



## Determinants of the Usage of ChatGPT in the Tourism and Hospitality Industry: A Model Proposal from the Technology Acceptance Perspective

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### Abstract

ChatGPT is a generative artificial intelligence technology. It is a technology that is becoming more widely used. This research aimed to identify the determinants of the usage of ChatGPT in the tourism and hospitality industry. For this purpose, a systematic literature review was conducted, and six determinants of ChatGPT usage were identified. These are experience quality, satisfaction, interaction, ethics, reliability, and design features. These determined variables affect the behavioral intention regarding the usage of ChatGPT. Within the scope of the findings, a model for using ChatGPT is proposed from the perspective of the Technology Acceptance Model. Determinants of the use of ChatGPT in the tourism and hospitality industry have been identified. Relevant articles were subjected to thematic analysis and themes were determined. These; quality of experience, satisfaction, interaction, ethics, reliability and design features. In this research, determinants regarding the use of ChatGPT in the tourism and accommodation sector were identified and recommendations were made.

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## INTRODUCTION

One of the artificial intelligence systems that develops day by day is ChatGPT (Korzynski et al., 2023). ChatGPT is a chatbot with the state-of-the-art extensive language modeling system of Generative Pretrained Transformer 3 (GPT-3.5) (Hughes, 2023). There is the ability to understand, speak, and interact. ChatGPT can interact with people, answer questions, understand code, admit errors, and reject inappropriate requests and expectations (Erul & Işın, 2023). ChatGPT can communicate and continue the conversation with the user (OpenAI, 2022; Hughes, 2023). It can also remember past information the user has given it. ChatGPT is a versatile artificial intelligence tool that includes natural language processing. ChatGPT is an interesting artificial intelligence system with all its features (Korzynski et al., 2023). Ethical evaluation ability is not yet fully present. However, it is designed not to spread illegal and harmful information (Hughes, 2023; Lund et al., 2023).

ChatGPT's structure and powerful artificial intelligence system facilitate its integration into life. Many businesses have started using productive artificial intelligence systems such as ChatGPT (Dwivedi et al., 2023a). Microsoft's usage of ChatGPT in the Bing search engine exemplifies this (Badr, 2023). Similarly, companies such as Google, OpenAI, Amazon, Jasper, and Meta can be given as examples (Dwivedi et al., 2023a). It is still in its early stages in the hospitality and tourism industry (Tourism and Hospitality Market Forecast, 2023).

Adoption of technology in the tourism and hospitality industry is difficult due to the nature of the service sector (Buhalis et al., 2023; Ozdemir et al., 2023). Recent developments show that businesses are trying Chatbots at customer service points (Brandtzaeg & Følstad, 2017; Candello, 2017; Calvillo, 2023). ChatGPT has applications to increase the productivity of employees and the experience of customers (Koc et al., 2023; Mich & Garigliano, 2023; Wang et al., 2024). If ChatGPT can be used correctly and the right questions can be asked, it can provide quick solutions and increase the quality of experience. It can help tourists create travel plans, evaluate transportation options, and get preliminary information about pricing. ChatGPT can be used before, during, and after travel (Dwivedi et al., 2023b; Gursoy et al., 2023; Wong et al., 2023).

ChatGPT has features that can increase tourism experience and service. ChatGPT can provide the necessary technical support for personalized service delivery using users' demands, experiences, and past preferences (Iskender, 2023). ChatGPT's capabilities can provide new revenue-generating business models for tourism and hospitality businesses. ChatGPT has a structure that can strengthen the industry with its usability, highly fluent language ability, customization, reliability, accuracy, and individual service delivery features (Carvalho & Ivanov, 2023; Sallam, 2023). There may be some challenging situations to benefit from all the power of ChatGPT. Comprehensive and high-quality data is required to receive quality service from the ChatGPT system. This data can only be obtained by collaborating with different stakeholders. ChatGPT will use user data. Therefore, issues of social impact and ethical concerns must also be addressed. In this context, appropriate ethical standards and legal regulations are needed (Helberger & Diakopoulos, 2023; Kasneci et al., 2023; Paul et al., 2023).

