



ChatGPT for Travel Planning: Influencing Factors and the Effect of AI Hallucination

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Abstract

Title: ChatGPT for Travel Planning: Influencing Factors and the Effect of AI Hallucination

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Artificial intelligence (AI) is considered the key technology of the 21st century and is on its way to disrupt multiple industries, including the tourism sector. As the fastest-growing consumer application in history, ChatGPT can support consumers during their travel planning process. However, a research gap concerning influencing factors of ChatGPT usage intention for tourism decision-making exists. This study aims to understand how perceived usefulness, perceived trustworthiness and AI hallucination potential influence the intention to use ChatGPT for travel planning. A quantitative methodology approach was used by conducting an online survey with 308 participants across Generation Y and Generation Z. By performing a statistical analysis, it was found that perceived usefulness directly influences the usage intention of ChatGPT for travel planning. Additional results show that AI hallucination potential and the division into Generation Y and Generation Z have no significant effect on the willingness to utilize ChatGPT in travel decision-making.

Keywords: Generative Artificial Intelligence; ChatGPT in Travel Planning; AI Hallucination; ChatGPT Usage Intention

Resumo

Título: ChatGPT para planeamento de viagens: Factores de influência e o efeito da alucinação da IA

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A inteligência artificial (IA) é considerada a principal inovação tecnológica do século XXI que alterou o modo como várias indústrias gerem o seu negócio e o setor do turismo não é exceção a estas alterações. O ChatGPT é a aplicação com o maior crescimento de sempre, e veio também permitir aos consumidores planejar as suas viagens. Consequentemente do ponto de vista da investigação é necessário aprofundar os fatores que influenciam a intenção de utilização do ChatGPT na tomada de decisão no setor do turismo. Este estudo tem como objetivo investigar a utilidade, fiabilidade e o potencial de alucinação da IA no planeamento de viagens e o modo como estas variáveis influenciam a intenção de utilizar o ChatGPT. Este estudo quantitativo teve a participação de 308 indivíduos das Gerações Y e Z. Os resultados da análise estatística, indicam que a utilidade percebida influencia diretamente a intenção de utilização do ChatGPT no planeamento de viagens. O potencial de alucinação da IA e a comparação entre a Geração Y e a Geração Z não têm um efeito significativo na intenção de utilização do ChatGPT. Quando comparado com outros meios tradicionais de planeamento de viagens, a intenção de utilizar a IA diminui quando o ChatGPT presta informações incorretas.

Palavras-chave: Inteligência Artificial Generativa; ChatGPT no Planeamento de Viagens; Alucinação com IA; Intenção de Utilização do ChatGPT

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1. Introduction

Multiple industries, including the tourism and hospitality sector, are currently facing extensive disruption due to the rise of artificial intelligence (Carvalho & Ivanov, 2023; Dogru et al., 2023; Dwivedi et al., 2023). As one of the most advanced language models, ChatGPT launched in November 2022, gained 1 million users in only 5 days (Greg Brockman [@gdb], 2022) and counts over 100 million monthly active users as of January 2023 (Hu, 2023). ChatGPT has been trained on large amounts of data to follow an instructional prompt and to provide logical responses (Ali et al., 2023). Considering the infancy of generative AI and the lack of research in that field, it is necessary to explore AI's potential and recognize influencing factors that affect usage intention for tourism decision-making (Gursoy et al., 2023; Law et al., 2023; Pham et al., 2024). This is particularly important as AI will continue to affect multiple tourism stakeholders and will introduce staggering opportunities as well as challenges that cannot be overlooked (Gursoy et al., 2023; Wong et al., 2023). In fact, generative AI software such as ChatGPT often generates erroneous ideas for individuals, a phenomenon commonly referred to as "AI Hallucination" (Christensen et al., 2024). These data mistakes could potentially pose issues to tourists (Brender, 2023). Possible dangers within the tourism industry include AI suggestions producing wrong information related to travel planning and user frustration which may affect AI usage behaviours (Christensen et al., 2024; Zhan et al., 2023).

Focus areas of further research should include travel planning with AI (Kim et al., 2023), trustworthiness in conversational AIs within the tourism industry (Carvalho & Ivanov, 2023), the role of ChatGPT in the travel decision-making process and relevant factors that influence ChatGPT adoption and usage (Gursoy et al., 2023). Moreover, previous literature has referred to the Technology Acceptance Model (Davis, 1989) to explain the usage intention for AI regarding travel planning through perceived usefulness (Choung et al., 2023; Christensen et al., 2024; Pillai & Sivathanu, 2020). Additionally, other research has focused on trustworthiness in conversational AI and the adoption of ChatGPT within the tourism industry (Ali et al., 2023; Choung et al., 2023; Kim et al., 2023; Pham et al., 2024). Furthermore, a research gap regarding tourism decision-making and AI among younger generations, particularly Generation Z and Millennials exists (Christensen et al., 2024). Studying the tourism behaviour of younger consumers is particularly essential "since their demand structure will shape the future of the tourism sector" (Caber et al., 2020, p.1).

Hence, this research aims to understand which factors do or do not influence the usage intention of ChatGPT for travel planning among Generation Z and Generation Y. Through quantitative research surveying ChatGPT users, this study's objectives include researching whether AI hallucination potential, perceived usefulness or trustworthiness have an impact on the intention to use ChatGPT trip planning.

Based on these research purposes, this study focuses on the following research question (RQ1):

- To what extent do perceived trustworthiness, usefulness, and AI hallucination potential influence consumers' ChatGPT usage intentions for travel planning?

The second research question (RQ2) tries to evaluate whether an impact concerning different generations can be found:

- To what extent do AI hallucination potential, usage frequency and intention to use ChatGPT for travel planning differ among Generation Z and Generation Y?

Hence, the objectives of the research can be described as follows:

- Investigate the influence of perceived trustworthiness, usefulness, and AI hallucination potential on consumers' intention to use ChatGPT for travel planning and contribute results towards tourism decision-making
- Assess and compare whether AI hallucination potential, usage frequency and intention differ among Generation Z and Generation Y

Studies on the topic of ChatGPT usage intention for travel planning combining the technology acceptance model with perceived trustworthiness and AI hallucination do not exist to the authors' knowledge. Additionally, prior research has not only been focused on Generation Z and Generation Y as a target sample. Furthermore, through a rather exploratory approach, the research will evaluate whether the intention to select ChatGPT as a preferred travel planning changes compared to other travel planning resources when being confronted with incorrect information. With these findings, tourism companies may adapt their communication and promotion efforts regarding AI for travel planning. Moreover, the results provide insights into AI hallucination potential and how it affects the tourism decision-making process.

This paper starts by reviewing relevant literature about AI in the tourism industry, AI hallucination and consumers' perceptions about AI and its possible misinformation. Afterwards, the study examines the methodological approach and the sampling technique. To achieve the research objectives, a quantitative methodology approach has been chosen. An online survey

was created, and data analysis of the responses included the use of statistical research methods through SPSS. Moreover, the paper discusses the findings and evaluates managerial implications. Lastly, this research evaluates its limitations and recommends areas for further research investigations.

2. Literature Review

The objective of this chapter is to develop and justify the conceptual model for this dissertation. Hence, research about AI in tourism has been studied to provide a contextual overview of the overall issue. Moreover, studies about all factors of the conceptual model have been considered to provide a theoretical basis for answering the first research question. Additionally, literature about generational differences as well as the influence of incorrect information have been consulted to provide additional findings.

2.1. Artificial Intelligence in the Tourism Industry

The adoption of new technologies has changed the way people travel for centuries and every generation experienced a “golden travel era” due to technological advancements (Almasi et al., 2023). From the early production of automobiles during the late 19th century over the first internet networking connections over 40 years ago to the introduction of ChatGPT in November 2022: as one of the most significant disruptors in today’s age, AI is on its way to change consumers expectations as well as the tourism and hospitality industry as a whole (Buhalis et al., 2019). As one of the first researchers defining the term artificial intelligence, Winston (1992, p. 5) states that AI is “the study of the computations that make it possible to perceive, reason, and act”. Almost 30 years later, the definition is more advanced but built on the same foundation as AI can be defined as a technology series that can detect, evaluate, perform, learn, and exhibit characteristics of human intellect while solving problems (McCartney & McCartney, 2020). The topic of AI in tourism has gained higher popularity for research purposes as in 2020, almost 50% more papers have been published in that area compared to 2019 (Nannelli et al., 2023).

AI technologies for tourism-related purposes may either be standalone or embedded into an existing system (Irawan, 2023). According to Huang et al. (2022, p. 1085), there are five major AI application types within the tourism sector: “(1) search/booking engines, (2) virtual agents/chatbots, (3) robots and autonomous vehicles, (4) kiosks/self-service screens and (5) AR/VR devices”. For this research purpose, (1) and (2) are the most relevant applications to

have a closer look at as, similarly to ChatGPT, they mainly rely on natural language processing (NLP). NLP is a subfield of machine learning and deep learning and focuses on “machines’ understanding and generation of text and speech in natural languages” (Huang et al., 2022, p. 1082). AI-powered Booking engines can help tourism companies enhance customer experience and collect data about user preferences (Huang et al., 2022). Since 2018, the largest rental booking platform Airbnb uses NLP and machine learning algorithms to create price recommendations for a listing or to screen the most relevant reviews regarding a housing option to improve customer experience (Airbnb, 2018).

Moreover, the one-stop travel site Expedia saved millions of calls by establishing a virtual chatbot on their website (Ransbotham, 2023). ChatGPT can be defined as a chatbot as well. However, multiple tourism companies use chatbots that are less advanced and only comprise a selection of dialogue frameworks and use techniques for input processing (Ivanov & Webster, 2019). Nevertheless, AI-driven chatbots revolutionize customer experience by offering (hyper-)personalized suggestions and unlimited availability (Ali et al., 2023).

2.1.1. ChatGPT in Travel Planning

ChatGPT’s abilities represent a paradigm shift in the general capabilities of AI chatbots (Ruan & Mezei, 2022). Generally, AI can improve the efficiency of tourism operations and customer service while increasing profits (Buhalis et al., 2019). Moving away from fixed dialogue structures, ChatGPT embraces adaptability by building an authentic user experience with immediate responsiveness (Duong et al., 2023; Rejeb et al., 2024).

Generally, ChatGPT can be used by tourists during all travel stages, “from inspiration through booking and the trip itself, to the post-trip stage” (Carvalho & Ivanov, 2023, p. 7). However, this dissertation will focus on the travel planning or the pre-trip stage as this phase is characterized by the consumer’s need to identify valuable information, develop expectations and commit to a course of action regarding their travel preferences (Gretzel et al., 2006; Wong et al., 2023; Xiang et al., 2015), which fits very well to ChatGPT’s capabilities. Nevertheless, there are multiple possibilities for individuals to research and gather information about a forthcoming trip, for instance, through online travel agencies (Xiang et al., 2015), social media (Sakshi et al., 2020) or word of mouth (Murphy et al., 2007). However, according to Wong et al. (2023), gathering useful travel information and making informed decisions can still pose challenges and require a significant amount of time due to an information overload. Unlike

other online resources, ChatGPT can be beneficial and time-saving as outputs are personalized and filtered based on users' inputs (Paul et al., 2023). With ChatGPT, the travel planning process can be simplified as users get the possibility to indicate their requirements, for instance, time and budget ranges or dietary preferences (Carvalho & Ivanov, 2023).

