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Role of tourist-chatbot interaction on visit intention in tourism: the mediating role of destination image

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ABSTRACT

The current research examined the link between the informativeness of tourist-chatbot interaction, destination image, and visit intention in two studies. In the first study, 111 participants were asked to interact with ChatGPT about a destination (i.e. Batumi) for 5–10 min. The conceptual model was analyzed using the Structural Equation Modelling framework. Findings suggested that the informativeness of tourist-chatbot interaction would increase destination image and visit intention. Destination image was also directly and positively related to visit intention. Specifically, destination image mediated the link between the informativeness of tourist-chat bot interaction and visit intention. A second study ($N = 184$) was conducted, in which the entire procedure was the same as the first study, to test the replicability of the current findings. Consequently, all results remained consistent with the first study. This is the first study to show the mediating role of destination image in the link between human-machine interaction and visit intention in tourism research. Thus, the findings would expand the current understanding regarding the role of human-machine interaction on attitude and behaviour.

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Tourist-chatbot interaction; human-machine interaction; destination image; visit intention; structural equation modeling; Turkey

1. Introduction

Developments in information technologies influence tourism as well as many other industries. Technologies such as the Internet, social media, mobile technologies, artificial intelligence, robotics, the Internet of things, and human-machine interaction have led to the formation of new service models in tourism (Buhalis, 2020; Lee et al., 2020; Popy & Bappy, 2022). These technologies are not only limited to service and process optimization but are also used to directly reach and interact with tourists (Buhalis & Sinarta, 2019; Lei et al., 2021; Ukpabi et al., 2019).

In the tourism literature, there are studies on the factors that could influence the destination image and visit intention. One of those factors is the information source (de la Hoz-Correa & Munoz-Leiva, 2019; Doosti et al., 2016). However, the restriction of mobility due to the emergence of COVID-19 has led to a decrease in touristic experiences (Duro et al., 2021; Lagos et al., 2021). As this situation limits the recommendation and information resources needed in destination selection and in the pre-travel process (e.g. transportation, flight, and hotel reservation), tourists' need for smart applications where they can obtain this information has increased (Hung & Khoa, 2023; Lee et al., 2020).

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Today, chatbots may be the primary smart applications accelerating and facilitating tourist interaction. Alan Turing's (1950) artificial intelligence studies, which he started with his article titled '*Can machines think?*' continued with the introduction of the chatbot ELIZA by Joseph Weizenbaum (1966). ELIZA, designed as a psychotherapist, succeeded in establishing human dialogues with questions and answers, showing success in line with the development of artificial intelligence in those years. Chatbots, developed with technologies such as natural language processing, machine learning, and deep learning, can process and compile the big data accumulated on the Internet and social media in a very short time, thus enabling the user to access more refined and summary information.

The use of chatbots in destination marketing is an emerging topic, and empirical studies of tourist-chatbot interaction have gained importance. Yet, studies on how chatbots would be related to destination image have been scanty, and studies on tourist-chatbot interaction and visit intention do not exist in tourism research. Visit intention may mainly be critical since the intention was suggested to be the strongest direct predictor of actual behaviour (i.e. Theory of Planned Behaviour; Ajzen, 1985). Considering this gap in the literature, the relationship between the informativeness of tourist-chatbot interaction, the destination image, and visit intention was investigated in this study. More specifically, to understand an underlying mechanism in such relationship patterns, the mediating role of destination image was examined, for the first time, in the link between informativeness of tourist-chatbot interaction and visit intention (see Figure 1).

The current paper is structured as follows: Section 2 presents the theoretical background of the current study, particularly focusing on the informativeness of human-chatbot interaction, destination image, and visit intention. Section 3 presents the methodology, including procedures and data analysis strategy. Section 4 presents the current findings. Section 5 presents the replicability of the results through a second study. Finally, Section 6 discusses the findings, including limitations, implications, and future research suggestions.

2. Theoretical background and hypotheses

2.1. Visit intention

Various constructs related to destination visit intention have been suggested in the tourism literature. For instance, information source (e.g. de la Hoz-Correa & Munoz-Leiva, 2019; Doosti et al., 2016; González-Rodríguez et al., 2022), destination image (e.g. Baloglu & McCleary, 1999; Byon & Zhang, 2010), tourist satisfaction (e.g. Yoon & Uysal, 2005), quality of service (e.g. Ekinci et al.,