ChatGPT is one of the latest products of generative artificial intelligence systems and is becoming increasingly widespread (Calvillo, 2023; Wamba et al., 2023). The usage of ChatGPT in the tourism and hospitality industry is still in its early stages (Tourism and Hospitality Market Forecast, 2023). Related studies show that ChatGPT can benefit these industries (Carvalho & Ivanov, 2023; Dwivedi et al., 2023b; Mich & Garigliano, 2023). However, the possible effects and future of ChatGPT on the hospitality and tourism industry need to be examined (Gursoy et al.,

2023; Lee et al., 2023). ChatGPT is a newly developed technology. Academic studies on the tourism industry will intensify as of 2023. Although there are studies on chatbots (Brandtzaeg & Følstad, 2017; Calvillo, 2023; Canello, 2017; Ukpabi, 2019; Pillai & Sivathanu, 2020; Tosun et al., 2024), the possible effects and future of ChatGPT, which has an advanced productive artificial intelligence system, are still a question mark (Carvalho & Ivanov, 2023; Demir & Demir, 2023; Dogru et al., 2023; Gursoy et al., 2023; Shin & Kang, 2023;). The research will contribute to the gaps in the literature with these mentioned aspects.

ChatGPT research is generally conducted using the Utilizing stakeholder theory, Leader-Member-Exchange theory, disruptive innovation theory, the Technology Acceptance Model, and the Unified Theory of Acceptance and Use of Technology. ChatGPT has its unique structure; in this context, models, scales, and empirical studies are needed (Dogru et al., 2023). This research examined the determinants and possible effects of the usage of ChatGPT. A model proposal for user acceptance of ChatGPT has been developed. ChatGPT's user intention can be determined with this developed model. The research will contribute to the gaps in the literature with these mentioned aspects.

### **Using Chatgpt in the Tourism and Hospitality Industry**

Generative artificial intelligence technologies have significant potential to benefit stakeholders in the tourism and hospitality industry. ChatGPT is one of them (Carvalho & Ivanov, 2023). It can be used for restaurants and food and beverage businesses (Calvillo, 2023). This system can be used to access recipes and world cuisine information. Strategies can be developed for the target market. It can give information about the local people. Menus can be prepared (Calvillo, 2023; Carvalho & Ivanov, 2023). It can contribute to the development of students' learning experiences. If system integration is achieved, it may also have rapid problem-solving ability (Iskender, 2023; Keiper, 2023).

The quality of travelers' experience before, during, and after travel can be improved. Information can be obtained about places to visit in the region, and information about the region's history, culture, and structure can be accessed. Travel itineraries can be arranged and encourage customers to purchase (Gursoy et al., 2023; Wong et al., 2023). It can provide up-selling and cross-selling opportunities for businesses. Legal regulations can be followed through this channel. It can improve service quality. With all these features, it can provide a demand-creating effect. Considering all this, ChatGPT has the potential to benefit tourism and hospitality industry stakeholders (Gursoy et al., 2023; Remountakis et al., 2023).