Moreover, there are several paths how tourists can interact with OpenAI's large language model: Either visit the ChatGPT website by themselves or use ChatGPT-powered AI services from tourist companies. For instance, popular online travel agencies such as Tripadvisor have published their own OpenAI-powered AI travel planning tools (Tripadvisor, 2023). With this integration on travel websites, ChatGPT may access real-time data and would be able to provide even more accurate, personalized suggestions for the desired holiday destination (Carvalho & Ivanov, 2023). Recommendations may include ideas for accommodation, prices, restaurants, (public) transport, sightseeing and other activities. Furthermore, OpenAI's introduction of ChatGPT plugins for the GPT-4.0 version in March 2023 included plugins for the online travel agencies Kayak and Expedia (Goktas & Dirsehan, 2023). All these access points increase trip planning efficiency and personalized recommendations for tourists during the pre-trip phase (Wong et al., 2023). Other benefits during this travel stage include improved consumer engagement (Goktas & Dirsehan, 2023), continuous communication around the clock in multiple languages as well as user-friendliness (Carvalho & Ivanov, 2023). ChatGPT-powered chatbots may create an improved customer experience as well by providing a fixed personality and creative tone of voice (Carvalho & Ivanov, 2023). Companies using ChatGPT-powered AI can incorporate user feedback into the GPT database to enhance their service quality based on travellers' preferences (Gursoy et al., 2023).

Despite all the advantages, large language models also carry the potential to introduce significant challenges to stakeholders within the tourism industry (Gursoy et al., 2023; Wong et al., 2023). For tourism companies, major challenges include the technical integration of ChatGPT in the current IT infrastructure, security concerns regarding the use of internal data as well as building user trust (Dwivedi et al., 2023). Furthermore, especially small and medium-sized businesses may be confronted with high development investments and ongoing operational costs (Gursoy et al., 2023). Due to future advancements, the difficulty of fully understanding AI systems, especially for tourism marketers, will also increase (Bulchand-Gidumal et al., 2023; Kozinets & Gretzel, 2021). Furthermore, employees could be replaced due to productivity advancements by ChatGPTs (Carvalho & Ivanov, 2023). Lastly, ChatGPT

may not understand colloquialisms or regional expressions that the language model is not aware of. Hence, the misinterpretations could be dissatisfying and frustrating to users (Wong et al., 2023). Incorrect information provided by ChatGPT will be discussed in the next chapter.

2.1.2. AI Hallucination

“Consumers can certainly use me for travel planning to access personalized recommendations, tips, and insights, but they should also consider consulting multiple sources to ensure comprehensive and accurate information.” (OpenAI, personal communication, March 29, 2024)

ChatGPT itself admits that as a large language model, it is susceptible to misinformation and that other sources should be included for proof of fact. In this context, the artificial intelligence draws attention to the phenomenon of "AI hallucination". AI hallucination is a comparably recent term in academic literature and should be considered under different definitions. AI hallucination can be described as “NLG [Natural Language Generation] models generating unfaithful or nonsensical text” (Ji et al., 2023, p. 3) as well as the production of results “that are not genuine, do not correspond to the data the algorithm was trained on, or do not follow any other discernible pattern” (Susanto et al., 2023). Other sources define the term AI hallucination as the outcome of an AI chatbot that drifts away from the truth and makes up information (Metz, 2023) or generates “fabricated information in response to a user’s prompt” while presenting it as credible and accurate (DeVon, 2023, para. 3). However, some researchers do not yet use the term “AI hallucination” and refer to the same phenomenon as misinformation through AI (Kim et al., 2023). Other studies avoid the use of a specific term and state inaccurate AI responses as one of the main challenges of AI usage (Carvalho & Ivanov, 2023; Skavronskaya et al., 2023).

However, according to Christensen et al. (2024), the term AI hallucination has been used in many recent newspaper articles. One example by Forbes magazine titled ‘Why These 50 Over 50 Founders Say Beware Of AI ‘Hallucination’ argues that “AI may very well give you the wrong output, which ultimately requires that humans double check and correct its work” (Hasan, 2023, para. 6) On the one hand, AI hallucination can be based on the fact that AI algorithms can potentially misunderstand human commands that do not align with trained AI patterns (Kim et al., 2023). On the other hand, AI outputs follow determined patterns which may present a deficiency in originality and context sensitivity leading to erroneous information (Kim et al., 2023). As mentioned above, erroneous information by an AI can lead to

dissatisfaction among tourists with these technologies (Wong et al., 2023). However, the latest findings suggest that despite the mistakes present in travel recommendations generated by ChatGPT, consumers preferred erroneous AI recommendations over correct suggestions from other travel planning sources (Christensen et al., 2024). Reasons include general user trust in AI and the fact that ChatGPT's errors may not have been recognized. Mistakes made by ChatGPT may not be obvious to most users unless they are highly knowledgeable about travel destinations (Kim et al., 2023). Another recent survey by Forbes Advisor asked 2000 employed Americans about their opinions and concerns regarding AI. Although 76% of respondents were concerned about AI suggesting wrong information on a companies' website, only 11% expressed that they would not plan to utilize AI in the future (Haan & Watts, 2023). Hence, awareness of AI hallucination does not necessarily connect with a decreased intention to use ChatGPT for travel planning. This discrepancy leads to the following hypothesis, expressed in a null-hypothesis format:

***H1:** Perceived AI hallucination potential has no significant correlation with ChatGPT usage intention for travel planning.*

It is essential to understand whether perceived AI hallucination has an impact on usage intention for ChatGPT regarding travel planning (Christensen et al., 2024). Since AI hallucination potential might not influence the intention to use AI in tourism, other factors have to be evaluated that may have an impact. Therefore, the next chapter will delve into additional variables affecting the described usage intention by examining the Technology Acceptance Model (TAM), perceived trustworthiness as well as generational differences and the impact of incorrect information.

2.2. Consumer Perception and AI

The Technology Acceptance Model (TAM) describes an individual's adoption process of new technologies (Davis, 1989) and is one of the most used models in connection with technology adoption in multiple industries and within hospitality and tourism until today (Guo et al., 2022; tom Dieck & Jung, 2018). Following the original TAM, perceived usefulness is a key factor connected to behavioural intention and technology adoption (Mogaji et al., 2024). However, this study has included other variables into TAM and trustworthiness has been highlighted as an essential component for technology acceptance (Wu et al., 2011). Furthermore, the latest research about technology acceptance of AI within tourism has incorporated trust as a variable

as well in form of an extended Technology Acceptance Model (Choung et al., 2023). Therefore, apart from AI hallucination potential, this dissertation focuses on "perceived usefulness" and "perceived trustworthiness" as independent variables.

2.2.1. Perceived Usefulness

According to the TAM, perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320) and has a significant effect on usage intention for technology. Recent studies found a correlation between perceived usefulness and the intention to use AI for tourism planning (Christensen, 2024) or within the tourism industry in general (Sökmen et al., 2024). It has been confirmed that AI users who are more satisfied with ChatGPT and perceive it as more useful are more likely to continue using ChatGPT for travel-related requests (Pham et al., 2024). Similarly, a recent study by Choung et al. (2023) confirms the traditional TAM by finding a positive relationship between the perceived usefulness of AI voice assistant and the willingness to use it ($p < 0.05$). They found an even stronger positive correlation ($p < 0.001$) between the perceived usefulness of AI smart technologies, such as AI-powered smart home devices, and their usage intention. These findings lead to the second hypothesis:

H2: Increased perceived usefulness of ChatGPT leads to an increased ChatGPT usage intention for travel planning.

As H2 suggests, the more users find ChatGPT useful for travel planning, the more likely they are to use the generative AI. However, perceived usefulness does not only have an impact on usage intention but also affects perceived trust (Horst et al., 2007). According to Ali et al. (2023), the perceived usefulness of personalized travel recommendations significantly and positively influences travellers' trust in personalized recommendations created by ChatGPT. Moreover, through exploratory factor analysis, Choung et al. (2023) divided the term trust into two-dimensional elements: human-like trust and functional trust. Within the study, human-like trust is more related to integrity and justice, while functional trust is more concerned with proficiency and expertise. For both dimensions, they found a strong positive impact of trust towards perceived usefulness. Consequently, the third hypothesis of this research would be:

H3: Perceived usefulness of ChatGPT leads to an increased perceived trustworthiness level and vice versa.

2.2.2. Perceived Trustworthiness

In today's world, it is essential to evaluate our trustworthiness in certain technologies, as it impacts our behavioural intentions towards a specific technological product (Kim et al., 2023). According to Lankton et al. (2015), trust in technology has three underlying dimensions: functionality, reliability and helpfulness. Understanding every dimensional aspect of trustworthiness extends the scope of this and therefore, trustworthiness will be treated as one single variable. Many studies have shown that trust(worthiness) can impact behavioural intentions regarding technology usage (Cheng & Chen, 2020; Singh & Sinha, 2020).

In addition, previous research examined the intention and actual usage of AI-powered chatbots for the hospitality and tourism industry in India by extending the above-mentioned TAM with additional predictors, for instance, perceived trust (Pillai & Sivathanu, 2020).

Research by Alam et al. (2023) examined variables that affect the intention to use AI in the hospitality and tourism industry in Malaysia. The findings indicate as well that a higher level of trust in AI leads to an increased usage intention of AI technologies.

Therefore, the fourth hypothesis of this research is:

H4: Increased perceived trustworthiness of ChatGPT's results leads to an increased ChatGPT usage intention for travel planning.

Based on the literature review and the hypothesis, a conceptual model was developed (see Figure 1). The model is influenced by tested studies in the field (Christensen, 2024; Kim et al., 2023) to prove the above-mentioned hypothesis. The framework has been created to test the impact of AI hallucination potential, perceived usefulness, and perceived trustworthiness on ChatGPT usage intention for travel planning.

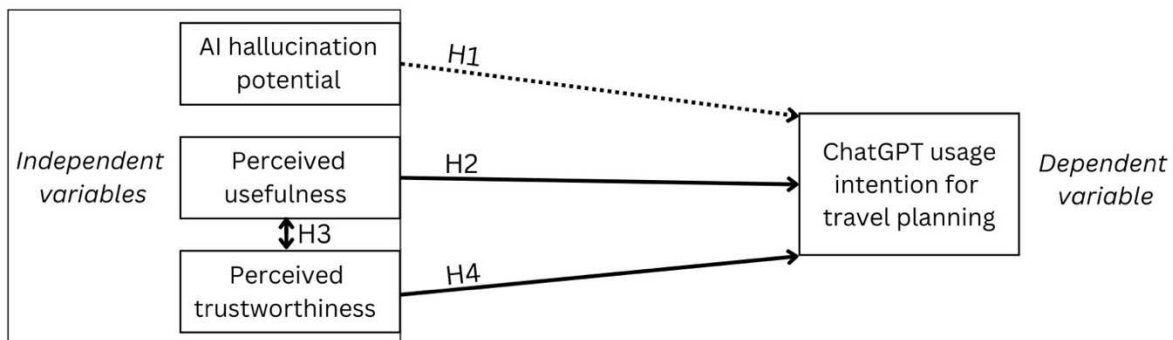


Figure 1, Conceptual framework (Adapted from: Christensen et al., 2024; Kim et al, 2023).

While the conceptual model presents a structured approach to understand the independent variables influencing ChatGPT usage intention for travel planning, it is also essential to examine the role of demographic differences as well as the influence of incorrect information.

2.2.3. Generational Differences

To ensure future-proofing, the tourism industry must offer products and services that adapt to the shifting needs of generations (Corbisiero et al., 2022). The importance of Generation Y as well as Generation Z for the future of tourism has been recognized by many researchers (Caber et al., 2020; Cavagnaro et al., 2018; Christensen et al., 2024; Horwath HTL Corporate, 2015). Generation Z, also known as Gen Z, was born after the turn of the millennium while Generation Y, also known as Millennials, was born between 1980-1999 (Aydoğdu, 2022). According to the Horwath Tourism Megatrend Report (2015), 50% of all travellers will be represented by Millennials by 2025. Moreover, Gen Z is equally important for the future of tourism (Pinho & Gomes, 2023). Both Generation Y and Z share multiple attributes, most notably their familiarity with globalization and technology-savviness, as both are often referred to as “digital natives” (Chan & Lee, 2023; Corbisiero et al., 2022). However, other research highlights that the adoption rate of generative AI technologies may vary among Gen Y and Gen Z due to their different generational circumstances and levels of familiarity with AI (Chan & Lee, 2023). Nevertheless, the same study indicates that both generations raised similar concerns about AI misinformation. That is why two additional hypotheses are suggested as follows:

***H5:** There is no significant difference in the perception of AI hallucination potential among Generation Z and Generation Y.*

***H6:** Individuals of Generation Z have a higher intention to use ChatGPT for travel planning than members of Generation Y.*

2.2.4. Influence of Incorrect Information

Apart from the conceptual model, the following chapter evaluates further underlying factors that may influence ChatGPT usage intention in a more exploratory manner.