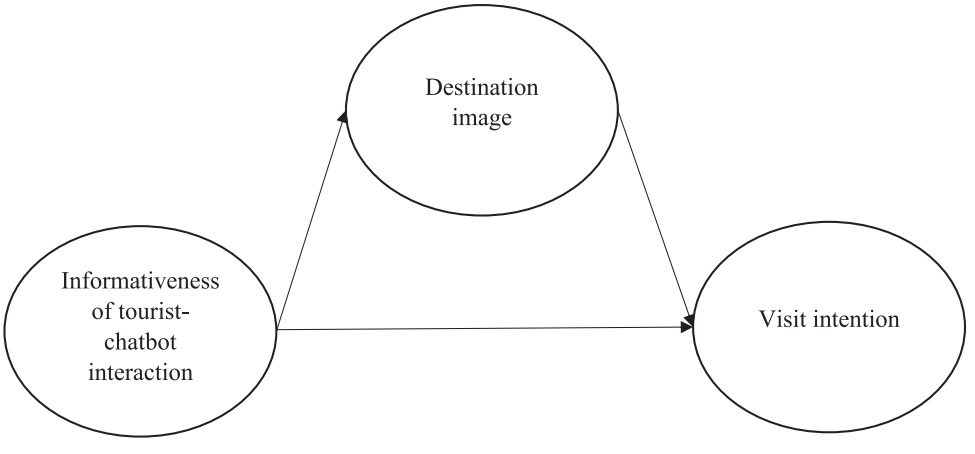

Figure 1. The conceptual model.

2000; Lee et al., 2005), perceived risk (e.g. Noh & Vogt, 2013; Rittichainuwat & Chakraborty, 2009) are some of those variables.

Unlike many other products and services, it is impossible to experience tourism services before purchasing them. In this respect, travel decisions for destinations to be visited for the first time are susceptible to uncertainties regarding financial, social, and security-related issues. Information can be used to reduce such uncertainties and risks in destination selection. Therefore, potential tourists try to learn as much as possible about destinations using different information resources (Blazquez-Resino et al., 2016). Consumers' information-seeking behaviour is one of the most studied topics in consumer research (Schmidt & Spreng, 1996). As in other sectors, the consumer must have sufficient information about alternatives to make decisions such as destination, transportation, and accommodation selection in the tourism sector (Gursoy & McCleary, 2004). According to Woodside and Lysonski, the formation of the intention to visit and the ability to choose among the alternatives depend on the destination image. One of the determinants of the destination image is information (Woodside & Lysonski, 1989).

Chen et al. (2014), in their study on potential tourists using travel blogs as an information source, found that the novelty, understandability, and interest dimensions of information increased the likelihood of visiting a destination. Similarly, de la Hoz-Correa and Munoz-Leiva (2019) examined the destination visit intentions of participants in six different countries in the context of health tourism. The results showed that information sources such as doctor's advice, word of mouth communication, success stories of patients, non-commercial websites, social media, traditional media, and fairs strengthened cognitive image, affective image, and overall image, which in turn, increasing visit intention to the health tourism destination.

Likewise, according to a study examining the effect of electronic word of mouth (e-WOM) as a source of information on visit intention, tourists follow reviews on online social networks to remove uncertainty and narrow down their destination options (Doosti et al., 2016). This information obtained by tourists via e-WOM positively affected the city's image, attitude towards the city, and visit intention. In addition, the relationship between e-WOM and visit intention was mediated by city image and attitude towards the city. According to González-Rodríguez et al. (2022), tourists can access e-WOM through multiple channels, such as social media, discussion forums, and review websites. The source credibility of the information obtained from those channels would increase the probability of visiting intention by reducing the perceived risk towards a destination. Another study showed that video ads featuring celebrities as information sources could lead tourists to visit places they have not seen before. The results showed that advertising credibility positively affected the intention to visit a destination, depending on creativity and the fame of the celebrities featured in the advertisement (Ferreira et al., 2022).

2.2. Informativeness of tourist-chatbot interaction

Chatbots have become one of the information sources affecting the behavioural intentions of consumers (Ashfaq et al., 2020; Jiang et al., 2022). A chatbot is programmed to chat with people via text or voice interfaces and interact anthropomorphically with the consumer using human-like dialogue (Han, 2021; Shawar & Atwell, 2007). After Facebook announced that it would launch chatbots in Messenger in 2016, it is seen that the developments in this area accelerated. On the other hand, it can be suggested that the studies on bot and human-machine interactions go back to the studies of Turing (1950) and Weizenbaum (1966). Nowadays, chatbots developed with artificial intelligence technologies such as natural language processing, machine learning, deep learning, and rule-based systems are used in varying industries such as media and journalism (Beckett, 2015; Tosyalı & Aytekin, 2020), law (Arruda, 2017), finance (Trading Strategy Guides, 2021), airline transportation (Carisi et al., 2019), and hotel management (Putri et al., 2019).

The potential of chatbots to replace some of the functions performed by humans has prompted companies to adopt chatbots quickly to improve customer service, build stronger relationships with

consumers, and increase sales (Letheren et al., 2020; Trivedi, 2019). Chatbots were as effective on consumer purchase intention as competent workers and four times more effective than inexperienced workers. However, if the consumer knows that the interaction is between that person and the chatbot, the purchase rate would reduce by 79.7% (Luo et al., 2019). Previous research showed that some consumers avoid using intermediaries for risky transactions, such as making payments, and tend to maintain their problem-solving habits with a human customer representative (Nguyen, 2019; Pereira et al., 2021). According to Luo et al. (2019), the most important reason consumers feel uncomfortable interacting with a chatbot is that they think chatbots are less knowledgeable and less empathetic.