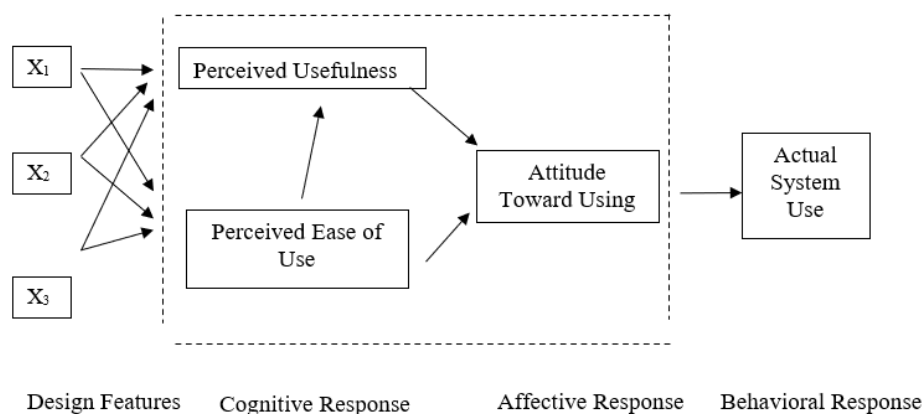
ChatGPT has great potential for the tourism and hospitality industry (Dwivedi et al., 2023b; Mich & Garigliano, 2023). However, some basic regulations are needed to realize this potential. The first of these is the development of information and communication technological infrastructures. The system needs to be constantly developed and updated. Increasing the service quality can be achieved by having solid infrastructural equipment. Thus, it can help in providing personalized service (Dogru et al., 2023; Kim et al., 2023; Ma & Huo, 2023). However, the databases to be used may cause ethical problems. Therefore, there is a need to develop international ethical standards (Joksimovic et al., 2023; Stahl & Eke, 2024). The other problem is credibility. ChatGPT requires integration with other programs. The integrated system must be reliable (Dogru et al., 2023; Dwivedi et al., 2023a).

Another potential problem for ChatGPT is the structure of the hospitality and tourism industry. Customers come into contact with people in the service industry. They care about people's reactions and want to interact. For this

reason, there may be a prejudice regarding the usage of ChatGPT (Buhalis et al., 2023; Ozdemir et al., 2023). Likewise, sector-based preparation of ChatGPT can increase ease of use and attract users' attention. ChatGPT is used on platforms such as QuadLabs and Expedia. Sector-based integration may be more beneficial (Dwivedi et al., 2023b).

### Technology Acceptance Model

The Technology Acceptance Model was developed to determine how people perceive new technologies. It aims to determine users' reactions to developing and new technologies, to detect resistance situations, and to find the reasons for acceptance. Its basis is the "Theory of Reasoned Behavior" developed by Ajzen and Fishbein in 1975. Over time, it has become the standard model used in studies examining technology acceptance. According to the theory, perceived ease of use and usefulness of technology affect behavioral intention. The model has significant power to determine users' acceptance behavior towards technologies (Venkatesh et al., 2012), The fact that it is clear and understandable has enabled the model to be widely used. Perceived ease of use refers to the easy adoption of technology. It is a case of rapid adoption with little effort. Perceived usefulness is the tendency to perform better due to technology. Behavioral intention is a result of thoughts and feelings. It is a result of the user's cognitive or emotional response. The user desires to use the system. Usage behavior is the user's positive attitude due to his positive feelings and thoughts (Davis, 1986). This model, developed by Davis in 1986, is shown in Figure 1.



**Figure 1.** Technology Acceptance Model

**Source:** (Davis, 1986)

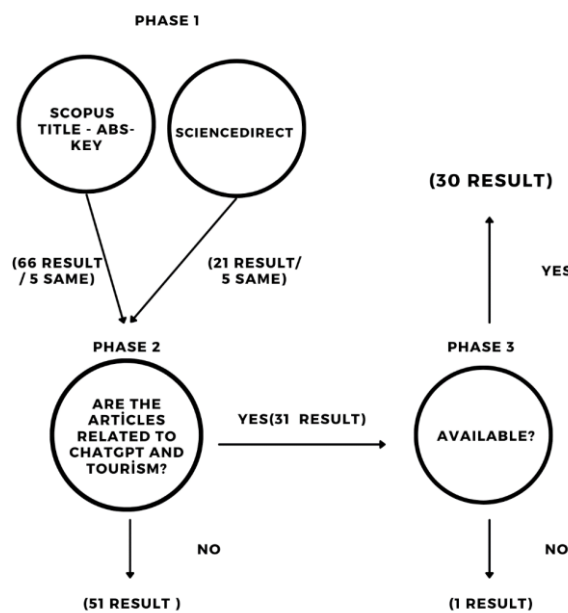
In this research, the usage of ChatGPT in the tourism and hospitality sectors was evaluated based on the Technology Acceptance Model. Determinants and variables of ChatGPT usage have been identified. A model is proposed from the Technology Acceptance Model perspective for tourism and hospitality businesses.

