot significantly affected users' trust in the chatbot.

In addition, chatbot usefulness can be the extent to which a chatbot's responses and actions are valuable and beneficial to the user (Kasilingam, 2020). Chatbots are beneficial conversational agents that can be utilized in any communication system to enhance the socio-economic structure (Majumder and Mondal, 2021). Buhalis and Cheng (2020) pointed out that chatbots can be useful in personalization, smart marketing, automation, efficiency, profitability, language, accessibility, anonymity, and guest experience. On the other hand, Brandtzaeg and Folstad (2017) stated that creating chatbots that are considered useful due to their ability to provide essential assistance or information in a prompt and efficient manner should be the focus of chatbot designers. Sousa et al. (2020) examined the impact of chatbots on customer trust in a hotel booking context. The study found that the perceived usefulness of the chatbot significantly affected users' trust in the chatbot and their

intention to use it in the future. Similarly, [Ahmad and Rehman \(2021\)](#) and [Gao et al. \(2021\)](#) found that the perceived usefulness of the chatbot significantly affected users' trust in the chatbot.

Lastly, intelligence is an individual's capacity to acquire knowledge from their experiences and adjust, influence, and choose their surroundings accordingly ([Sternberg, 2012](#)). It is an overall mental capacity for problem-solving, reasoning, and learning tasks. This broad concept of intelligence encompasses various cognitive functions, including perception, attention, memory, language, and planning ([Colom et al., 2010](#)). Perceived intelligence significantly affected users' trust in chatbots. As per [Wu et al. \(2019\)](#), users who perceived the chatbot to be more intelligent also trusted it more. [Wang and Liu \(2019\)](#) found that intelligence significantly impacted users' trust in chatbots, mainly regarding the chatbot's ability to provide personalized and relevant recommendations. Therefore, chatbots should be designed to display their intelligence through their responses and actions to increase user trust ([Zhang and Wang, 2021](#)). Based on this discussion, we propose the following hypotheses:

- H1.** : The relevance of personalized travel recommendations significantly and positively influences travelers' trust.
- H2.** : The credibility of personalized travel recommendations significantly and positively influences travelers' trust.
- H3.** : The usefulness of personalized travel recommendations significantly and positively influences travelers' trust.
- H4.** : The intelligence of personalized travel recommendations significantly and positively influences travelers' trust.

## 2.5. Behavioral intentions

Behavioral intention refers to a person's projected or planned behavior in the future. It reflects their anticipated actions in a specific context and can be measured as their likelihood of acting. The Theory of Planned Behavior (TPB) proposes that the primary factor determining a person's behavior is their behavioral intention to act in a particular way. When given a chance to act, the intention translates into behavior. As a result, if the intention is precisely measured, it can be the most reliable predictor of behavior ([Lam and Hsu, 2006](#)). On the other hand, the Theory of Reasoned Action (TRA) suggests that an individual's behavioral intention, which ultimately leads to their actions, is impacted by both their subjective norms and attitudes. These attitudes are shaped by the person's beliefs and perceptions ([Gu et al., 2009](#)).

Trust is an essential factor influencing consumers' behavioral intentions towards technology-based services like chatbots. Trust is crucial for users' adoption and continued use of technology. Trust in technology mediates the relationship between users' perception of technology and behavioral intentions. Several studies have found that trust in technology positively impacts consumers' behavioral intentions toward that technology ([Xu, Zhang, and Liu, 2019](#); [Zeithaml et al., 2002](#)). For instance, in online shopping, trust in the online retailer positively affects consumers' intention to purchase from that retailer ([Y. Kim and Gupta, 2020](#); [K.J. Kim and Gupta, 2020](#)). Similarly, in the context of mobile banking, trust in the banking app positively impacts consumers' intention to use that app ([Zhou et al. 2010](#); [Yousafzai et al., 2009](#)). Based on this discussion, we propose the following hypothesis ([Fig. 1](#)).