However, the quality of the information provided in the consumer-chatbot interaction and the consumer's satisfaction level towards anthropomorphism could positively influence brand loyalty, satisfaction, and behavioural intentions (Ashfaq et al., 2020; Han, 2021). For example, a study examining the impact of chatbots on customer satisfaction in luxury fashion retail brands suggested that chatbots could help develop positive relationships with customers (Chung et al., 2020). According to Chung et al. (2020), chatbots can replace the human agent and perform the sales transaction through communication based on the five quality dimensions, i.e. interaction, entertainment, trendiness, customization, and problem-solving.

In addition, research on participants using chatbots in banking services found that the informativeness of chatbot had a significant impact on customer experience through timely, accurate, and relevant information, which in turn strengthens brand love. Another study in the retail industry showed that the social, communicative, and informative properties of anthropomorphic chatbots were related to behavioural intentions (i.e. continued use and purchase intentions) of Chinese consumers (Jiang et al., 2022). Likewise, Yen and Chiang (2021) developed a chatbot trust model by analyzing data collected through a survey and electroencephalography. The model revealed that credibility, competence, anthropomorphism, social presence, and informativeness in consumer-chatbot interaction could influence consumer confidence in chatbot and purchase intention. Chatbots provide answers for users through their information-providing functions. Therefore, chatbots integrated into online shopping sites significantly affect the consumer's purchase intention by increasing the hedonic and utilitarian values of the products in the online purchasing process (Presti et al., 2021).

Although previous research indicated that information is effective on destination image and visit intention, a tourist exposed to excessive information on the Internet and social media may develop a negative destination image and back out purchasing (Chen et al., 2014). Nevertheless, we expect that through chatbots' ability to process and compile large amounts of data accumulated on the Internet quickly, the consumer would access more refined and quality information, supporting the destination image and visit intention. Parallel to that argument, only a recent study investigated the relationship between tourist-chatbot interaction and visit intention (Orden-Mejía et al., 2023). The researchers confirmed the positive link between informativeness and visit intention. Therefore, based on the literature summarized above and the limited number of tourism research (Orden-Mejía et al., 2023; Orden-Mejía & Huertas, 2022a; Orden-Mejía & Huertas, 2022b), the following hypotheses were proposed:

H1. Informativeness of tourist-chatbot interaction would be positively related to visit intention.

H2. Informativeness of tourist-chatbot interaction would be positively related to the destination image.

2.3. Destination image

Destination image refers to cognitions of tourists, such as beliefs and impressions (e.g. perceived features or attractions) about a tourism destination (Crompton, 1979). The image of a particular destination emerges in three stages: organic image, induced image, and complex image (Fakeye & Crompton, 1991). According to Gunn (1997), non-tourism information sources such as newspapers,

articles, and TV news would shape organic image. The organic image would turn into an induced image through the influence of information sources such as advertisements and posters from tourism companies. In the last stage, a complex image emerges depending on the experiences in the destination visit.

According to Fakeye and Crompton (1991), organic image is related to the informativeness of the promotion for nonvisitors. The induced image is linked to the persuasiveness of the promotion for first-timers who make a travel decision. On the other hand, a complex image is associated with being a reminder of the promotion for repeater tourists. In other words, while information sources are effective in the emergence of organic and induced images, complex images can only be obtained from the direct destination experience (Byon & Zhang, 2010). As understood from those stages, even if individuals have never visited a particular destination, particular images (i.e. organic images) about the destination could be formed through secondary sources.

Many studies suggest that destination image is related to travel decisions. Baloglu and McCleary (1999) stated that the overall image is formed through cognitive and affective evaluations of the destination. According to Alcañiz et al. (2009), analyzing the destination image with its cognitive dimension, psychological and functional components shape the overall image. They reported that overall image consistently influences future visit intention, the functional component was related to revisit intention, and the psychological component was associated with recommendation intention. In their research, Byon and Zhang (2010) found that the destination image, which consists of four dimensions, i.e. infrastructure, attraction, value for money, and enjoyment, positively predicted visit intention. A recent study proposed a conceptual model in which destination image was a direct predictor of visit intention toward a tea culture tourism destination (see Liang & Lai, 2023). In that study, destination image was operationally defined via the following components: nature (e.g. '*I think this destination should have a lot in terms of natural scenic beauty*'.), culture (e.g. '*I think this destination should be a place which interesting cultural activities are offered*'.), atmosphere (e.g. '*I think this destination is a place to rest*'.), and affective (e.g. '*It is an exciting destination*'.). The authors confirmed the previous knowledge, suggesting that positive images of a particular destination would increase visit intention toward that destination. Therefore, consistent with the existing body of knowledge, the following hypothesis was proposed:

H3. Destination image would be positively related to visit intention.