### Method

The systematic analysis method was adopted in this research. Within the scope of the research, articles regarding the usability of ChatGPT in the tourism and hospitality industry were identified. Systematic analysis is a detailed examination of studies conducted in a specific field or subject (Gough et al., 2012). Exclusion and inclusion criteria are applied during the analysis process. The method used in this research includes the steps suggested by Pollock & Berge (2018). Scopus and ScienceDirect databases were preferred. The main reason for this is that it is a comprehensive, robust, and up-to-date database. "TITLE-ABS-KEY" search was performed in the Scopus database

("ChatGPT" AND ("travel" OR "tourism" OR "hospitality" OR "marketing" OR "tourist" OR "leisure")). The ScienceDirect database used "ChatGPT" and " TOURISM" themes.

As a result of the search in the ScienceDirect database, 66 articles were found. The articles were accessed on October 11, 2023. 5 out of 66 articles are included in both databases. Forty-five articles were not relevant to the subject and were excluded. Sixteen articles were evaluated within the scope of the research. Scopus 21 articles were found in the database. There were six irrelevant and one unreachable article, and 14 articles were evaluated within the scope of the research. Articles related to tourism and hospitality in the pre-publication process that were published and accepted for publication were included (article in press). The MAXQDA analysis tool was also used in the analysis of the articles. Thematic analysis was used to group the articles and identify determinants. With thematic analysis, the data was divided into categories. The flow chart in the research is shown in Figure 2.



**Figure 2.** Flow Chart (Obtaining Data)

**Source:** own elaboration

Figure 2 shows that 30 articles were included in the analysis due to the inclusion and exclusion criteria. It is sufficient that the articles are in the publication process and have been published. Studies that may be related to tourism and hospitality were included in the research.

**Findings**

The findings of the research were evaluated under two headings. These are general findings and the usage of ChatGPT in the tourism and hospitality industry.

**General Findings**

The first of the general findings is the publication years of the articles. The publication years of the articles are listed in Table 1. It can be seen that 26 articles belong to 2023 and 4 to 2024—the years of publication show that the subject is a very current issue. The data was accessed in October. Therefore, the number of articles on the subject

will increase further in 2023 and the following years.

**Table 1.** Publication Years of Articles

Puclication Years	Number of Publications
2024	4
2023	26

**Source:** (ScienceDirect.com 2023; Scopus.com, 2023).

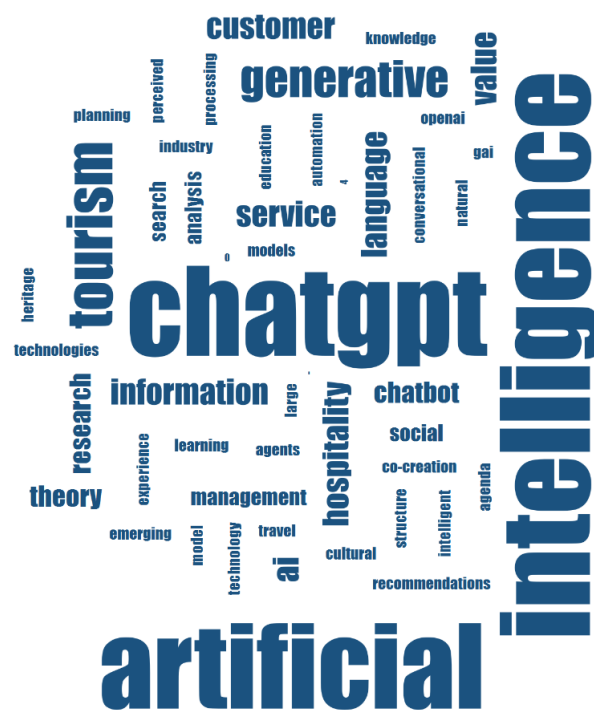
Another finding relates to journals. When Table 2 is examined, the journal with the most publications is the "Journal of Retailing and Consumer Services" with three articles. Thirty articles were published in 24 different journals.