- H5.** : Travelers' trust in personalized travel recommendations by ChatGPT significantly and positively influences travelers' behavioral intentions.

## 3. Overview of Studies

This study intends to unpack the black box of travelers' trust in ChatGPT's personalized travel recommendations. To achieve this goal, two studies are conducted and reported. The first is a lay theory study to test travelers' intuitive beliefs (i.e., lay theories) about how relevant,

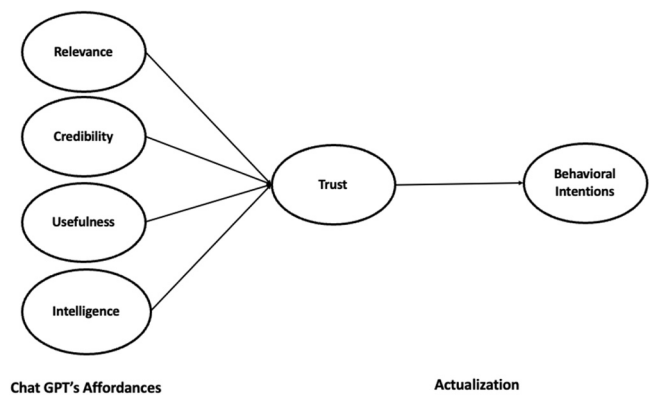


Fig. 1. : Theoretical Framework.

credible, useful, intelligent, and trustworthy personalized ChatGPT offers travel recommendations. Lay theory studies are gaining traction in marketing studies and examine the informal or non-expert explanations, beliefs, and assumptions people hold about a particular topic ([Mai et al., 2019](#)). This study is followed by a more extensive survey to examine the influence of ChatGPT offered personalized recommendations' relevance, credibility, usefulness, and intelligence on travelers' trust and behavioral intentions.

### 3.1. Study 1: lay theory prolific study

Study 1 tested travelers' intuitive beliefs (i.e., lay theories) about how relevant, credible, useful, intelligent, and trustworthy are personalized travel recommendations offered by ChatGPT. This study involved data collection from a sample of 102 panelists recruited on Prolific. First, they were shown a video recording of a traveler interacting with ChatGPT to get personalized travel recommendations and itineraries. Participants were then asked if they thought the personalized travel recommendations and itinerary were relevant, credible, useful, intelligent, and trustworthy. They were given three responses, including "Yes", "No", and "Maybe". The display order of the response options was randomized. Descriptive results show that many respondents selected "Maybe", implying they were unsure about the characteristics of these personalized travel recommendations offered by ChatGPT. Overall, 68.4% of the respondents felt these recommendations were intelligent, whereas 42% thought of these recommendations as untrustworthy. A comparison of all these perceptions is shown in [Fig. 2](#).

Study 2: Large Sample Survey Study.

## 4. Research methodology

### 4.1. Research instrument

All the constructs were adapted from previously validated measures. Both five items of relevance and three items of credibility were adapted from [Choi and Rifon \(2002\)](#). The concept of usefulness was assessed with four items adapted from [Pillai and Sivathanu \(2020\)](#). Three items of trust were adapted from [Hsiao and Chen \(2022\)](#). Finally, five items of intelligence and 3 items of behavioral intentions were adapted from [Pillai and Sivathanu \(2020\)](#). The response options for all the items ranged from 1 (strongly disagree) to 5 (strongly agree). Initially, a pilot test was conducted with 34 respondents who frequently travel to ensure the expressions' clarity and reliability of measurements. The pilot study results indicated that the Cronbach alpha of all the constructs was above the threshold value of 0.70. Minor changes were made based on respondents' recommendations about the items' wording and the instrument's overall formatting.