The current study examined the interaction of potential tourists who have not visited a particular destination (i.e. Batumi) with chatbots for information seeking as the predictor of the destination image. In addition, considering the cumulative knowledge mentioned above, the following hypothesis was proposed to reveal a potential underlying mechanism via destination image in the relationship between informativeness of tourist-chatbot interaction and visit intention:

H4. The link between the informativeness of tourist-chatbot interaction and visit intention would be mediated by destination image.

3. Methods

3.1. Participants and procedure

Ethical approval for the current study was obtained from Middle East Technical University (Protocol number: 0369-ODTUIAEK-2023). The research was conducted as a case study using ChatGPT, which attracted great attention shortly after being announced by OpenAI company in November 2022 and is considered one of the most advanced chatbot applications (OpenAI, 2022). As the destination, the Georgian city of Batumi, which is close to Turkey and won Europe's Fastest Growing Tourism Destination award in the 2022 World Travel Awards, has been determined. Since the current study focuses on organic image formation, the sample is limited to potential tourists who have never visited Batumi.

The study was announced at a university. Voluntary participants were invited to the laboratory. Thus, a convenience sampling strategy was used. Participants were asked to interact with ChatGPT for 5–10 min to learn about Batumi. For example, they were informed that they could focus on details such as historical and cultural sites, attractions, restaurants, weather, and transportation options for the city. Such human-chatbot conversation is a strategy used in similar case studies (e.g. De Cicco et al., 2020; Orden-Mejía & Huertas, 2022a). Next, participants were asked to complete a questionnaire regarding their experience with ChatGPT. The survey consisted of two parts. In the first part, adapted measures included informativeness of tourist-chatbot interaction, destination image, and visit intentions. In the second part, a demographic form including gender, age, and travel frequency was presented. Those three variables were included as control variables on visit intentions.

The measurements scales, i.e. informativeness of tourist-chatbot interaction (Trivedi, 2019), destination image (Orden-Mejía & Huertas, 2022a), and visit intention (Marasco et al., 2018) were translated into Turkish through back-translation method by three bilingual translators. Each translation was compared based on the three assessments. After necessary adjustments, the final version of the scales was presented to ten people to get feedback about the clarity and relevance of each item. The final form included ten questions regarding informativeness, image, and intention (sample items: *I got the information I need to know about Batumi from ChatGPT*; *I had a positive image of Batumi after chatting with ChatGPT*; *I may visit Batumi in the future*, respectively) in which participants were asked to respond on a 5 points Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*). The three scales showed good reliability (Cronbach's alpha values = 0.87, 0.79, 0.72, respectively) for the current study.

The final sample consisted of 111 participants (N_{men} = 64) ranging from 21 to 53 years old (M_{age} = 24.77, SD = 5.08). A minority of the participants reported that they travel once in two years, [1 = every three years (8.1%), 2 = once in two years (6.3%), 3 = once a year (41.4%), 4 = twice a year (23.4%), 5 = three or more per year (20.7%)].

3.2. Data analysis strategy

First, descriptive statistics and correlations among study variables were examined. Then, the conceptual model (see Figure 1) was tested through the SEM framework using Mplus version 6.0. The estimations were based on maximum likelihood estimation with robust standard errors. SEM is a multivariate analysis strategy combining confirmatory factor analysis (also called measurement model) and multiple regressions (also called structural model), commonly used in various research areas such as marketing, psychology, and tourism. The simultaneous inclusion of indicators representing theoretical constructs in the analysis reduces measurement bias, leading to more valid results.

To evaluate whether the model fits into the current data, the following fit indices were interpreted: comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square (SRMR). The cut-off values for CFI and TLI were 0.90, suggested as an indication of good model fit. The value equal/greater than 0.95 was accepted as a perfect model fit. For RMSEA and SRMR, the acceptable threshold was suggested as a value less than 0.08, while a value less than 0.05 was accepted as an indication of perfect model fit (Hu & Bentler, 1999).

4. Results

4.1. Bivariate relationships

Bivariate relationships are shown in Table 1. As could be seen, visit intention was positively related to the informativeness of tourist-chatbot interaction (r = 0.479, $p < 0.001$) and destination image (r =

Table 1. Bivariate relationships among variables ($N = 111$).

		1	2	3	4	5	6
1	Gender						
2	Age	−.115					
3	Travel frequency	.115	.077				
4	Informativeness	.057	−.096	.041			
5	Image	.085	−.087	−.054	.689**		
6	Intention	.195*	−.004	−.012	.479**	.695**	
	M	–	24.765	3.423	4.146	3.901	3.853
	SD	–	5.082	1.133	0.756	0.788	0.744

Note. *$p < 0.05$, **$p < 0.001$.

0.695, $p < 0.001$). Namely, respondents reporting greater informativeness and a more favorable destination image would likely score higher on visit intention. In addition, there was a positive relationship between the informativeness of tourist-chatbot interaction and destination image ($r = 0.689$, $p < 0.001$).