Experiment-based research by Kim et al. (2023) explored how erroneous outputs by ChatGPT influence tourists' AI recommendations acceptance. The findings suggest that participants' intentions to visit ChatGPT were stronger when they perceived accuracy and trustworthiness in the absence of incorrect information but declined when faced with noticeable mistakes or

inaccuracies. Although this study only focused on the visit intention, it can be derived from the Technology Acceptance Model (Davis, 1989) that a behavioural intention to use technology (here: visit intention of ChatGPT) predicts an actual usage intention. Furthermore, a qualitative study with ChatGPT users from India suggests that users' performance expectancy of ChatGPT influences ChatGPT usage for educational purposes (Menon & Shilpa, 2023). As ChatGPT's potential to create false output was also part of the variable performance expectancy, the assumption can be drawn that incorrect information by ChatGPT would affect respondents' usage intention negatively.

3. Methodology

This chapter presents the overall research methodology used for this study. Research design, the sampling method and data analysis requirements will be evaluated.

3.1. Research Design

To add a contribution to current research about AI hallucination and travel planning, a quantitative methodology approach has been used. This approach was selected for several reasons. Firstly, a quantitative research design is appropriate to examine how certain factors influence an outcome (Creswell, 2009). Concerning this study, the research aims to investigate how AI hallucination, perceived usefulness and perceived trustworthiness affect the outcome of ChatGPT usage intention for travel planning. Secondly, a quantitative research design is the most suitable approach to examine whether relationships between particular variables may or may not exist (Patten & Newhart, 2017). Correlatedly, this study further investigates the relationship between perceived usefulness as well as perceived trustworthiness of ChatGPT and the usage intention of this generative AI. Thirdly, previous research about AI hallucination within the tourism industry already used quantitative research designs as part of their studies (Ali et al., 2023; Christensen, 2024). Additionally, the quantitative research design was implemented after an in-depth literature review, where secondary data was collected from scientific journals mainly allocated in the first or second quartile of the SCImago Journal Rank. This research design ensures that the derived hypothesis as well as the conceptual model are based on reliable, reputable, and impactful sources. Regarding the quantitative research approach, a single cross-sectional design was applied and all measurements of each respondent were conducted at one point in time (Mann, 2003).

3.2. Data Collection Method

A structured online questionnaire has been established to generate new insights about perceptions of AI and the impact of AI hallucination. The survey was designed on Qualtrics, a web-based software that allows the user to create multiple types of online surveys. The survey was based on questionnaires from similar studies to ensure the reliability and validity of the data collected. Next to other validated surveys, the main study that the questionnaire was based on Christensen et al. (2024). An online survey approach was chosen because it can be distributed to a large sample in a short period by collecting primary data (Malhotra et al., 2017). Another key factor for selecting this method was that responses are anonymous which leads to a greater reliability of responses as participants are less drawn to provide socially desirable answers (Joinson, 1999).

However, it should be mentioned that in many cases, researchers cannot ensure that potential survey respondents belong to the targeted sample (Nayak & K A, 2019). To alleviate this potential drawback, one screening question asking whether the respondents have already used ChatGPT has been included at the beginning of the survey to ensure the familiarity of the sample. Furthermore, only members of Generation Z and Y were recruited to answer the survey by communicating this age constraint beforehand. Before the screening question, an introductory part was included as well to introduce the research purpose to the participant and set expectations regarding time expenditure. To express appreciation for the respondents participating, it was announced that at the end of the survey, respondents may enter their email address to take part in a raffle for a gift card. The email addresses were only used for this purpose and were not connected to the data collected.

Fixed-response alternative questions were used as participants had to select answers from a predetermined response set (Malhotra et al., 2017). Most survey questions followed the Likert scale scheme with a degree of agreement on a 1 (strongly disagree) to 5 (strongly agree) scale. This particular type of scale ensures a standardized format that is easy to understand by survey participants (Malhotra et al., 2017). After the screening question part, respondents had to answer questions about their perceived usefulness and trustworthiness of ChatGPT through Likert scale questions. After this second section, survey participants had to indicate their perceptions of AI hallucination potential by selecting response options from a Likert scale as well.

During the fourth and fifth part of the same survey instrument, respondents had to select one out of two itinerary choices for travel recommendation sources. Two tables with tourism recommendations for a popular destination were presented, displayed side-by-side on the screen. Respondents were instructed to select their preference from one of the two suggestions for Paris, Tokyo, and the North Island of New Zealand. The Paris itineraries were provided by TripAdvisor's new AI and ChatGPT, the Tokyo recommendations were retrieved from ChatGPT and the governmental website and the suggestions for the North Island of New Zealand were taken from a travel blogger as well as ChatGPT. Part four and five of the survey were identical except the communication of incorrect information within two out of three travel recommendations within the fifth part. Afterwards, respondents had to indicate their preferences regarding the usage intention of ChatGPT for travel planning on a 5-point Likert scale as well. The last part of the main survey instrument included demographic questions regarding age, gender, professional status, income, nationality and ChatGPT usage frequency. Before publishing the final survey, a pilot test with 15 participants was conducted. This procedure ensured that all questions were comprehensible for respondents which increased the reliability and validity of the data (Saunders et al., 2019). Afterwards, the final survey link was shared on social media platforms, such as Instagram and LinkedIn and the online questionnaire was active for the month of April. All respondents were informed in the introductory part of the survey that the data would be exclusively used in the context of this research and that their responses were anonymous.

3.3. Research Sample

The screening question at the beginning of the questionnaire had the aim to only target respondents who were familiar with ChatGPT and had used the large language model at least once in their lives. Apart from this requirement, the survey was focused on younger consumers from different cultures. There is a specific need in academic literature to focus on tourism-related perceptions of younger consumers as their preferences will influence the tourism industry to a large extent (Caber et al., 2020). Therefore, valid respondents are members of either Generation Y or Generation Z. The sample was chosen because research recommends studying the influencing factors regarding AI adoption using a diverse sample from different countries as well as clearly defined age groups to allocate every respondent to a particular generation (Chan & Lee, 2023).

In total, 363 responses were collected through the web-based software Qualtrics. 18 respondents had never used ChatGPT before and were therefore excluded from further participation in the survey through the screening question. Eleven respondents did not finish the survey to the last questions and were sorted out as well. Moreover, to ensure reliable results through attentive survey completion by respondents, survey participants had to complete the survey in 5-15 minutes as a response time below 5 minutes would not ensure an attentive survey completion and that a response time over 15 minutes would mean that the survey was completed in at least two timeframes. Therefore, 26 respondents were excluded from the final analysis. Out of 363 responses, 308 responses were valid for further analysis.

3.3.1. Sample size requirement

To determine whether a quantitative analysis is sufficient, the minimum sample size has to be determined to justify the research procedure and results. Hair et al. (2010) introduced two approaches: the minimum number and the sample-to-variable(s) ratio. Firstly, Hair et al. (2010) suggest that a minimum sample size should equal 100 to proceed. Moreover, the researchers introduce another method where the minimum sample size is based on the number of variables used in the research. The sample-to-variables ratio should not be less than 5:1, however, a 15:1 ratio is preferable. This study used 4 main factors with 3-4 attributes to measure. Hence, the minimum sample size equals $N = (4 * 4) * 15 = 240$. Other studies using this technique do not take the attributes into account and only calculate the single factors ($N = 4 * 15 = 60$) (Rahman, 2023). However, as $60 < 100$, the minimum sample size is too low. Lastly, other research on non-probability sampling suggests a minimum sample size of 300 cases for factor analysis, otherwise, the number cannot be considered comfortable (Tabachnick & Fidell, 2007).

3.4. Data Analysis

The data from the online survey has been analyzed through the software platform IBM SPSS Statistics Version 28 which offers advanced statistical analysis features. Before analyzing the survey data, the downloaded data set from SPSS has been exported, cleaned, and prepared.

Next to analyzing demographics of the sample and overall means through descriptive statistics, an exploratory factor analysis was conducted to explore underlying relationships between the variables (Fabrigar & Wegener, 2011), Scales were constructed by forming responses to scale items, resulting in constructs such as perceived usefulness and trustworthiness. Cronbach's alpha was computed for each scale using SPSS to assess reliability followed by a multiple regression analysis to test the proposed hypotheses H1-H4. Regression models were employed

to examine the effects of AI hallucination, perceived usefulness, and perceived trustworthiness on ChatGPT usage intention for travel planning. The results of these analyses were interpreted concerning the research questions and hypotheses, providing insights into the perceived utility and trustworthiness of ChatGPT for travel planning, as well as its potential limitations. Moreover, generational differences were evaluated through an independent sample t-test while the impact of incorrect of communicating incorrect information was analyzed through a frequency analysis and paired sample t-test. Finally, the findings were synthesized and presented to contribute to the understanding of AI's role in travel planning.

4. Results

4.1. Descriptive Results

In total, respondents from 27 nationalities finished the online questionnaire, while German (59.10%), Mexican (7.80%), Austrian (5.20%) and Portuguese (4.20%) were the most common nationalities mentioned. All respondents are members of either Generation Z or Generation Y/ Millennials. 53.20% of participants identified as female, while 44.80% felt belonging to the male gender. 0.60% identified as non-binary and 1.30% had the preference to not indicate their gender. Almost 75% of survey participants use ChatGPT at least once a week. Additional demographical data can be found in Table 1.

Age in years		Gender	
[18:24] (Generation Z)	41.60%	Male	44.80%
[25:44] (Generation Y)	58.40%	Female	53.20%
		Non-binary/ Third gender	0.60%
		Prefer not to say	1.30%
Total	100%	Total	100%
Occupation		Highest level of education	
Student	52.30%	Less than high school	0.30%
Employed	43.50%	High school diploma or equivalent	16.20%
Unemployed	3.90%	Bachelor's degree	46.40%
Retired	0.30%	Master's degree	31.50%
		Doctorate degree	3.90%
		Other	1.30%
		Prefer not to say	0.30%
Total	100%	Total	100%
Nationality		ChatGPT usage frequency	
German	59.10%	Daily	17.50%
Mexican	7.80%	Several times a week	40.60%
Austrian	5.20%	Once a week	16.20%
Portuguese	4.20%	Occasionally	21.80%
Other	23.70%	Rarely	3.90%
Total	100%	Total	100%

Table 1, Demographic characterization, source: survey data

In general, respondents found ChatGPT somewhat useful for travel planning with an overall average mean of 3.67 for perceived usefulness. They agreed that ChatGPT can generate a wide range of information about destinations and attractions (mean=3.90). Respondents also concluded that ChatGPT could help them save time (mean=3.59) and increase efficiency for travel planning (mean=3.57).

However, respondents expressed mixed feelings about the trustworthiness of ChatGPT. With 3.25, the overall average of all means combined is less than for perceived usefulness but still on a moderate level. Respondents felt the highest amount of trustworthiness in ChatGPT when it comes to the generation of a destination's history, culture, or attractions. The lowest mean (3.18) can be found in confidently relying on ChatGPT's travel recommendations. Survey participants expressed some concerns about the potential of AI to generate false information. They agreed to a comparably large extent (mean=4.04) that AI can generate false information which may lead to false decisions. The possibility of AI being hacked and manipulated to share incorrect information was somewhat relevant (mean=3.40).