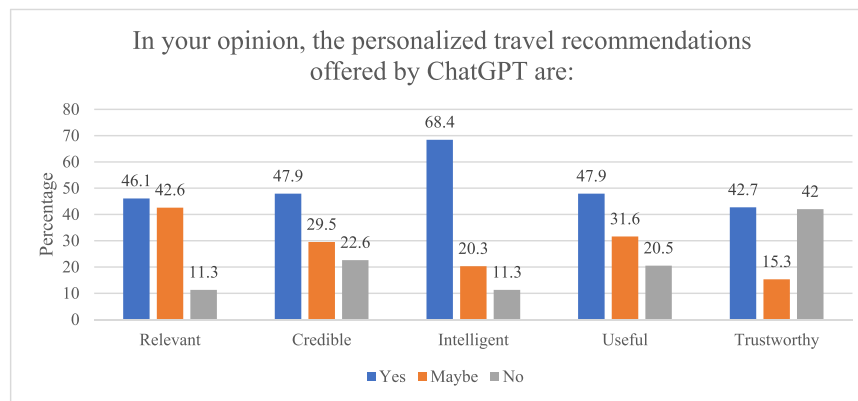


Fig. 2. : Results of Lay Theory Prolific Study.

#### 4.2. Data collection

This study focused on users over 18 who traveled at least twice in the last six months. Using a self-selection sampling method, data was gathered from Amazon MTurk from respondents with a minimum of 95% Human Intelligence to ensure data quality (Ali et al., 2021). Moreover, the questionnaire also included two attention-check questions. Respondents who failed the attention-check questions were eliminated from the dataset. Consequently, 344 valid responses were selected for further examination. The demographic profile is presented in Table 1.

#### 4.3. Common method bias

Since the data for this study was collected from a single source, several steps were taken to reduce common method bias. First, the response bias was limited in data collection by assuring the confidentiality and anonymity of the participants' responses. Second, different

cover stories were given for each measurement scale to achieve psychological separation among respondents. Last, Harman's single-factor test as a statistical investigation was employed. The results showed that a single factor was extracted, representing 31.6% of the total variance. Results showed that CMB was fine for the data collected.

#### 4.4. Findings and analysis

This research employed Partial Least Squares-based Structural Equation Modeling (PLS-SEM) to examine the relationships between the constructs. PLS-SEM was chosen due to the non-normal distribution of data and the study's exploratory nature (Ali et al., 2018). The assessment of the measurement model is presented in Table 2. The results indicate appropriate convergent validity and reliability (Ali et al., 2018). Almost all outer loadings met this requirement except for REL4 and INT2. Since the AVEs for both constructs exceeded 0.5, it was decided to keep the items (Ali et al., 2018). Finally, discriminant validity was confirmed by examining Table 3, which showed that the Fornell-Larcker Criterion (i.e., the square root of AVE on the diagonal) had the highest value and all Heterotrait-Monotrait Ratio values were lower than 0.85 or 0.90.

The assessment of the structural model involves the examination of the relationships between various constructs. It involved following steps. Firstly, the absence of collinearity issues was confirmed as all values of VIF were below the threshold of 5. Secondly, all R2 values for the constructs exceeded the minimum limit of 0.10, indicating satisfactory results. Thirdly, the Q2 values for all constructs were larger than zero, indicating that the predictive relevance of the endogenous constructs is achieved. To test the significance and relevance of path coefficients, Bootstrapping was used. The results of the hypotheses testing are presented in Table 4. This study found that relevance significantly impacts trust ( $\beta = 0.199$ ,  $p < 0.05$ ). Thus, H1 was supported. Furthermore, credibility significantly impacts trust ( $\beta = 0.211$ ,  $p < 0.05$ ), confirming H2. Likewise, usefulness has a significant impact on trust ( $\beta = 0.168$ ,  $p < 0.01$ ). Hence, H4 was also supported. Finally, H5 was supported as trust ( $\beta = 0.498$ ,  $p < 0.01$ ) have a significant positive impact on behavioral intentions.