4.2. Measurement model

The measurement model refers to confirmatory factor analyzes of three latent variables, i.e. informativeness of tourist-chatbot interaction, destination image, and visit intention. Findings suggested that measurement model adequately fitted to data, [(χ^2 (32) = 40.528, $p = 0.143$), CFI = 0.978, TLI = 0.969, RMSEA = 0.049, SRMR = 0.051]. Standardized factor loadings ranged from 0.539 to 0.866. Critical ratios (> 1.96), average variance extracted, and composite reliability scores confirmed the validity and reliability of the measurement model (see Table 2).

4.3. Structural Model

The structural model tested the relationship patterns proposed in the hypotheses. Findings indicated that the conceptual model adequately fitted to data, [(χ^2 (59) = 80.583, $p = 0.033$), CFI = 0.953, TLI = 0.940, RMSEA = 0.057, SRMR = 0.064]. As seen in Figure 2, the informativeness of tourist-chatbot interaction positively predicted visit intention ($B = 0.458$, $SE = 0.120$, $p < 0.001$). Thus, Hypothesis 1 was confirmed. Informativeness of tourist-chatbot interaction positively predicted destination image ($B = 0.991$, $SE = 0.128$, $p < 0.001$). Therefore, Hypothesis 2 was confirmed. There was a positive link between destination image and visit intention ($B = 0.838$, $SE = 0.360$, $p = 0.020$). As a result, Hypothesis 3 was accepted. Control variables (i.e. gender, age, and travel

Table 2. Results of measurement model ($N = 111$).

Factors of measurement model	Factor loadings	CRs	AVE	CR
Informativeness			0.622	0.868
Informativenss1	0.815	14.153		
Informativenss2	0.866	23.895		
Informativenss3	0.739	9.568		
Informativenss4	0.726	11.616		
Image			0.568	0.797
Image1	0.805	14.690		
Image2	0.790	12.129		
Image3	0.658	9.925		
Intention			0.478	0.728
Intention1	0.539	4.466		
Intention2	0.707	8.523		
Intention3	0.803	11.025		

Note. Standardized factor loadings were reported. CRs: Critical ratios; AVE: Average variance extracted; CR: Composite reliability.

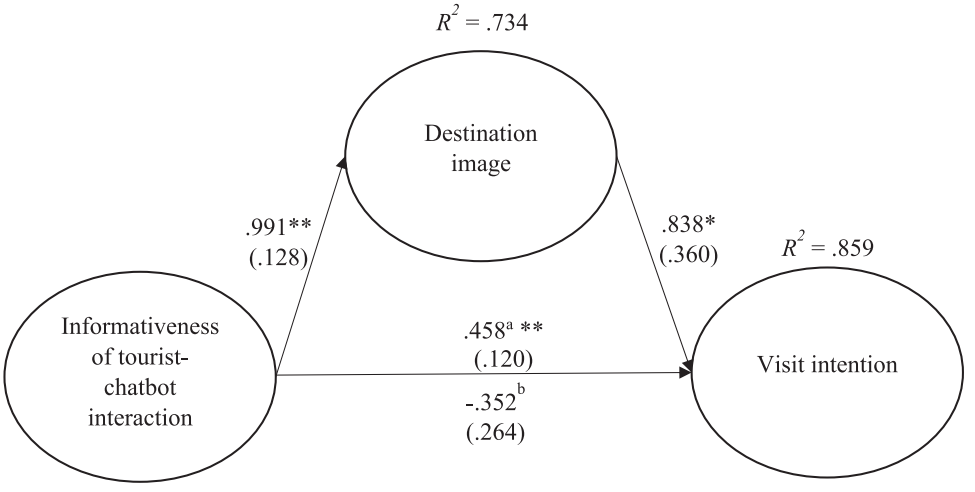

Figure 2. The direct links ($N = 111$). *Note*. For the sake of clarity, the indicators of the latent variables and the effect of the control variables on visit intention were not shown in the figure. Unstandardized coefficients were reported; standard errors in parenthesis. [a]Direct relationship between informativeness and visit intention without destination image in the model; [b]Direct relationship between informativeness and visit intention including destination image. *$p < .05$; **$p < .001$.

frequency) were not significantly related to visit intention ($p = 0.258$, $p = 0.245$, and $p = 0.841$, respectively).

Finally, the indirect link between the informativeness of tourist-chatbot interaction and visit intention via destination image was significant, indicating approval of Hypothesis 4 ($B = 0.831$, $SE = 0.311$, $p = 0.007$). Moreover, after including the destination image in the model, the direct link between informativeness and visit intention became non-significant, showing a full mediation. In a sense, respondents reporting higher informativeness based on their interaction with the chatbot would likely have a better destination image, which would be associated with a greater visit intention of the destination.

5. Study 2

The second study was conducted at least for two reasons. A post-hoc power analysis showed that the minimum sample size required to test the current conceptual model was 156 (Soper, 2021).[1] In the first study, the authors were able to reach fewer participants than the minimum required sample size. Thus, the first objective of the second study was to increase the statistical power. In addition, the second study would provide an opportunity to examine the replicability of the current findings.