Before being confronted with incorrect information by ChatGPT, survey respondents showed a moderate intention to use the large language model for travel planning with an average mean of 3.14. After the communication of incorrect information within ChatGPT's travel planning suggestions, the overall mean of the usage intention decreased to 3.03. Interestingly, the intention to use ChatGPT to compare vacation prices stayed at the same lower level of 2.47.

In summary, survey respondents felt ChatGPT to be relatively useful for personalized recommendations regarding travel planning. However, mixed feelings about AI's trustworthiness and concerns about AI's hallucination potential have been expressed. Depending on the purpose, survey participants were moderately interested in the usage of ChatGPT for future travel planning. The results showed that they would rather use ChatGPT for vacation and itinerary idea generation than for price comparison. Further means and standard deviations can be retrieved from the table below (see Table 2).

Variable	Attribute	Mean	STDEV
Perceived usefulness	ChatGPT provides comprehensive, wide range of information about a destination, including its history, culture, cuisine, and popular attractions.	3.90	0.897
	ChatGPT's personalized recommendations improve the efficiency of my travel planning.	3.57	0.964
	ChatGPT's personalized recommendations improve my performance in travel planning (save time).	3.59	1.009
	Overall, I feel that ChatGPT's personalized recommendations are very useful for travel planning.	3.67	0.948
	ChatGPT provides comprehensive suggestions and a wide range of information for travel planning.	3.63	0.982
Perceived trustworthiness	I trust ChatGPT to provide reliable and accurate information about a destination's history, culture, cuisine, and popular attractions.	3.33	1.068
	I believe ChatGPT acts in my best interest.	3.24	1.041
	In general, ChatGPT's personalized recommendations are reliable.	3.25	0.955
	I feel confident relying on ChatGPT's suggestions and advice regarding travel destinations.	3.18	1.036
	Overall, ChatGPT's personalized recommendations are trustworthy.	3.30	0.959
AI hallucination potential	AI can generate false information and present it as factual, leading to incorrect decisions or actions.	4.04	1.004
	AI can make up and create imaginary scenarios that have no basis in reality, leading to confusion and misinterpretation of data.	3.89	1.055
	AI can perpetuate biases and stereotypes of different cultures and customs and peoples, leading to discriminatory outcomes and reinforcing social inequalities.	3.63	1.042
	AI can make erroneous predictions based on flawed or incomplete data, leading to incorrect assumptions and misguided travel and tourism decisions.	3.78	0.951
	AI can be vulnerable to hacking or manipulation, leading to the dissemination of false or misleading information about travel and tourism.	3.40	1.030
ChatGPT usage intention	I intend to use ChatGPT to help me plan vacations/holidays in the future.	3.44	1.008
	I plan to use ChatGPT to learn more about vacation/holiday locations.	3.52	1.002
	I would consider checking the prices of a vacation/holiday using ChatGPT.	2.47	1.251
	I consider asking ChatGPT to set up a travel route with holiday destinations.	3.26	1.094
	I intend to use ChatGPT as it helps me to brainstorm ideas about holiday destinations.	3.36	1.035
	I am keen on using ChatGPT to compare vacation prices.	2.47	1.241

Table 2, *Descriptive analysis for each dimension of Likert scale data*, source: survey data

4.2. Exploratory Factor Analysis

Firstly, an exploratory factor analysis was conducted regarding all questions within the questionnaire following a Likert scale scheme (see Appendix 2, Output 1). The varimax rotation method has been used to discover underlying dimensions of perceived usefulness, perceived trustworthiness, AI hallucination potential as well as ChatGPT usage intention for travel planning. Due to commonalities below 0.6, five variables were excluded from further analysis: PU1, PU3, PT1, PT2 and AIH5 (see Appendix 2, Output 1). The value of the Kaiser- Meyer-

Olkin (KMO) was 0.768, which indicates a high proportion of underlying factors and factor analysis as an adequate method for this purpose ($0.768 > 0.6$). Moreover, Bartlett's sphericity suggested statistical significance ($p < 0.001$), which confirms factor analysis as a suitable method as well as the rejection of the null hypothesis (no correlation between variables). All 5 factors had an eigenvalue of > 1.000 , and the model explains a total variance of 70.805%. Through the rotated component matrix and the exclusion of factors with small coefficients for improved readability, 5 factors were extracted (see Table 2).

Dimension	Item	Loading	Cronbach's alpha
Factor 1: Perceived Usefulness	PU2 – ChatGPT improves efficiency for travel planning.	0.800	0.766
	PU4 – ChatGPT is useful for travel planning.	0.732	
	PU5 - ChatGPT provides comprehensive, wide range of information for travel planning.	0.756	
Factor 2: Perceived Trustworthiness	PT3 –ChatGPT is reliable.	0.809	0.784
	PT4 - I feel confident relying on ChatGPT.	0.788	
	PT5 –ChatGPT is trustworthy.	0.824	
Factor 3: Perceived AI Hallucination Potential	AIH1 - AI can generate false information and present it as factual.	0.802	0.813
	AIH2 - AI can make up imaginary scenarios.	0.800	
	AIH3 - AI can perpetuate biases and stereotypes.	0.785	
	AIH4 - AI can make erroneous predictions.	0.801	
Factor 4: ChatGPT usage intention	CUIB1 - I intend to use ChatGPT to help me plan vacations/holidays in the future.	0.758	0.847
	CIUB2 - I plan to use ChatGPT to learn more about vacation/holiday locations.	0.835	
	CIUA1 - I intend to use ChatGPT to help me plan vacations/holidays in the future.	0.738	
	CIUA2 - I plan to use ChatGPT to learn more about vacation/holiday locations.	0.854	

Table 3, *Overview of factor analysis*, source: survey data

Interestingly, the usage intention for ChatGPT was divided into two factors focusing on two different usage aspects (location and prices). However, research suggests that a minimum of three items must load on each dimension to be statistically significant (Raubenheimer, 2004) and "to provide minimum coverage of the construct's theoretical domain" (Hair et al., 2010, p. 676). Therefore, factor 5 concerning ChatGPT usage intention for travel planning expenses has been excluded. With 4 factors, the total variance explained decreases to 59.991%.

4.3. Linear regression – Conceptual Model

After forming and testing the factors, multiple linear regression was applied to examine the relationship between AI hallucination potential, perceived trustworthiness, perceived usefulness of ChatGPT (independent variables) and ChatGPT usage intention for travel

planning (dependent variable). The relationships can be retrieved from the conceptual model (see chapter 2.2.2).

The results imply that perceived usefulness has a strong positive correlation (0.483) with ChatGPT usage intention for travel planning, meaning that if ChatGPT usage intention for travel planning increases perceived usefulness increases and vice-versa (see Appendix 2, Output 2.1). The model is statistically significant as $p < 0.05$ and accounts for the independent variable perceived usefulness for 23.40% of the variation in ChatGPT usage intention for travel planning, as the R square equals 0.234. The coefficient of conviction variable resulted in an unstandardized beta of 0.523. Again, this confirms that there is a positive relationship between the perceived usefulness of ChatGPT and the intention to use ChatGPT for travel planning, supporting H2. Furthermore, no issue with multicollinearity has been found as the Tolerance equals 1.00 ($1 > 0.4$) while VIF is below 2.5 and the condition index is 1.00 as well ($1 < 15$). However, the p-value for perceived trustworthiness (PT) is not significant ($p = 0.305$), indicating no significant effect on ChatGPT usage intention for travel planning according to this analysis. This does not provide support for H4.

Similarly, the p-value for AI hallucination potential (AIH) is not significant ($p = 0.934$), suggesting it does not have a significant effect on ChatGPT usage intention for travel planning. This does support H1. Hence, the effect of AIH and PT on CUI should be rejected. Furthermore, an additional linear regression has been conducted to test whether there is a correlation between perceived usefulness and perceived trustworthiness (see Appendix 2, Output 2.2). The results suggest that perceived usefulness has a strong positive correlation with perceived trustworthiness and vice versa (0.425), supporting H3. The model is statistically significant as $p < 0.05$ and accounts for the independent variable perceived trustworthiness for 18.00% of the variation in perceived usefulness, as the R square equals 0.180. Tolerance, VIF and condition index suggest no issues with multicollinearity either.

4.4. Independent Sample T-Test - Generational Differences

All survey respondents were either members of Generation Z or Millennials. Based on the literature review, it was relevant to investigate whether there is a significant difference in their answers regarding AI hallucination potential, frequency of ChatGPT usage and intention to use ChatGPT for travel planning. An independent sample t-test has been conducted to see whether there is a statistically significant difference in their answers regarding AI hallucination potential

(see Appendix 2, Output 4). However, the p-value is far away from being significant ($0.908 > 0.05$). Hence, it cannot be concluded that there is a significant difference in the perception of AI hallucination potential among Generation Z and Generation Y. Further independent sample t-tests were conducted to investigate whether the answers regarding the frequency of ChatGPT usage in general or the intention to use ChatGPT for travel planning differs among the two generations. Similarly, no significant difference could be measured as the p-value was above 0.05 (see Appendix 2, Output 4) Hence, the behaviour of Generation Z and Generation Y regarding AI hallucination potential as well as ChatGPT usage intention cannot be distributed into two clusters, which supports H5 but does not provide evidence for H6. A summary of all proposed hypotheses is presented below.

Hypothesis	Statement	Support
H1	Perceived AI hallucination potential has no significant correlation with ChatGPT usage intention for travel planning.	Supported
H2	Increased perceived usefulness of ChatGPT leads to an increased ChatGPT usage intention for travel planning.	Supported
H3	Perceived usefulness of ChatGPT leads to an increased perceived trustworthiness level and vice versa.	Supported
H4	Increased perceived trustworthiness of ChatGPT's results leads to an increased ChatGPT usage intention for travel planning.	Not supported
H5	There is no significant difference in the perception of AI hallucination potential among Generation Z and Generation Y.	Supported
H6	Individuals of Generation Z have a higher intention to use ChatGPT for travel planning than members of Generation Y.	Not supported

Table 4, *Summary of proposed hypothesis*, source: survey data

4.5. Frequencies and paired sample T-Test

The analysis of the selections of the travel source options (see Appendix 1, Part 4-5, TRIPCHAT1-2, CHATGOV1-2, BLOGCHAT1-2) adds some additional insights beyond the conceptual model into the participant's behaviour when being confronted with different sources as well as AI hallucination.

Firstly, a frequency analysis has been conducted to see the overall selection results (see Appendix 2, Output 3.1). The table compares the source selections before and after the introduction of incorrect information by focusing on three sets of sources: Tripadvisor AI vs. ChatGPT, ChatGPT vs. Government website, and Travel Blogger vs. ChatGPT (see Table 5).

	Data before being communicated with incorrect information		Data after being communicated with incorrect information	
Source	Tripadvisor AI	ChatGPT	Tripadvisor AI	ChatGPT
Number of Selections	163 (52.9%)	145 (47.1%)	271 (88.0%)	37 (12.0%)
Source	ChatGPT	Gov. website	ChatGPT	Gov. website
Number of Selections	151 (49.0%)	157 (51.0%)	142 (46.1%)	166 (53.9%)
Source	Travel Blogger	ChatGPT	Travel Blogger	ChatGPT
Number of Selections	217 (70.5%)	91 (29.5%)	274 (89.0%)	34 (11.0%)

Table 5, *Summary of travel source selections*, source: survey data

Across all comparisons, ChatGPT was selected less frequently compared to the other travel sources. ChatGPT was most selected when compared to the governmental website before communicating incorrect information (151 selections, 49% of respondents). Only 91 respondents (29.5%) preferred ChatGPT over the travel blogger before being confronted with incorrect information. The table shows a clear trend that ChatGPT was chosen less as a travel planning option after incorrect information was communicated. In the first scenario for the options ChatGPT vs. TripAdvisor AI, ChatGPT was selected 145 times, while in the second scenario, the large language model from Open AI was only selected 37 times. This represents a reduction of almost 75%. Generally, a lot of respondents tend to shift their preferred option towards alternative sources that might be perceived as less erroneous, such as TripAdvisor AI, Government websites, and Travel Bloggers, when the accuracy of ChatGPT is in question. To evaluate whether there is a significant difference between selecting the travel planning option before and after communicating incorrect information, a paired sample t-test has been applied (see Appendix 2, Output 3). The results show that there is a significant difference between the selection of ChatGPT vs. TripAdvisor AI and ChatGPT vs. Travel Blogger as the p-value is below 0.05. However, there is no significant difference between ChatGPT and the Governmental website. It must be noted that for the option ChatGPT vs. Governmental website, it was communicated that the information provided by ChatGPT was fully correct.