#### 5. Discussion and conclusions

The sudden emergence of ChatGPT in recent months has shifted the focus towards using AI-based chatbots across various industries, including the travel and tourism sector. Such chatbots have been implemented to perform various tasks, such as processing product orders, responding to frequently asked questions, and providing customer recommendations within the hospitality and tourism domains. Many service providers have begun utilizing chatbots to aid users in searching for flights, hotels, and rental cars. In the case of ChatGPT, its principal

Table 1  
Demographic Characteristics.

Variables	Values	Percentage (%)
Age	18–24	12.8
	25–34	56.4
	35–44	20.9
	45–54	7
	55–64	2.9
Gender	Male	61.6
	Female	38.4
Ethnicity	Asian	16.3
	European/American	69.2
	Middle Eastern	3.5
	Others	11
Marital Status	Married	63.4
	Living with a partner	9.9
	Divorced/Separated	1.7
	Never been married	25
Working Status	Working full-time	82
	Working part-time	7
	Unemployed and looking for work	3.5
	A homemaker or a stay-at-home parent	2.3
	Student	3.5
How frequently do you use these tourism-related websites/apps?	Retired	1.2
	Once a week	40.1
	2–3 times a month	50
	4–6 times a month	9.9
Have you ever used ChatGPT?	Yes	58
	No	42
Have you ever used ChatGPT for travel-related queries?	Yes	31
	No	69

**Table 2**  
Assessment of Measurement Model.

	Items	Loadings	CR (rho_A)	Cronbach's alpha	AVE
<b>Relevance</b>	I believe that ChatGPT's personalized recommendations are beneficial to me	0.767	0.714	0.714	0.501
	I believe that ChatGPT's personalized recommendations are valuable to me	0.708			
	I believe that ChatGPT's personalized recommendations are related to my requirements	0.710			
	I believe that ChatGPT's personalized recommendations will most likely provide me with fresh ideas	0.622			
<b>Credibility</b>	I believe that ChatGPT's personalized recommendations were designed exclusively for me	0.705	0.699	0.697	0.622
	I believe the ChatGPT's personalized recommendations are credible	0.816			
	I believe the ChatGPT's personalized recommendations are believable	0.776			
	I believe the ChatGPT's personalized recommendations are convincing	0.773			
<b>Usefulness</b>	ChatGPT's personalized recommendations are useful for my travel planning	0.769	0.778	0.776	0.600
	ChatGPT's personalized recommendations improve the efficiency of my travel planning	0.700			
	ChatGPT's personalized recommendations improve my performance in travel planning (save time)	0.823			
	Overall, I feel that ChatGPT's personalized recommendations are very useful for travel planning	0.775			
<b>Intelligence</b>	I feel that ChatGPT's personalized recommendations are competent	0.709	0.775	0.766	0.521
	I feel that ChatGPT's personalized recommendations are knowledgeable	0.679			
	I feel that ChatGPT's personalized recommendations are responsible	0.755			
	I feel that ChatGPT's personalized recommendations are intelligent	0.774			
<b>Trust</b>	I feel that ChatGPT's personalized recommendations are sensible	0.784	0.789	0.784	0.699
	I think ChatGPT's personalized recommendations are reliable	0.875			
	I think ChatGPT's personalized recommendations are trustworthy	0.788			
	I think ChatGPT's personalized recommendations are correct	0.843			
<b>Behavioral Intentions</b>	I will continue to communicate with ChatGPT to get personalized recommendations	0.738	0.753	0.720	0.642
	I will say positive things about ChatGPT's personalized recommendations	0.765			
	I will recommend ChatGPT's personalized recommendations to others	0.893			