**Table 2.** Journals

Journals	Number of Publications
Journal of Retailing and Consumer Services	3
International Journal of Information Management	2
Journal of Hospitality and Tourism Management	2
Technological Forecasting & Social Change	2
Technology in Society	2

**Source:** (ScienceDirect.com 2023; Scopus.com, 2023).

The keywords of the articles were processed with the MAXQDA analysis tool. The word cloud formed as a result of the analysis is shown in Figure 3.



**Figure 3.** Word Cloud for Keywords

**Source:** (ScienceDirect.com 2023; Scopus.com, 2023).

When Figure 3 is examined, the most repeated keywords are "intelligence" and "ChatGPT," with 20 repetitions. There is the word "artificial" with 19 repetitions. There are ten repetitions of the word "tourism" and eight repetitions

of the word "generative." When the keywords are examined, the articles are related to the subject. The data includes articles targeted with the correct scanning method.

### **Findings on the Usage of ChatGPT in the Tourism and Hospitality Industry**

This section identifies the determinants of the usage of ChatGPT in the tourism and hospitality industry. Relevant articles were subjected to thematic analysis. Study findings were divided into classifications to determine themes. The prominent findings of the studies are classified into words. Findings are divided into the most commonly used categories. Themes regarding the usage of ChatGPT were identified. These are quality of experience, satisfaction, interaction, ethics, credibility, and design features. These determinants are factors that affect users' usage of ChatGPT.

#### **Quality of Experience**

The quality of users' experience affects ChatGPT usage. Relevant literature (Carvalho & Ivanov, 2023; Demir & Demir, 2023; Dogru et al., 2023; Dwivedi et al., 2023b; Gursoy et al., 2023; Iskender, 2023; Ivanov & Soliman, 2023; Javaid et al., 2023; Joksimovic et al., 2023; Keiper, 2023; Koc et al., 2023; Ma ve Huo, 2023; Mich & Garigliano, 2023; Remountakis et al., 2023; Wamba et al., 2023; Wang et al., 2024; Wong et al., 2023; Yan et al., 2023; Zarezadeh et al., 2023) supports this view.

ChatGPT is capable of solving customer experiences and complex problems. Wang et al. (2024) developed the new customer experiences scale in artificial intelligence-supported products. Five dimensions have been identified that express the customer experience in artificial intelligence-supported products: classification, delegation, data capture, and social and anthropomorphic experience. The study suggests that artificial intelligence-supported products will contribute to customer experiences. Joksimovic et al. (2023) examined the role of artificial intelligence in solving complex problems. The study results show that ChatGPT has the potential to significantly increase the efficiency and effectiveness of human-machine collaboration in problem-solving. For this, it is recommended to develop machine learning and artificial intelligence techniques, research new forms of human-machine interaction, and develop new methods. ChatGPT is also considered one of these tools. Yan et al. (2023) examined the trends regarding ChatGPT. The results show that ChatGPT can be used, especially in non-professional fields. ChatGPT can reject inappropriate requests, answer questions, and prevent faulty assumptions. It can provide complex reasoning processes, establish chains of thought (CoT), provide contextual learning, and carry out many activities such as code understanding/generation. Within the scope of the study, it is recommended to expand the usage of ChatGPT, including tourism, to encourage application scenarios and to develop digital service capacities. Koc et al. (2023) examined the usage of ChatGPT to respond to customer complaints on TripAdvisor. The results suggest that ChatGPT can be an effective and efficient response tool, with high quality, rapid response, and the ability to understand customer complaints. Remountakis et al. (2023) examined ChatGPT as a persuasive technology in hotel sales. It has been stated that it has a structure that produces personalized recommendation messages. The results show that the ChatGPT system can be effective in decision-making processes and increase sales. Shin & Kang (2023) examined the current status, development, and future of tourism research using ChatGPT. The findings reveal that tourism contributes to the development of other academic fields. Tourism research focuses on the practical research problem rather than theoretical and conceptual studies. It is suggested that it may be beneficial to examine future tourism research in cooperation with different fields such as social justice, health, climate, and politics. ChatGPT is

a technology that can be collaborated with many fields.