5. Discussion

The results of this study add some additional insights to the theory of the usage intention of AI in travel planning and examine influencing factors as well as the effect of AI hallucination potential and incorrect information. In this chapter, the results will be explained and put into context with previous literature.

Firstly, this study has applied theories and frameworks from other recent studies regarding AI usage intention for travel planning. Similarly to previous research about AI usage for tourism,

the independent variables AI hallucination potential, perceived trustworthiness and perceived usefulness have been established to explain the usage intention of AI for travel planning (Ali et al., 2023; Christensen et al., 2024; Kim et al., 2023; Sökmen et al., 2024). Interestingly, through the exploratory factor analysis, the usage intention of ChatGPT for travel planning was split up into two factorial dimensions: usage intention for destination and itinerary planning and the intention to use ChatGPT for comparing and investigating prices. For instance, Christensen et al. (2024) also used items referring to destinations and prices within the usage intention dimension and summarized it as one variable based on a factor analysis. As far as the author is aware, there has been no study regarding ChatGPT usage for tourism that has divided the usage intention into two parts. However, Christensen et al. (2024) provide a possible explanation by stating that tourism information such as pricing may continuously change and ChatGPT has not been able at that time to refer to the latest data published. It can be argued that tourist attractions such as ruins, museums or other sights are more consistent, and tourists can rely more on the data regarding these attractions than prices. This is also reflected in the mean of the individual items of the usage intention dimension, as on average fewer survey participants find ChatGPT useful for price comparison (mean=2.47) than for information about travel location (mean=3.52). However, as of the most recent announcements by OpenAI based on May 2024, free users now have access to GPT4o which provides the ability to access the internet and real-time information (OpenAI, 2024). Beforehand, ChatGPT has been more beneficial for suggesting an estimated price range of tourism attractions (Dwivedi et al., 2023) or considering budget constraints (Carvalho & Ivanov, 2023), as its model was limited to data up until September 2021.

The first hypothesis of this study stated that AI hallucination potential has no significant correlation with ChatGPT usage intention for travel planning and has been confirmed. In line with previous research by Christensen et al. (2024), AI hallucination potential has no statistically significant effect on the behavioural intention of using ChatGPT. It is important to note that there is a difference between AI hallucination potential and the confrontation with actual erroneous information created by AI. Previous research confirmed that increased awareness of incorrect information does not mean that individuals can identify these mistakes and change their intended behaviour accordingly (Christensen et al., 2024; Kim et al., 2023).

The second hypothesis of this paper suggested that increased perceived usefulness of ChatGPT leads to an increased ChatGPT usage intention for travel planning. Linear regression analysis

confirms the second hypothesis and shows a significant positive correlation between these two variables. This result ties well with previous studies about perceived usefulness and AI usage intention wherein the Technology Acceptance Model (TAM) has been included (Christensen et al., 2024; Sökmen et al., 2024). However, other studies stress the importance of extending the TAM when investigating AI technology (Lin & Xu, 2022; Lu et al., 2019). Nevertheless, it can be stated that the correlation between perceived usefulness and usage intention is still relevant for today's technology adoption.

The third hypothesis implied that perceived usefulness of ChatGPT leads to an increased perceived trustworthiness level and was supported. This correlation has been confirmed by multiple studies in the field of AI usage in tourism but also for other technologies within the tourism industry (Ali et al., 2023; Choung et al., 2023; Horst et al., 2007).

The fourth hypothesis stated that perceived trustworthiness of ChatGPT leads to an increased ChatGPT usage intention for travel planning. Contrary to recent findings (Alam et al., 2023; Pillai & Sivathanu, 2020) about the connection between trustworthiness and AI usage this study did not find any correlation between the two variables. However, one possible reason for the insignificant correlation is that perceived trustworthiness only has an indirect influence on the intention to use ChatGPT in tourism. A study by Choung et al. (2023) confirms the positive relationship between trust and usefulness and another positive correlation between usefulness and usage intention. Additionally, previous research indicates that trust(worthiness) has an indirect effect on usage intention, for instance, through increased usefulness (Choung et al., 2023; Shin, 2023). Hence, results differ about the fact whether perceived trustworthiness has a direct or indirect impact on usage intention and more investigations are needed to evaluate these correlations.

In addition, past studies on AI Hallucination, perceived usefulness and perceived trustworthiness within the tourism industry have mainly focused on consumers based in the UK and the U.S. (Christensen et al., 2024; Kim et al., 2023). This study adds more insights regarding users from several continents, mainly Europe (Germany, Austria, Portugal) and North America (Mexico).

Furthermore, his study assessed the behaviour of Generation Z and Generation Y and had the purpose of comparing whether the results would show a significant difference.

However, the generations did not show significantly different behaviour regarding AI hallucination potential, frequency of ChatGPT usage and ChatGPT usage intention for travel planning. A recent study found that Generation Z and Generation Y have very similar opinions regarding the usage of AI for personalized travel recommendations as approximately 25% of respondents would intend to utilize AI for their itinerary planning (Almasi et al., 2023). As mentioned above, Generation Y and Z are considered very tech-savvy which would explain their similar attitudes and behaviours towards AI technology (Chan & Lee, 2023; Corbisiero et al., 2022). As respondents are from younger generations and over 80% of survey respondents hold at least a bachelor's degree it can be assumed that many respondents are still students with similar needs.

Moreover, the survey generated additional insights beyond the conceptual model by analyzing the behavioural change of preferred travel planning options. The question type was inspired by Christensen et al. (2024) but this study went beyond previous reports by adding a second section where incorrect information was communicated.

This result ties well with previous studies wherein incorrect information provided by AI has a negative influence on usage intention (Kim et al., 2023). However, in line with the result by Christensen et al. (2024), people chose erroneous ChatGPT travel recommendations as a preferred option when mistakes were not communicated to them. However, although the number of selections increased, 11-12% of the respondents even preferred ChatGPT as an option after being communicated with the misinformation. Next to perceived usefulness, other factors may influence the usage intention for ChatGPT in travel decision-making. Interestingly, the selection of either ChatGPT or the governmental website showed no significant difference. However, in this case, ChatGPT did not make any mistakes. A preferred selection of ChatGPT, with or without mistakes, may be based on the assumption that the generative AI provides more relevant and personalized recommendations (Christensen et al., 2024).

6. Conclusion

This chapter will summarize the research results and suggest theoretical as well as managerial implications for researchers and practitioners in tourism. Lastly, limitations and possibilities for future research will be discussed.

6.1. Main Conclusion

This study contributes to the corpus of growing research on how consumers intend to use AI technology for tourism decision-making, particularly travel planning. To the best knowledge of the author, the study is the first of its kind that analyzed the perceptions of Generation Z and Generation Y regarding perceived usefulness and perceived trustworthiness towards ChatGPT, general AI hallucination potential and the intention to use ChatGPT for travel planning.

The first research question had the aim of exposing the influence of perceived trustworthiness, usefulness, and AI hallucination potential on ChatGPT usage intentions for travel planning. It can be highlighted that the perceived AI hallucination potential of survey respondents has no significant impact on the intention to use ChatGPT for travel planning, as an increased awareness level is not necessarily connected to being able to detect hallucinations and change intentional behaviours (Christensen et al., 2024). These results confirm previous research and H1 by stating that although respondents may be concerned about AI hallucination, only a few individuals were not inclined to use AI in the future (Haan & Watts, 2023). Additionally, the study found a positive correlation between perceived usefulness and usage intention of ChatGPT for travel planning, confirming this relationship with the TAM. However, only an indirect relationship of perceived trustworthiness towards the usage intention of ChatGPT for travel planning could be confirmed as perceived trustworthiness affects perceived usefulness which has a significant relationship with usage intention.

The second research question had the purpose of examining to what extent the above-mentioned findings would differ among Generation Z and Generation Y. No significant difference between Generation Z and Generation Y regarding AI hallucination potential, usage intention and usage frequency have been found. Lastly, it can be assumed that communicating incorrect information about AI leads to a decreased usage intention of ChatGPT for travel planning.

6.2. Theoretical and Managerial Implications

The following theoretical and managerial contributions derive from the above literature review, discussion as well as quantitative results and are supposed to serve as recommendations for researchers, tourists and tourism companies.

It can be confirmed that the proposed relationship between perceived usefulness and behavioural intention of the TAM is still valid for researching AI technology. However, this

research shows that due to technological advancements, other factors should be taken into consideration.

It has been noted that consumers may not be aware of erroneous information provided by ChatGPT unless they have extraordinary knowledge about a certain travel option (Kim et al., 2023). Hence, consumers need to be careful when considering information created by an AI. Additionally, addressing the issue of AI hallucination for tourism companies is a difficult topic (Christensen et al., 2024). Firstly, tourism companies should train the AI model on the highest standards to avoid frustrating customers through incorrect information (Zhan et al., 2023). However, to mitigate this risk regarding the effects of AI hallucination tourism companies should integrate disclaimers about possible AI mistakes, establish feedback loops for users and create a platform where users can share their tips on how to use AI for travel planning. To raise awareness among young consumers, Christensen et al. (2024) suggests a humorous TikTok or Instagram video where a tourist goes to a wrong location due to AI hallucination.

When promoting AI services to its potential users, tourism and hospitality companies should establish a marketing strategy that highlights the usefulness of AI technology for travel planning to establish trust and enhance usage intentions.

When choosing the target group for promoting AI services, it can be suggested to treat Generation Z and Generation Y as a homogenous group. However, this does not imply further separation of the target group regarding location, needs, educational status or technology affinity.

6.3. Limitations and Avenue for Future Research

Although this study presents relevant findings towards the research of AI usage in travel planning, the dissertation has several limitations that should be considered. Nevertheless, these shortcomings introduce opportunities for future research.

Firstly, as the conceptual model only explains 23.40% of the variation in usage intention in ChatGPT for travel planning, it can be concluded that other factors next to perceived usefulness directly impact the usage intention in ChatGPT for travel planning. Past research has taken variables such as AI familiarity and perceived ease of use into consideration that could be included as well (Christensen et al., 2024). From a marketing perspective, future research could assess the impact of brand perception of different AI services in tourism and whether these

perceptions have an impact on usage intention. This may be particularly relevant as the online travel agencies Expedia and Kayak already introduced ChatGPT plugins (Goktas & Dirsehan, 2023) and Tripadvisor has published its own OpenAI-powered AI travel planning tool.

Secondly, participants' nationality from this study was widespread and gave valuable insights regarding the perceptions of a generation. However, it may also be relevant to study the attitudes regarding AI hallucination from respondents with the same nationality.

Moreover, future research should focus on comparing different generations, for instance, Generation X and Baby Boomers with Generation Z. Comparing these generations with a higher age difference might lead to statistically significant differences regarding perceived trustworthiness, perceived usefulness, AI hallucination potential and ChatGPT usage intention. Furthermore, there is a necessity to conduct more research in the field of AI hallucination as the "discrepancy between recognizing the potential of AI hallucination and still choosing to trust AI recommendations with significant errors is disconcerting" (Christensen et al., 2024, p. 14)

Additionally, it should be mentioned that not only the usage intention for an AI should be studied but also the actual usage behaviours. It is also beyond the study to address the question of the reasoning behind the choices between ChatGPT and other travel planning sources (travel bloggers, governmental websites, Tripadvisor AI). Furthermore, results may not translate into real-life settings because this was done in a highly controlled environment. Additional studies are needed to fully understand user's motives for preferring one option over the other.