**Table 3**  
Results of Discriminant Validity.

	Fornell-Larcker Criterion						HTMT Criterion					
	BI	CRE	INT	REL	TRU	USE	BI	CRE	INT	REL	TRU	USE
BI	<b>0.801</b>											
CRE	0.593	<b>0.789</b>					0.839					
INT	0.725	0.777	<b>0.722</b>				0.788	0.835				
REL	0.716	0.660	0.652	<b>0.678</b>			0.798	0.746	0.798			
TRU	0.697	0.658	0.630	0.621	<b>0.836</b>		0.710	0.615	0.665	0.816		
USE	0.610	0.552	0.720	0.632	0.576	<b>0.775</b>	0.817	0.747	0.742	0.811	0.736	

**Table 4**  
Results of Hypotheses Testing.

	Relationships	Path Coefficients	T values	P values	Decision
H1	Relevance -> Trust	0.199	1.699	0.050	Supported
H2	Credibility -> Trust	0.211	3.018	0.001	Supported
H3	Usefulness -> Trust	0.168	5.122	0.000	Supported
H4	Intelligence -> Trust	0.442	4.952	0.000	Supported
H5	Trust -> Behavioral Intentions	0.498	11.060	0.000	Supported

function is serving as a tool for offering personalized recommendations to travelers. Nevertheless, this approach has certain limitations. Previous studies have established that individuals may experience unease and perceive risks while interacting with AI robots and recommendation systems.

Moreover, consumers need more time to rely on AI's ability to infer their preferences accurately. Despite various providers' growing adoption of ChatGPT, this technology is still relatively new to providers and consumers. Practitioners and scholars alike have recognized the need to consider the credibility of ChatGPT concerning its message efficacy. However, the factors affecting travelers' trust in ChatGPT's personalized travel recommendations and the outcomes of such trust remain unexplored. Thus, the present study aims to unpack the black box of trust in ChatGPT's personalized travel recommendations among travelers.

Specifically, this study used the Affordance-Actualization theory to examine the influence of ChatGPT's personalized recommendation's relevance, credibility, usefulness, and intelligence on perceived trust and behavioral intentions.

To achieve this goal, two studies were conducted. First, a lay theory study was conducted to test travelers' intuitive beliefs (i.e., lay theories) about how relevant, credible, useful, intelligent, and trustworthy ChatGPT offers personalized travel recommendations. This study involved data collection from a sample of 102 panelists recruited on Prolific. Results show that many respondents selected "Maybe", implying they were unsure about the characteristics of these personalized travel recommendations offered by ChatGPT. Overall, 68.4% of the respondents felt these recommendations were intelligent, whereas 42% thought of these recommendations as untrustworthy. Against this intuition, a more extensive survey-based study was conducted with data collected from 344 respondents from Amazon MTurk. Findings indicated that ChatGPT's personalized recommendation's relevance, credibility, usefulness, and intelligence significantly positively influence perceived trust. Moreover, perceived trust has a significantly positive influence on behavioral intentions. These findings are in line with previous studies that have also confirmed the influence determinants of trust, including relevance (Alkhodairi and Basu, 2021; Sharma and Ahmad, 2020), credibility (Cheung et al., 2020; Sharma and Ahmad, 2020), usefulness (Ahmad and Rehman, 2021; Gao et al., 2021; Sousa et al., 2020), and intelligence (Wang and Liu, 2019; Wu et al., 2019;

Zhang and Wang, 2021). Moreover, this study confirmed a significantly positive influence of travelers' trust on their behavioral intentions. These findings also align with previous literature (Y. Kim and Gupta, 2020; K.J. Kim and Gupta, 2020; Xu et al., 2019; Yousafzai et al., 2009; Zeithaml et al., 2002; Zhou, Lu, and Wang, 2010). These findings have several theoretical and practical implications, as discussed below.