Table 3. Bivariate relationships among variables ($N = 184$).

		1	2	3	4	5	6
1	Gender						
2	Age	−.085					
3	Travel frequency	−.030	.077				
4	Informativeness	.017	−.003	.051			
5	Image	.053	−.095	−.004	.653*		
6	Intention	.055	−.018	−.026	.415*	.602*	
	M	–	23.544	3.457	4.177	3.924	3.855
	SD	–	6.161	1.196	0.689	0.730	0.748

Note. *$p < 0.001$.

5.1. Procedure and results

Two months after the first study, data were collected from new participants. All the procedures and data analysis strategies were the same as in the first study. The final sample consisted of 184 participants ($N_{men} = 98$) ranging from 18 to 63 years old ($M_{age} = 23.54$, $SD = 6.16$). A minority of the participants reported that they travel every three years, [1 = every three years (8.2%), 2 = once in two years (9.8%), 3 = once a year (34.8%), 4 = twice a year (22.8%), 5 = three or more per year (24.5%)].

Bivariate relationships are shown in Table 3. As seen from Table 3, the bivariate correlations remained consistent with the first study. Findings suggested that measurement model adequately fitted to data, [(χ^2 (32) = 43.249, $p = 0.089$), CFI = 0.978, TLI = 0.969, RMSEA = 0.044, SRMR = 0.040]. Standardized factor loadings ranged from 0.584 to 0.869. Critical ratios (> 1.96), average variance extracted, and composite reliability scores confirmed the validity and reliability of the measurement model (see Table 4). Thus, the measurement model remained consistent with the first study's findings.

Findings indicated that the conceptual model adequately fitted to data, [(χ^2 (59) = 87.156, $p = 0.010$), CFI = 0.955, TLI = 0.942, RMSEA = 0.051, SRMR = 0.048]. As seen in Figure 3, the informativeness of tourist-chatbot interaction positively predicted visit intention ($B = 0.467$, $SE = 0.098$, $p < 0.001$). Thus, Hypothesis 1 was replicated. Informativeness of tourist-chatbot interaction positively predicted destination image ($B = 0.935$, $SE = 0.138$, $p < 0.001$). Therefore, Hypothesis 2 was replicated. There was a positive link between destination image and visit intention ($B = 0.756$, $SE = 0.217$, $p < 0.001$). As a result, Hypothesis 3 was replicated. Control variables (i.e. gender, age, and travel frequency) were not significantly related to visit intention ($p = 0.922$, $p = 0.200$, and $p = 0.794$, respectively).

Finally, the indirect link between the informativeness of tourist-chatbot interaction and visit intention via destination image was significant, indicating the replicability of Hypothesis 4 ($B = 0.707$, $SE = 0.193$, $p < 0.001$). Overall, the second study's findings remained consistent with the first study.

6. Discussion

As in many areas, the use of chatbots in tourism has become widespread (Nica et al., 2018). Previous work on chatbot usage in tourism showed that it facilitates travel planning, increases customer satisfaction, supports marketing activities of tourism businesses, increases tourists' brand loyalty and satisfaction, and could be an important source of information in destination marketing (Chi, 2022; Orden-Mejía & Huertas, 2021; Orden-Mejía & Huertas, 2022a; Pillai & Sivathanu, 2020). Chatbots can provide satisfactory recommendations to tourists about attractions and accommodation

Table 4. Results of measurement model ($N = 184$).

Factors of measurement model	Factor loadings	CRs	AVE	CR
Informativeness			0.582	0.846
Informativenss1	0.782	14.153		
Informativenss2	0.869	23.895		
Informativenss3	0.730	9.568		
Informativenss4	0.653	11.616		
Image			0.536	0.745
Image1	0.782	14.690		
Image2	0.766	12.129		
Image3	0.640	9.925		
Intention			0.500	0.747
Intention1	0.584	4.466		
Intention2	0.730	8.523		
Intention3	0.791	11.025		

Note. Standardized factor loadings were reported. CRs: Critical ratios; AVE: Average variance extracted; CR: Composite reliability.