Lastly, his research was conducted between February and Mai 2024, and only within that time frame, Open AI announced the major advancement of their open-access ChatGPT model. There is a high possibility that the free version of ChatGPT will provide even more advanced features in the future. In line with predictions from other researchers, these circumstances allow deviating results in the future and emphasize the need for further research on how advancements in ChatGPT's potential may influence usage intention and adoption (Kim et al., 2023; Pham et al., 2024). As ChatGPT is the fastest-growing application in history, this study provides an important snapshot of the current state, but its fast disruption is far from over.

References

- Airbnb. (2018, March 23). Sharing More About the Technology That Powers Airbnb. *Airbnb Newsroom*. <https://news.airbnb.com/sharing-more-about-the-technology-that-powers-airbnb/>
- Alam, S. S., Masukujjaman, M., Mohamed Makhbul, Z. K., Helmi Ali, M., Ahmad, I., & Al Mamun, A. (2023). Experience, Trust, eWOM Engagement and Usage Intention of AI Enabled Services in Hospitality and Tourism Industry: Moderating Mediating Analysis. *Journal of Quality Assurance in Hospitality & Tourism*, 0(0), 1–29. <https://doi.org/10.1080/1528008X.2023.2167762>
- Ali, F., Yasar, B., Ali, L., & Dogan, S. (2023). Antecedents and consequences of travelers' trust towards personalized travel recommendations offered by ChatGPT. *International Journal of Hospitality Management*, 114, 103588. <https://doi.org/10.1016/j.ijhm.2023.103588>
- Almasi, S., Cosmas, A., Cowan, S., Ellencweig, B., Krishnan, V., Vassa, N., Geerts, W., Borko, S., & Agarwal, P. (2023, September). *The promise of AI in the travel industry* | McKinsey. <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/the-promise-of-travel-in-the-age-of-ai>
- Aydoğdu, M. (2022). Determining the Generations of Women in Türkiye Who Gave Birth between 2001-2021 and Birth Propensity According to Generation. *Journal of Geography*, 0(45), Article 45. <https://doi.org/10.26650/JGEOG2022-1159356>
- Brender, T. D. (2023). Chatbot Confabulations Are Not Hallucinations—Reply. *JAMA Internal Medicine*, 183(10), 1177–1178. <https://doi.org/10.1001/jamainternmed.2023.3875>
- Buhalis, D., Harwood, T., Bogicevic, V., Viglia, G., Beldona, S., & Hofacker, C. (2019). Technological disruptions in services: Lessons from tourism and hospitality. *Journal of Service Management*, 30(4), 484–506. <https://doi.org/10.1108/JOSM-12-2018-0398>
- Bulchand-Gidumal, J., William Secin, E., O'Connor, P., & Buhalis, D. (2023). Artificial intelligence's impact on hospitality and tourism marketing: Exploring key themes and

addressing challenges. *Current Issues in Tourism*, 0(0), 1–18.

<https://doi.org/10.1080/13683500.2023.2229480>

Caber, M., Albayrak, T., & Crawford, D. (2020). Perceived value and its impact on travel outcomes in youth tourism. *Journal of Outdoor Recreation and Tourism*, 31, 100327.

<https://doi.org/10.1016/j.jort.2020.100327>

Carvalho, I., & Ivanov, S. (2023). *ChatGPT for tourism: Applications, benefits, and risks*.

<https://doi.org/10.1108/TR-02-2023-0088>

Cavagnaro, E., Staffieri, S., & Postma, A. (2018). Understanding millennials' tourism experience: Values and meaning to travel as a key for identifying target clusters for youth (sustainable) tourism. *Journal of Tourism Futures*, 4(1), 31–42. <https://doi.org/10.1108/JTF-12-2017-0058>

Chan, C. K. Y., & Lee, K. K. W. (2023). The AI generation gap: Are Gen Z students more interested in adopting generative AI such as ChatGPT in teaching and learning than their Gen X and millennial generation teachers? *Smart Learning Environments*, 10(1), 60.

<https://doi.org/10.1186/s40561-023-00269-3>

Cheng, Y., & Chen, Z. F. (2020). Encountering misinformation online: Antecedents of trust and distrust and their impact on the intensity of Facebook use. *Online Information Review*, ahead-of-print. <https://doi.org/10.1108/OIR-04-2020-0130>

Choung, H., David, P., & Ross, A. (2023). Trust in AI and Its Role in the Acceptance of AI Technologies. *International Journal of Human–Computer Interaction*, 39(9), 1727–1739.

<https://doi.org/10.1080/10447318.2022.2050543>

Christensen, J., Hansen, J. M., & Wilson, P. (2024). Understanding the role and impact of Generative Artificial Intelligence (AI) hallucination within consumers' tourism decision-making processes. *Current Issues in Tourism*, 0(0), 1–16.

<https://doi.org/10.1080/13683500.2023.2300032>

Corbisiero, F., Monaco, S., & Ruspini, E. (2022). *Millennials, Generation Z and the Future of*

Tourism. Channel View Publications.

Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches | Online Resources*. SAGE. <https://study.sagepub.com/creswellrd4e>

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>

DeVon, C. (2023, December 22). *AI chatbots can 'hallucinate' and make things up—Why it happens and how to spot it*. CNBC. <https://www.cnbc.com/2023/12/22/why-ai-chatbots-hallucinate.html>

Dogru, T., Line, N., Mody, M., Hanks, L., Abbott, J., Acikgoz, F., Assaf, A., Bakir, S., Berbekova, A., Bilgihan, A., Dalton, A., Erkmen, E., Geronasso, M., Gomez, D., Graves, S., Iskender, A., Ivanov, S., Kizildag, M., Lee, M., ... Zhang, T. (2023). Generative Artificial Intelligence in the Hospitality and Tourism Industry: Developing a Framework for Future Research. *Journal of Hospitality & Tourism Research*, 10963480231188663. <https://doi.org/10.1177/10963480231188663>

Duong, C. D., Bui, D. T., Pham, H. T., Vu, A. T., & Nguyen, V. H. (2023). How effort expectancy and performance expectancy interact to trigger higher education students' uses of ChatGPT for learning. *Interactive Technology and Smart Education, ahead-of-print*(ahead-of-print). <https://doi.org/10.1108/ITSE-05-2023-0096>

Dwivedi, Y. K., Pandey, N., Currie, W., & Micu, A. (2023). Leveraging ChatGPT and other generative artificial intelligence (AI)-based applications in the hospitality and tourism industry: Practices, challenges and research agenda. *International Journal of Contemporary Hospitality Management*, 36(1), 1–12. <https://doi.org/10.1108/IJCHM-05-2023-0686>

Fabrigar, L. R., & Wegener, D. T. (2011). *Exploratory Factor Analysis*. Oxford University Press.

Goktas, P., & Dirsehan, T. (2023). *Optimizing Customer Experience in Hospitality and Tourism with ChatGPT Plugins: A Strategic Guide* (SSRN Scholarly Paper 4602852).

<https://doi.org/10.2139/ssrn.4602852>

Greg Brockman [@gdb]. (2022, December 5). *ChatGPT just crossed 1 million users; it's been 5 days since launch*. [Tweet]. Twitter.

<https://twitter.com/gdb/status/1599683104142430208>

Gretzel, U., Fesenmaier, D. R., & O'Leary, J. T. (2006). Chapter 2—The transformation of consumer behaviour. In D. Buhalis & C. Costa (Eds.), *Tourism Business Frontiers* (pp. 9–18).

Butterworth-Heinemann. <https://doi.org/10.1016/B978-0-7506-6377-9.50009-2>

Guo, Q., Zhu, D., Lin, M.-T. (Brian), Li, F. (Sam), Kim, P. B., Du, D., & Shu, Y. (2022). Hospitality employees' technology adoption at the workplace: Evidence from a meta-analysis. *International Journal of Contemporary Hospitality Management*, 35(7), 2437–2464.

<https://doi.org/10.1108/IJCHM-06-2022-0701>

Gursoy, D., Li, Y., & Song, H. (2023). ChatGPT and the hospitality and tourism industry: An overview of current trends and future research directions. *Journal of Hospitality Marketing & Management*. <https://www.tandfonline.com/doi/abs/10.1080/19368623.2023.2211993>

Haan, K., & Watts, R. (2023, July 20). *Over 75% Of Consumers Are Concerned About Misinformation From Artificial Intelligence – Forbes Advisor*.

<https://www.forbes.com/advisor/business/artificial-intelligence-consumer-sentiment/>

Hair, J. F., Black, W. C., & Babin, B. J. (2010). *Multivariate Data Analysis: A Global Perspective*. Pearson Education.

Hasan, Z. (2023, August 1). *Why These 50 Over 50 Founders Say Beware Of AI 'Hallucination'*. Forbes. <https://www.forbes.com/sites/forbeswomenvoices/2023/08/01/why-these-50-over-50-founders-say-beware-of-ai-hallucination/>

Horst, M., Kuttschreuter, M., & Gutteling, J. M. (2007). Perceived usefulness, personal experiences, risk perception and trust as determinants of adoption of e-government services in The Netherlands. *Computers in Human Behavior*, 23(4), 1838–1852.

<https://doi.org/10.1016/j.chb.2005.11.003>

Horwath HTL Corporate. (2015). *Tourism Megatrends Report*.
<https://horwathhtl.com/publication/tourism-megatrends-report/>

Hu, K. (2023, February 2). ChatGPT sets record for fastest-growing user base—Analyst note. *Reuters*. <https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/>

Huang, A., Chao, Y., De La Mora Velasco, E., Bilgihan, A., & Wei, W. (2022). When artificial intelligence meets the hospitality and tourism industry: An assessment framework to inform theory and management. *Journal of Hospitality and Tourism Insights*, 5(5), 1080–1100. <https://doi.org/10.1108/JHTI-01-2021-0021>

Irawan, B. (2023). Impact of Artificial Intelligence on the Tourism Industry: A Literature Review. *Innovative: Journal Of Social Science Research*, 3(6), Article 6.
<https://doi.org/10.31004/innovative.v3i6.4526>

Ivanov, S., & Webster, C. (Eds.). (2019). *Robots, artificial intelligence, and service automation in travel, tourism and hospitality* (First edition). Emerald Publishing.

Ji, Z., Lee, N., Frieske, R., Yu, T., Su, D., Xu, Y., Ishii, E., Bang, Y. J., Madotto, A., & Fung, P. (2023). Survey of Hallucination in Natural Language Generation. *ACM Computing Surveys*, 55(12), 248:1-248:38. <https://doi.org/10.1145/3571730>

Joinson, A. (1999). Social desirability, anonymity, and internet-based questionnaires. *Behavior Research Methods, Instruments, & Computers*, 31(3), 433–438.
<https://doi.org/10.3758/BF03200723>

Kim, J. H., Kim, J., Park, J., Kim, C., Jhang, J., & King, B. (2023). When ChatGPT Gives Incorrect Answers: The Impact of Inaccurate Information by Generative AI on Tourism Decision-Making. *Journal of Travel Research*. <https://doi.org/10.1177/00472875231212996>

Kozinets, R. V., & Gretzel, U. (2021). Commentary: Artificial Intelligence: The Marketer's Dilemma. *Journal of Marketing*, 85(1), 156–159. <https://doi.org/10.1177/0022242920972933>

Lankton, N., McKnight, D., & Tripp, J. (2015). Technology, Humanness, and Trust: Rethinking Trust in Technology. *Journal of the Association for Information Systems*, 16(10). <https://doi.org/10.17705/1jais.00411>

Law, R., Lin, K. J., Ye, H., & Fong, D. K. C. (2023). Artificial intelligence research in hospitality: A state-of-the-art review and future directions. *International Journal of Contemporary Hospitality Management*, 36(6), 2049–2068. <https://doi.org/10.1108/IJCHM-02-2023-0189>

Lin, C.-Y., & Xu, N. (2022). Extended TAM model to explore the factors that affect intention to use AI robotic architects for architectural design. *Technology Analysis & Strategic Management*, 34(3), 349–362. <https://doi.org/10.1080/09537325.2021.1900808>

Lu, L., Cai, R., & Gursoy, D. (2019). Developing and validating a service robot integration willingness scale. *International Journal of Hospitality Management*, 80, 36–51. <https://doi.org/10.1016/j.ijhm.2019.01.005>

Malhotra, N. K., Nunan, D., & Birks, D. F. (2017). *Marketing Research: An Applied Approach* (5th edition). Pearson Education Limited.