### 5.1. Theoretical implications

The present conceptual framework centers on the determinants and consequences of trust in personalized recommendations furnished by ChatGPT, an innovative technology. The proposed model draws from the extant literature and addresses the research lacuna and the need for further investigation and empirical analyses on intelligent automation in the tourism sector, specifically concerning the reception and utilization of ChatGPT within the hospitality and tourism industry. Existing studies by Pillai and Sivathanu (2020), Loureiro et al. (2022), and Tussyadiah (2020) have also called for more research on this topic. The current gap in research pertains to the need for more exploration of how tourism practices have been altered by the involvement of innovative AI-powered conversational agents like ChatGPT, as Carvalho and Ivanov (2023) argued. This investigation seeks to address this gap and additionally contribute to the current literature on trust and behavioral intentions towards personalized recommendations provided by ChatGPT in the context of tourism. The study provides valuable insights for scholars and practitioners interested in researching travelers' behavior regarding adopting ChatGPT in tourism.

With its brief history, the conversational agents and AI-based Chatbots are still struggling to build credibility or trust on the consumer side; many leading industries outlets, such as Time Magazine, The New York Times, CBNC, and many more, have commented consistently on the issues related to trust in AI-based chatbots and ChatGPT. As a result, trust in ChatGPT and the personalized recommendations provided by ChatGPT is an emerging trend. To understand this phenomenon better, the current study merges Choi and Rifon's (2002) model of ad credibility with the Affordance-actualization (A-A) theory. It systematically examines relevant variables by expanding the literature on source credibility and trusts toward personalized recommendation by ChatGPT. The study's results revealed many significant relationships among the variables of interest. Specifically, this study tests the influence of relevance, credibility, usefulness, and intelligence of the personalized recommendation as affordances, leading to trust as an actualization and behavioral intentions. Most importantly, the results confirmed all the hypotheses and reiterated the importance of relevance, credibility, usefulness, and intelligence of the personalized recommendation offered by ChatGPT in developing trust, leading to positive behavioral intentions. To the best of our knowledge, this is the first research to examine the determinants and consequences of trust toward personalized recommendations offered by ChatGPT.

### 5.2. Practical implications

This research provides critical insights for practitioners and managers by highlighting the determinants and consequences of travelers' trust in personalized travel recommendations offered by ChatGPT. Developing consumers' trust in AI-based chatbots such as ChatGPT is vital for travel service providers to create positive customer experiences, increase confidence in recommendations, gain a competitive advantage, enhance brand perception, effectively utilize technology, and address privacy concerns. The findings of this study confirmed the significant positive influence of relevance, credibility, usefulness, and intelligence of the personalized recommendation offered by ChatGPT on travelers' trust.

The relevance of personalized travel recommendations offered by ChatGPT must be ensured. Travel service providers should ensure that the recommendations provided by ChatGPT are relevant to the traveler's

preferences, interests, and needs. They can do this by collecting more detailed information from the traveler and continuously updating their knowledge about the traveler's preferences. For example, Booking.com, a popular online travel agency, uses machine learning algorithms to provide personalized recommendations to users based on their search history and preferences. Airbnb uses a similar approach to suggest personalized travel experiences to its users. However, service providers must provide transparent information about how ChatGPT works and how it generates personalized recommendations. They can also provide options for travelers to override the recommendations if they do not meet their preferences or needs.

Another important implication for travel service providers is to enhance the credibility of personalized travel recommendations offered by ChatGPT. Service providers can enhance the credibility of ChatGPT's recommendations by providing transparent information about the data sources used to generate the recommendations and by ensuring that the recommendations are accurate and up to date. For example, Expedia has its own "Expedia Virtual Agent" chatbot that uses natural language processing and machine learning to provide relevant travel recommendations based on users' inputs. Expedia's Virtual Agent uses an icon with the same color code as Expedia's branding to bring in credibility. In addition, as soon as a traveler clicks on the 'Chat the Expedia Virtual Agent' button on their website, a window pops up with a prompt stating, "To continue to improve your experience, this conversation may be recorded. If at any point I am not able to assist you, I will connect you to an agent who can. What would you like to do?" making the conversation credible.