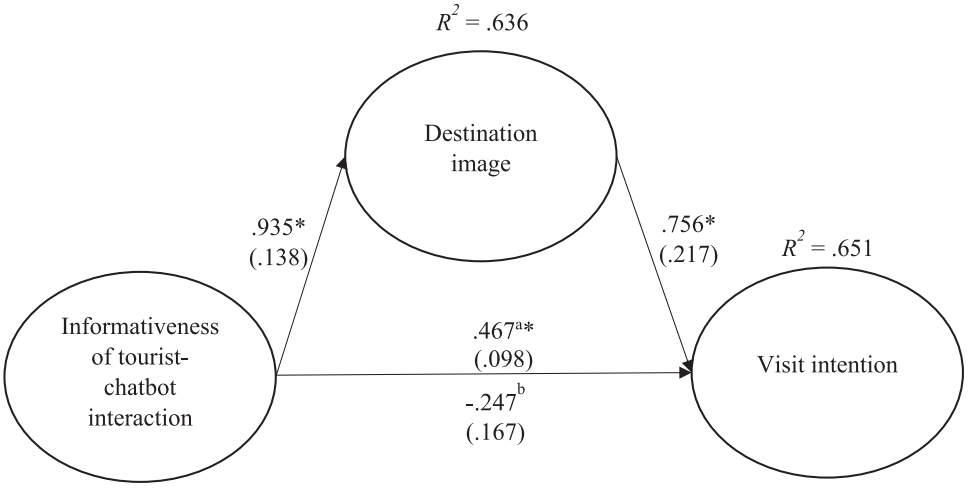

Figure 3. The Direct Links ($N = 184$). *Note*. For the sake of clarity, the indicators of the latent variables and the effect of the control variables on visit intention were not shown in the figure. Unstandardized coefficients were reported; standard errors in parenthesis. [a]Direct relationship between informativeness and visit intention without destination image in the model; [b]Direct relationship between informativeness and visit intention including destination image. *$p < .001$.

options in any destination (Nica et al., 2018; Sano et al., 2018). However, though the role of consumer-chatbot interaction in purchasing has been discussed in the marketing literature, studies in tourism are scarce (see Gursoy et al., 2023; Ivanov et al., 2019; Pereira et al., 2021).

Parallel to that existing body of knowledge, the current research with two consecutive studies found significant associations among informativeness of tourist-chatbot interaction, destination image, and visit intention. When the informativeness of tourist-chatbot interaction increases, there would be a more favorable destination image. Also, a positive destination image was associated with greater visit intention. However, the informativeness of tourist-chatbot interaction was not directly related to visit intention. Thus, the results indicated a full mediation of destination image in the relationship between the informativeness of tourist-chatbot interaction and visit intention.

The informativeness of chatbots brings about quality responses (Jiang & Ahuja, 2020) and plays a crucial role in developing destination image (Govers & Go, 2005). Consistent with previous findings, the present study indicated that positive and informative interaction with chatbots fosters a stronger intention to visit, as tourists associate the destination with enjoyable experiences and valuable information. Destination image is positively related to future visit intention (Byon & Zhang, 2010), while functional features of destination image predict the intention to revisit, and psychological characteristics may be associated with recommendation intention (Alcañiz et al., 2009).

These findings can be explained within the scope of the Theory of Planned Behaviour, a social psychology theory that aims to explain and predict human behaviour based on individuals' intentions (Ajzen, 1985). The theory posits that intentions highly influenced by attitudes, subjective norms, and perceived control are strong predictors of behavioural decisions. At the core of the theory, behavioural intention refers to an individual's readiness and willingness to engage in a specific behaviour. The stronger the intention to perform a behaviour, the more likely the behaviour would be observed. Attitudes represent a person's overall evaluation of a particular behaviour. These attitudes are shaped by individuals' beliefs about the consequences of the behaviour and their evaluations of these consequences as positive or negative.

Positive attitudes toward a behaviour make it more likely that an individual would strongly intend to perform that behaviour. Subjective norms refer to an individual's perception of the social pressures and expectations associated with a behaviour. That includes beliefs about what significant others (such as friends, family, or peers) think they should do. Perceived behavioural control

refers to the person's perception of their ability to perform the behaviour successfully. It incorporates skills, resources, obstacles, and situational constraints that could affect their ability to carry out the behaviour. These three factors, attitude toward the behaviour, subjective norms, and perceived behavioural control, influence an individual's intention to perform a behaviour. The stronger these factors are, the more likely the individual is to have a positive intention to engage in the behaviour (Ajzen, 1985).

The informativeness of chatbot interactions has a great potential to improve tourists' destination image, enhancing positive attitudes. Personalized chatbot interactions establish rapport and address emotions that affect purchasing intentions and customer satisfaction (Sands et al., 2021). The chatbot can emphasize the positive aspects of the destination, showcasing its natural beauty, cultural richness, hospitality, and other appealing attributes. By consistently presenting these positive features, the chatbot contributes to a favourable perception of the destination. Chatbots can provide personalized and relevant information about the destination's attractions, activities, and unique features (Boes et al., 2015). By addressing the interests and preferences of each user, the chatbot enhances the perceived value of the destination. This tailored information delivery creates a positive attitude by showing potential travellers that the destination offers experiences aligned with their preferences. In addition, chatbot features such as presenting compelling narratives and interactive content can evoke emotional engagement (Zhou et al., 2020). Potential tourists develop positive attitudes towards destinations by creating emotional connections to the destination through the chatbot's content.

On the other hand, social norms can be influential in forming a destination image through informative chatbot interactions. An informative chatbot can share real-time or historical data on previous tourists' positive experiences, activities, and memorable moments during their visits to the destination (Tussyadiah, 2020). By highlighting these enjoyable aspects, the chatbot indirectly establishes a social norm that visiting the destination leads to satisfying and enjoyable experiences. As the chatbot conveys the positive experiences of previous tourists, potential travelers are exposed to a perception that visiting the destination is a popular choice. This perception of popularity creates a subjective norm, where people feel that others have enjoyed the destination and that it's socially acceptable and popular. Moreover, when potential tourists see testimonials, reviews, or photos shared by other travellers, it would create a sense of social validation. Realizing other tourists' positive experiences, this social validation influences individuals' attitudes and intentions toward visiting the destination.