Mann, C. J. (2003). Observational research methods. Research design II: Cohort, cross sectional, and case-control studies. *Emergency Medicine Journal: EMJ*, 20(1), 54–60. <https://doi.org/10.1136/emj.20.1.54>

McCartney, G., & McCartney, A. (2020). Rise of the machines: Towards a conceptual service-robot research framework for the hospitality and tourism industry. *International Journal of Contemporary Hospitality Management*, 32(12), 3835–3851. <https://doi.org/10.1108/IJCHM-05-2020-0450>

Menon, D., & Shilpa, K. (2023). “Chatting with ChatGPT”: Analyzing the factors influencing users’ intention to Use the Open AI’s ChatGPT using the UTAUT model. *Heliyon*, 9(11), e20962. <https://doi.org/10.1016/j.heliyon.2023.e20962>

Metz, C. (2023, November 6). *Chatbots May 'Hallucinate' More Often Than Many Realize—The New York Times*. <https://www.nytimes.com/2023/11/06/technology/chatbots-hallucination-rates.html>

Mogaji, E., Viglia, G., Srivastava, P., & Dwivedi, Y. K. (2024). Is it the end of the technology acceptance model in the era of generative artificial intelligence? *International Journal of Contemporary Hospitality Management*, ahead-of-print(ahead-of-print). <https://doi.org/10.1108/IJCHM-08-2023-1271>

Murphy, L., Mascardo, G., & Benckendorff, P. (2007). Exploring word-of-mouth influences on travel decisions: Friends and relatives vs. other travellers. *International Journal of Consumer Studies*, 31(5), 517–527. <https://doi.org/10.1111/j.1470-6431.2007.00608.x>

Nannelli, M., Capone, F., & Lazzeretti, L. (2023). Artificial intelligence in hospitality and tourism. State of the art and future research avenues. *European Planning Studies*, 31(7), 1325–1344. <https://doi.org/10.1080/09654313.2023.2180321>

Nayak, M., & K A, N. (2019). *Strengths and Weakness of Online Surveys*. 24, 31–38. <https://doi.org/10.9790/0837-2405053138>

Open AI (2024, March 29) Personal communication. <https://chat.openai.com/>

OpenAI. (2024, May 13). *Introducing GPT-4o and more tools to ChatGPT free users*. <https://openai.com/index/gpt-4o-and-more-tools-to-chatgpt-free/>

Patten, M., & Newhart, M. (2017). Understanding research methods: An overview of the essentials, tenth edition. In *Understanding Research Methods: An Overview of the Essentials, Tenth Edition* (p. 338). <https://doi.org/10.4324/9781315213033>

Paul, J., Ueno, A., & Dennis, C. (2023). ChatGPT and consumers: Benefits, Pitfalls and Future Research Agenda. *International Journal of Consumer Studies*, 47(4), 1213–1225. <https://doi.org/10.1111/ijcs.12928>

Pham, H. C., Duong, C. D., & Nguyen, G. K. H. (2024). What drives tourists' continuance

intention to use ChatGPT for travel services? A stimulus-organism-response perspective. *Journal of Retailing and Consumer Services*, 78, 103758.
<https://doi.org/10.1016/j.jretconser.2024.103758>

Pillai, R., & Sivathanu, B. (2020). Adoption of AI-based chatbots for hospitality and tourism. *International Journal of Contemporary Hospitality Management*, 32(10), 3199–3226.
<https://doi.org/10.1108/IJCHM-04-2020-0259>

Pinho, M., & Gomes, S. (2023). Generation Z as a critical question mark for sustainable tourism – An exploratory study in Portugal. *Journal of Tourism Futures*, ahead-of-print(ahead-of-print). <https://doi.org/10.1108/JTF-07-2022-0171>

Rahman, Md. M. (2023). *Sample Size Determination for Survey Research and Non-Probability Sampling Techniques: A Review and Set of Recommendations*. 11, 42–62.

Ransbotham, S. (n.d.). *Making 600 Billion Decisions With AI: Expedia Group's Rathi Murthy* (EPISODE 605). Retrieved 23 May 2024, from <https://sloanreview.mit.edu/audio/making-600-billion-decisions-with-ai-expedia-groups-rathi-murthy/>

Raubenheimer, J. (2004). An item selection procedure to maximise scale reliability and validity. *SA Journal of Industrial Psychology*, 30(4), Article 4.
<https://doi.org/10.4102/sajip.v30i4.168>

Rejeb, A., Rejeb, K., Appolloni, A., Treiblmaier, H., & Iranmanesh, M. (2024). Exploring the impact of ChatGPT on education: A web mining and machine learning approach. *The International Journal of Management Education*, 22(1), 100932.
<https://doi.org/10.1016/j.ijme.2024.100932>

Ruan, Y., & Mezei, J. (2022). When do AI chatbots lead to higher customer satisfaction than human frontline employees in online shopping assistance? Considering product attribute type. *Journal of Retailing and Consumer Services*, 68, 103059.
<https://doi.org/10.1016/j.jretconser.2022.103059>

Sakshi, Tandon, U., Ertz, M., & Bansal, H. (2020). Social vacation: Proposition of a model to

understand tourists' usage of social media for travel planning. *Technology in Society*, 63, 101438. <https://doi.org/10.1016/j.techsoc.2020.101438>

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research Methods for Business Students*. Pearson Deutschland. <https://elibrary.pearson.de/book/99.150005/9781292208794>

Shin, D. (2023). Embodying algorithms, enactive artificial intelligence and the extended cognition: You can see as much as you know about algorithm. *Journal of Information Science*, 49(1), 18–31. <https://doi.org/10.1177/0165551520985495>

Singh, N., & Sinha, N. (2020). How perceived trust mediates merchant's intention to use a mobile wallet technology. *Journal of Retailing and Consumer Services*, 52, 101894. <https://doi.org/10.1016/j.jretconser.2019.101894>

Skavronskaya, L., Hadinejad, A. (Hana), & Cotterell, D. (2023). Reversing the threat of artificial intelligence to opportunity: A discussion of ChatGPT in tourism education. *Journal of Teaching in Travel & Tourism*, 23(2), 253–258. <https://doi.org/10.1080/15313220.2023.2196658>

Sökmen, A., Arici, H. E., & Çalışkan, G. (2024). Determinants of the Usage of ChatGPT in the Tourism and Hospitality Industry: A Model Proposal from the Technology Acceptance Perspective. *Journal of Tourism & Gastronomy Studies*, 12(1), Article 1. <https://doi.org/10.21325/jotags.2024.1398>

Susanto, D. S., Halim, E., Putra, R., Gui, A., & Nelly. (2023). *Resolving Artificial Intelligence Hallucination in Personalized Adaptive Learning System*. 6. <https://doi.org/10.1109/ICIC60109.2023.10382000>

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*, 5th ed (pp. xxvii, 980). Allyn & Bacon/Pearson Education.

tom Dieck, M. C., & Jung, T. (2018). A theoretical model of mobile augmented reality acceptance in urban heritage tourism. *Current Issues in Tourism*, 21(2), 154–174. <https://doi.org/10.1080/13683500.2015.1070801>

Tripadvisor. (2023, July 19). *Tripadvisor launches AI-powered travel planning product*. MediaRoom. <https://tripadvisor.mediaroom.com/Tripadvisor-launches-AI-powered-travel-planning-product>

Winston, P. H. (1992). *Artificial intelligence* (3rd ed). Addison-Wesley.

Wong, I. A., Lian, Q. L., & Sun, D. (2023). Autonomous travel decision-making: An early glimpse into ChatGPT and generative AI. *Journal of Hospitality and Tourism Management*, 56, 253–263. <https://doi.org/10.1016/j.jhtm.2023.06.022>

Wu, K., Zhao, Y., Zhu, Q., Tan, X., & Zheng, H. (2011). A meta-analysis of the impact of trust on technology acceptance model: Investigation of moderating influence of subject and context type. *International Journal of Information Management*, 31(6), 572–581. <https://doi.org/10.1016/j.ijinfomgt.2011.03.004>

Xiang, Z., Wang, D., O’Leary, J. T., & Fesenmaier, D. R. (2015). Adapting to the Internet: Trends in Travelers’ Use of the Web for Trip Planning. *Journal of Travel Research*, 54(4), 511–527. <https://doi.org/10.1177/0047287514522883>

Zhan, X., Xu, Y., & Sarkadi, S. (2023). Deceptive AI Ecosystems: The Case of ChatGPT. *Proceedings of the 5th International Conference on Conversational User Interfaces*, 1–6. <https://doi.org/10.1145/3571884.3603754>

Appendix

Appendix 1 - Online survey questionnaire

Dear participant, Thank you very much for taking part in this survey. You are contributing to my master's research at Católica Lisbon School of Business and Economics. This online survey studies the influence of AI hallucination on travel planning. Participating in this study is anonymous and voluntary. The completion of this survey will take around 5 minutes. In the end, one Amazon gift card of 30 EUR will be randomly distributed among participants to outline my appreciation for taking part in my research. In the last part of the survey, you may insert your email address to participate in the raffle, but it is not mandatory. Your email address neither won't be used for the statistical evaluation of the survey nor any other purposes than the raffle. Feel free to contact me anytime for comments, questions or concerns:			
Dimension	Item	Answering Options	Adapted from
<i>Part 1</i>			
Screening Question	SQ – Have you ever used ChatGPT?	Yes/No	Ali et al. (2023)
<i>Part 2</i>			
Please rate the following statements regarding your perceived usefulness and trustworthiness of ChatGPT for travel planning.			
Perceived Usefulness	PU1 - ChatGPT provides comprehensive, wide range of information about a destination, including its history, culture, cuisine, and popular attractions.	Scale: 1 (Disagree) to 5 (Agree)	Ali et al. (2023), Christensen et al., (2024)
	PU2 - ChatGPT's personalized recommendations improve the efficiency of my travel planning.		
	PU3 - ChatGPT's personalized recommendations improve my performance in travel planning (save time).		
	PU4 - Overall, I feel that ChatGPT's personalized recommendations are very useful for travel planning.		