Moreover, travel service providers should emphasize the usefulness of personalized travel recommendations offered by ChatGPT. Travel service providers can emphasize the usefulness of ChatGPT's recommendations by providing additional information about the recommended destinations, activities, and accommodations. They can also provide information about travelers' past experiences and preferences to help them make informed decisions—another vital implication for travel service providers in improving personalized travel recommendations' intelligence. Service providers can improve the intelligence of ChatGPT by continuously training it with new data and feedback from travelers. It can help ChatGPT provide more accurate and relevant recommendations over time. For example, Kayak – a large online travel agency, also announced the integration of the ChatGPT plugin into their platform to offer better and more personalized travel recommendations. However, to make these recommendations useful and intelligent, Kayak has announced the integration of ChatGPT with their historical travel data to offer better plans for queries such as, "Where can I fly to from NYC for under \$500 in April". Moreover, service providers should ensure that their chatbots based on ChatGPT communicate in various languages, which would provide a user-friendly interface to the customers.

### 5.3. Limitations and future research suggestions

Although this research strives to be scientific in its framework, it still has limitations from an objective point of view. First, this study focuses on ChatGPT, a very new platform. Therefore, responses from the subjects may be based on their excitement and somewhat biased. Secondly, data for this study was collected from Amazon MTurk, which is also a limitation of this study. Lastly, although this study adopted a specific model to derive the affordances of ChatGPT personalized travel recommendations, there might be other determinants of users' trust towards such technologies. In light of the findings of this study and these limitations, the following section lists a few directions for future research.

- (1) Investigating additional determinants of users' travelers' trust in ChatGPT personalized travel recommendations is recommended. It includes factors such as prior experience with ChatGPT, the recommendations' perceived accuracy, the recommendation process's transparency, and the AI system's perceived expertise.

- (2) Likewise, it is also recommended to study additional consequences of trust in ChatGPT recommendations, including emotional, perceptual, and behavioral outcomes. Examples include perceived value, excitement, delight, awe, happiness, satisfaction with the recommended travel products and services, the likelihood of repeat business, and willingness to recommend the service to others.
- (3) ChatGPT's use of personal data to generate personalized recommendations raises concerns about privacy and data security. Future research may focus on understanding how travelers' perceptions of privacy and security influence their trust in the recommendation system.
- (4) ChatGPT recommendations may influence travelers' decision-making processes. Future research should examine how travelers weigh the recommendations made by ChatGPT against other sources of information, such as reviews from other travelers, in making their travel decisions.
- (5) Travelers from different cultures and countries may use ChatGPT recommendations. It is recommended to study how cultural differences may affect travelers' trust in the recommendation system and how these differences can be addressed.
- (6) Since ChatGPT communicates like an individual human, it may be interesting to study the effect of message framing on consumers' trust in personalized travel recommendations made by ChatGPT.
- (7) Future research may emphasize the role of transparency in the ChatGPT recommendation process on consumers' trust in the system.
- (8) Lastly, future research should use experimental research design to investigate the effect of personalization levels on consumers' trust in travel recommendations offered by ChatGPT (e.g., fully personalized vs. partially personalized recommendations).

### Compliance with ethical standards

- **Disclosure of potential conflicts of interest:** The authors have no relevant financial or non-financial interests to disclose.
- **Research involving Human Participants:** Ethical approval was sought from the Institutional Review Board of University of South Florida (STUDY005333).
- **Informed consent:** Informed consent was obtained from all individual participants included in the study.

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### CRedit authorship contribution statement

All authors contributed to the study conception and design. Material preparation, and data collection were performed by Faizan Ali and Buket Yasar. Different sections of the first draft of the manuscript were written by all the authors including introduction (Faizan Ali), Literature Review (Buket Yasar, Seden Dogan, Laiba Ali), Methodology and Analysis (Laiba Ali), and Implications (Faizan Ali, Buket Yasar). All authors read and approved the final manuscript.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Data Availability

The authors do not have permission to share data.

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