Additionally, the informativeness of chatbots can enhance tourists' sense of control and confidence in planning their trips, affecting perceived behavioural control. Digital platforms provide extensive information that may negatively affect tourists because they are subjected to unnecessary information related to their research (Frias et al., 2008). Chatbots can offer step-by-step guidance on trip planning, including transportation options and accommodation recommendations, while offering customization (Leahu & Sengers, 2014). The chatbot enhances individuals' perceived behavioural control by simplifying the complex process of organizing a trip. Potential travellers feel more capable and confident in their ability to plan a successful visit. When individuals have a sense of control, they are more satisfied with the chatbot system and its performance (Nguyen et al., 2021). Social norms established by showing previous tourists' enjoyment also contribute to tourists' perceived behavioural control. When potential visitors see that others have successfully navigated and enjoyed the destination, they feel more confident in their ability to have a similar experience. This increased confidence enhances their perceived behavioural control over the decision to visit.

6.1. Implications

First, an original model in which destination image mediated the link between the informativeness of tourist-chatbot interaction and visit intention was investigated for the first time. Moreover, the significant role of human-chatbot interaction on behavioural intention was investigated, for the

first time, in a different area (i.e. tourism research) which would increase the generalizability of the current understanding regarding the role of human-machine interaction. This conceptual model can be expanded in further studies, for instance, by including elements of the Theory of Planned Behaviour mentioned above.

Based on the findings, designing and developing informative chatbots can effectively enhance the destination image and influence visit intentions. Increasing the positive attitudes toward destinations, tourism organizations can invest in creating user-friendly chatbots that provide accurate and personalized information to potential tourists. The chatbot's content should present positive experiences, attractions, activities, and local insights.

Building on perceived behavioural control, tourism organizations can integrate chatbots into their websites or mobile apps to offer personalized trip-planning assistance. Chatbots can guide users through visiting places, accommodation selection, and transportation options. By addressing potential tourists' concerns and providing timely recommendations, destinations can empower travellers to feel more in control of their travel decisions.

Increasing the positive impact of social norms, tourism organizations can share user-generated content on their websites and social media platforms. They can encourage tourists to share their experiences, photos, and comments, representing their enjoyment of the destination. These authentic stories would influence potential travellers' attitudes, reinforcing that others have had fulfilling experiences at the destination. As a result, one implication for tourists would be that they can organize their visit plans by spending less time and effort while minimizing potential uncertainties about the destination. Finally, the present findings contribute to our understanding of how technology-mediated experiences can influence travel decisions and underscores the importance of creating positive destination images through human-machine interactions (e.g. tourist-chatbot).

6.2. Limitations and future studies

This study is based on results from a single chatbot, a particular destination that has not been visited before, and a limited participant group. Thus, it would be worth pursuing to figure out the intentions and behaviours of a wide range of participant groups with multiple destinations communicating with various chatbots (e.g. Bing Chat, Google Bard).

Behavioural intentions are strong predictors of behaviours (Ajzen, 1985). The current study assessed participants' intentions to visit; however, their actual visit was not investigated. Real-life barriers or changing circumstances could affect whether participants follow through on their intentions. Furthermore, asking participants to rate their satisfaction with chatbot interaction after their visit would be informative. Therefore, future studies may examine whether tourists' visit intention translates into actual visits.

The present study did not examine participants' interest in technology usage. The user experience of the chatbot could vary based on factors such as user familiarity with technology, digital literacy, and a sense of comfort while interacting with chatbots. These factors might impact the quality of the interactions and the subsequent effects on destination image and visit intention. In future studies, examining participants' characteristics would contribute to understanding the impact of tourist-chatbot interaction regarding how it could be developed or differed based on individual differences.

In the current study, the effect of chatbot interaction on destination image and visit intention was examined in two consecutive studies, including samples of participants who had not been in the destination before. The change, if any, in the destination image of tourists, visiting intention for a particular destination that they have decided on using a chatbot, may be investigated using pre- and post-evaluations. Also, intentions to use chatbots in the future when planning a trip may be examined. In this way, comparative results can be assessed on the effectiveness of chatbot interactions. Overall, the replicability of the findings in the two studies presents insights regarding the reliability of such relationships between human-machine interaction and visit intentions to a particular destination.

Note

1. Based on similar research (see Orden-Mejía & Huertas, 2022a), the power analysis parameters were as follows: the number of indicators (10), the number of latent variables (3), power level (0.80), and the expected effect size (0.3).

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The study data can be accessed via the following anonymized link: https://osf.io/u6cjz/?view_only=7e6b6459d4c64d15926c8ac147623dc8

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