	PU5 - ChatGPT provides comprehensive suggestions and a wide range of information for travel planning.		
Perceived Trustworthiness	PT1 - I trust ChatGPT to provide reliable and accurate information about a destination's history, culture, cuisine, and popular attractions.	Scale: 1 (Disagree) to 5 (Agree)	Ali et al. (2023), Christensen et al., (2024)
	PT2 - I believe ChatGPT acts in my best interest.		
	PT3 - In general, ChatGPT's personalized recommendations are reliable.		
	PT4 - I feel confident relying on ChatGPT's suggestions and advice regarding travel destinations.		
	PT5 - Overall, ChatGPT's personalized recommendations are trustworthy.		
Part 3			
Please rate the following statements regarding your perceived AI hallucination potential of ChatGPT for travel planning.			
AI Hallucination	AIH1 - AI can generate false information and present it as factual, leading to incorrect decisions or actions.	Scale: 1 (Disagree) to 5 (Agree)	Christensen et al., (2024)
	AIH2 - AI can make up and create imaginary scenarios that have no basis in reality, leading to confusion and misinterpretation of data.		
	AIH3 - AI can perpetuate biases and stereotypes of different cultures and customs and peoples, leading to discriminatory outcomes and reinforcing social inequalities.		
	AIH4 - AI can make erroneous predictions based on flawed or incomplete data, leading to incorrect assumptions and misguided travel and tourism decisions.		
	AIH5 - AI can be vulnerable to hacking or manipulation, leading to the dissemination of false or misleading information about travel and tourism.		
Part 4			
Please read the introduced scenarios carefully and select one out of two options for each question.			
ChatGPT usage intention (incorrect	TRIPCHAT1- Please look at the two recommended vacation/holiday plans for Paris, France, shown below. If you had to choose one of	Select one out of two options	Christensen et al., (2024), Kim et al. (2023)

information unaddressed)	the two recommended sets of activities to use for your vacation travel plans, which of the two would you choose? Figure 1		
	CHATGOV1 - Please look at the two recommended vacation/holiday plans for Tokyo, Japan shown below. If you had to choose one of the two recommended sets of activities to use for your vacation travel plans, which of the two would you choose? Figure 2		
	BLOGCHAT1 - Please look at the two recommended vacation/holiday plans for the North Island of New Zealand, shown below. If you had to choose one of the two recommended sets of activities to use for your vacation travel plans, which of the two would you choose? Figure 3		
	CUIB1 - I intend to use ChatGPT to help me plan vacations/holidays in the future.	Scale: 1 (Disagree) to 5 (Agree)	
	CUIB2 - I plan to use ChatGPT to learn more about vacation/holiday locations.		
	CUIB3 - I would consider checking the prices of a vacation/holiday using ChatGPT.		
	Part 5		
Please read the introduced scenarios carefully and select one out of two options for each question.			
ChatGPT usage intention for travel planning (incorrect information addressed)	TRIPCHAT2 - After that, you found that ChatGPT provided wrong information. The 3rd restaurant recommendation, Quimet & Quimet, is actually located in Barcelona, not in Paris. Which of the two sources would you choose? Figure 1	Select one out of two options	Christensen et al., (2024), Kim et al. (2023)
	CHATGOV2 - After that, you found that ChatGPT provided correct information. Which of the two sources would you choose? Figure 2		
	BLOGCHAT2 - After that, you found that ChatGPT provided wrong information. The 5th recommended destination, Lake Tekapo, is actually located in the South Island, not the North		

	Island. Which of the two sources would you choose? Figure 3		
	CUIA1- I consider asking ChatGPT to set up a travel route with holiday destinations.	Scale: 1 (Disagree) to 5 (Agree)	
	CUIA2 - I intend to use ChatGPT as it helps me to brainstorm ideas about holiday destinations.		
	CUIA3 – I am keen on using ChatGPT to compare vacation prices.		
<i>Part 6</i>			
Demographics	D1 - How old are you? - 18-24 - 25-34 - 35-44 - 45-54 - 55-64 - 65+	Mark one option	Ali et al. (2023), Nguyen (2022)
	D2 - What is your gender? - Male - Female - Non-binary/Third gender - Prefer not to say		
	D3 - What is your occupation? - Student - Employed - Unemployed - Retired		
	D4 - What is your highest level of education? - Less than high school - High school diploma or equivalent - Bachelor's degree - Master's degree - Doctorate degree - Other - Prefer not to say		
	D5 - What is your nationality?	Write nationality	
	D6 - How often do you use ChatGPT? - Daily - Several times a week	Mark one option	

	- Once a week - Occasionally - Rarely		
Thank you very much for completing this online survey! If you wish to take part in the raffle of a 30 EUR Amazon gift card, please insert your e-mail address below.			

Figure 1

Tripadvisor Recommendations	ChatGPT Recommendations
- Eiffel Tower - Bateaux Parisiens Seine River Dinner Cruise - The Louvre Museum - Versailles Palace - Catacombs Tour	- Explore Montmartre - Visit the Louvre Museum - Eat at Quimet & Quimet - Walk along the Seine River - Admire the Eiffel Tower

Figure 2

ChatGPT Recommendations	Governmental Website Recommendations
- Tokyo Tower - Senso-ji Temple - Meiji Shrine (Meiji Jingu) - Shibuya Crossing and Hachiko Statue - Tsukiji Fish Market	- Sensoji Temple - Meiji Jingu - Hamarikyu Gardens - Edo-Tokyo Open Air Architectural Museum - Olympic sites

Figure 3

Travel Blogger Recommendations	ChatGPT Recommendations
- Bay of Islands - Te Pahi Giant Sand Dunes - Auckland and Surrounds - The Waitakere Ranges - Muriwai Beach	- Auckland - Bay of Islands - Coromandel Peninsula - Cape Reinga - Lake Tekapo

Appendix 2 – Quantitative Analysis

Output 1 – Exploratory Factor Analysis

Communalities

	Initial	Extraction
PU1	1,000	,362
PU2	1,000	,638
PU3	1,000	,475
PU4	1,000	,654
PU5	1,000	,657
PT1	1,000	,559
PT2	1,000	,440
PT3	1,000	,603
PT4	1,000	,605
PT5	1,000	,694
AIH1	1,000	,625
AIH2	1,000	,617
AIH3	1,000	,611
AIH4	1,000	,670
AIH5	1,000	,390
CUIB1	1,000	,687
CUIB2	1,000	,693
CUIB3	1,000	,844
CUIA1	1,000	,645
CUIA2	1,000	,767
CUIA3	1,000	,859

Extraction Method: Principal Component Analysis.

KMO and Bartlett's Test

Kaiser–Meyer–Olkin Measure of Sampling Adequacy.		,768
Bartlett's Test of Sphericity	Approx. Chi-Square	1977,764
	df	120
	Sig.	,000

Rotated Component Matrix^a

	Component				
	1	2	3	4	5
CUIA2	,854				
CUIB2	,835				
CUIB1	,758				
CUIA1	,738				
AIH1		,802			
AIH4		,801			
AIH2		,800			
AIH3		,785			
PT5			,824		
PT3			,809		
PT4			,788		
PU2				,800	
PU5				,756	
PU4				,732	
CUIA3					,915
CUIB3					,903

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,300	26,877	26,877	4,300	26,877	26,877	2,780	17,373	17,373
2	2,778	17,366	44,242	2,778	17,366	44,242	2,597	16,228	33,601
3	1,737	10,854	55,096	1,737	10,854	55,096	2,135	13,342	46,943
4	1,478	9,235	64,330	1,478	9,235	64,330	2,088	13,048	59,991
5	1,036	6,475	70,805	1,036	6,475	70,805	1,730	10,814	70,805
6	,650	4,063	74,868						
7	,611	3,821	78,689						
8	,538	3,360	82,049						
9	,465	2,909	84,958						
10	,463	2,893	87,851						
11	,427	2,667	90,518						
12	,390	2,436	92,954						
13	,363	2,267	95,221						
14	,308	1,924	97,145						
15	,256	1,599	98,744						
16	,201	1,256	100,000						

Extraction Method: Principal Component Analysis.

Output 2 – Linear Regression Analysis

Output 2.1 – Multiple Linear Regression – CUI, PU, PT, AIH

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,483 ^a	,234	,231	,75576	1,928

a. Predictors: (Constant), PU

b. Dependent Variable: CUI_Loc

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53,262	1	53,262	93,250	<,001 ^b
	Residual	174,778	306	,571		
	Total	228,040	307			

a. Dependent Variable: CUI_Loc

b. Predictors: (Constant), PU

Coefficients^a

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1,501	,201		7,468	<,001		
	PU	,523	,054	,483	9,657	<,001	1,000	1,000

a. Dependent Variable: CUI_Loc

Excluded Variables^a

Model		Beta In	t	Sig.	Partial Correlation	Tolerance	VIF	Minimum Tolerance
1	PT	,057 ^b	1,030	,304	,059	,820	1,220	,820
	AIH	-,004 ^b	-,084	,933	-,005	,990	1,010	,990

a. Dependent Variable: CUI_Loc

b. Predictors in the Model: (Constant), PU

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	PU
1	1	1,977	1,000	,01	,01
	2	,023	9,226	,99	,99

a. Dependent Variable: CUI_Loc

Output 2.2 – Linear Regression PU, PT

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,425 ^a	,180	,178	,72210	2,244

a. Predictors: (Constant), PT

b. Dependent Variable: PU

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35,116	1	35,116	67,347	<,001 ^b
	Residual	159,557	306	,521		
	Total	194,674	307			

a. Dependent Variable: PU

b. Predictors: (Constant), PT

Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2,291	,168	13,661	<,001		
	PT	,411	,050	,425	8,206	<,001	1,000

a. Dependent Variable: PU

Collinearity Diagnostics ^a					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	PT
1	1	1,969	1,000	,02	,02
	2	,031	8,026	,98	,98

a. Dependent Variable: PU

Output 3 - Paired Sample T Test

TRIPCHAT1				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	163	52,9	52,9	52,9
1	145	47,1	47,1	100,0
Total	308	100,0	100,0	

CHATGOV1				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	157	51,0	51,0	51,0
1	151	49,0	49,0	100,0
Total	308	100,0	100,0	

BLOGCHAT1				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	217	70,5	70,5	70,5
1	91	29,5	29,5	100,0
Total	308	100,0	100,0	

TRIPCHAT2				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	271	88,0	88,0	88,0
1	37	12,0	12,0	100,0
Total	308	100,0	100,0	

CHATGOV2				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	166	53,9	53,9	53,9
1	142	46,1	46,1	100,0
Total	308	100,0	100,0	

BLOGCHAT2				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	274	89,0	89,0	89,0
1	34	11,0	11,0	100,0
Total	308	100,0	100,0	

Paired Samples Correlations

		N	Correlation	Significance	
				One-Sided p	Two-Sided p
Pair 1	TRIPCHAT1 & TRIPCHAT2	308	,232	<,001	<,001
Pair 2	CHATGOV1 & CHATGOV2	308	,539	<,001	<,001
Pair 3	BLOGCHAT1 & BLOGCHAT2	308	,294	<,001	<,001

Paired Samples Test

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Significance	
					Lower	Upper			One-Sided p	Two-Sided p
Pair 1	TRIPCHAT1 - TRIPCHAT2	,351	,530	,030	,291	,410	11,618	307	<,001	<,001
Pair 2	CHATGOV1 - CHATGOV2	,029	,480	,027	-,025	,083	1,068	307	,143	,286
Pair 3	BLOGCHAT1 - BLOGCHAT2	,185	,472	,027	,132	,238	6,878	307	<,001	<,001

Output 4 – Generational Differences

Group Statistics

	D1	N	Mean	Std. Deviation	Std. Error Mean
AIH	18-24	128	3,8613	,81195	,07177
	25-44	180	3,8167	,81304	,06060

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
AIH	Equal variances assumed	,013	,908	,475	306	,317	,635	,04466	,09395	-,14021	,22953
	Equal variances not assumed			,475	273,883	,317	,635	,04466	,09393	-,14026	,22958

Group Statistics

	D1	N	Mean	Std. Deviation	Std. Error Mean
CUI_Loc	18-24	128	3,4531	,87662	,07748
	25-44	180	3,3569	,85140	,06346

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
CUI_Loc	Equal variances assumed	,067	,796	,965	306	,168	,335	,09618	,09966	-,09992	,29229
	Equal variances not assumed			,960	268,734	,169	,338	,09618	,10015	-,10100	,29337

Group Statistics

	D1	N	Mean	Std. Deviation	Std. Error Mean
D6	18-24	128	2,52	1,079	,095
	25-44	180	2,56	1,164	,087

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
D6	Equal variances assumed	1,724	,190	-,306	306	,380	,760	-,040	,131	-,297	,217
	Equal variances not assumed			-,310	285,390	,379	,757	-,040	,129	-,294	,214