ChatGPT has the potential to increase tourists' experiences and guide them. Zarezadeh et al. (2023) discussed how tourists search for online information. ChatGPT is one of the artificial intelligence technologies used in online travel planning. ChatGPT is a technology that can provide real-time and personalized information and recommend destinations and tourism products. Study results show that tourists apply an information search strategy during planning. In other words, it reveals that they collect information from appropriate information sources according to a specific search target. For this reason, it reveals that tourism managers and marketers should create the content of their online platforms in a way that tourists can easily use. Javaid et al. (2023) examined the potential, possibilities, and background of ChatGPT. The results show that ChatGPT can provide guidance with accurate information and be a flexible and effective method. Gursoy et al. (2023) examined the current and possible situation of ChatGPT in the tourism and hospitality sectors. The results suggest that ChatGPT can be used during and after planning, purchasing, and vacationing. It can meet customers' unique needs and requests using personal information. Demir & Demir (2023) examined ChatGPT for value creation and service individualization. They conducted research in the travel industry. The results show that ChatGPT supports and strengthens individual service and internalized knowledge. Thus, service value is affected positively. All these outputs show an increase in service quality and experience quality. Wong et al. (2023) examined the effect of ChatGPT on tourists' decision-making processes before, during, and after travel. Findings show that tourists can access cost-effective, customized information through ChatGPT. ChatGPT is a technology that can assist tourists at every stage of the trip, offer customized suggestions, provide 24/7 personal assistance, improve the quality of experience, and prepare autonomous guided tours.

ChatGPT also can increase supply chain performance. Wamba et al. (2023) examined the benefits, challenges, and trends of using artificial intelligence and ChatGPT in operations and supply chain management. ChatGPT is a technology that is becoming widespread, including in the hospitality and tourism industry. The results indicate that AI and ChatGPT integration improves overall supply chain performance. It has also been determined that these technologies increase users' productivity. Organizational learning processes are an essential detail in the adoption of these technologies.

ChatGPT can also improve the quality of experience in teaching activities. Keiper (2023) evaluated how and where ChatGPT can be used to plan activities during teaching. The results show that ChatGPT can be used in experiential learning experiences and make the process efficient. Ivanov & Soliman (2023) examined the effect of ChatGPT on research and tourism education. The results show that ChatGPT has the potential to research and revolutionize tourism education. ChatGPTs can do what researchers and students need to do. Therefore, universities should incorporate ChatGPTs into their teaching strategies and methods. ChatGPTs have the potential to take over cognitive tasks in the future. Iskender (2023) interviewed with ChatGPT and examined its effects on the tourism, hospitality, and education sectors. The results show that ChatGPT can be used in tourism education. It is supportive of students. Additionally, it may negatively impact students' critical thinking and cannot replace people's creativity and intellectuality. In this respect, it also has negative features.

ChatGPT can also positively impact hospitality and tourism industry employees and promote digital transformation. Dwivedi et al. (2023b) examined the use and challenges of artificial intelligence applications and ChatGPT in the tourism and hospitality industry. The results show that digital transformation in the tourism and



hospitality industry is possible with productive artificial intelligence applications like ChatGPT. ChatGPT will be able to increase the productivity of employees in the hospitality and tourism sectors. It will be able to ensure innovation and efficiency in business processes. Considering all these factors, it is predicted that it can contribute to digital transformation. In this context, providing training and development to sector employees to benefit from technologies such as ChatGPT is necessary. Carvalho & Ivanov (2023) examined ChatGPT applications, benefits, and risks in tourism. The results show that ChatGPT and other artificial intelligence applications will likely change tourism processes. These are technologies that can facilitate customer service. These will increase the efficiency and effectiveness of the business. In this context, technologies can benefit tourism employees and the sector. Dogru et al. (2023) examined productive artificial intelligence applications in the tourism and hospitality sectors. Although artificial intelligence applications are an exciting technology, it is emphasized that the tourism and hospitality industry always needs people. These technologies exist to make employees and businesses valuable. In this context, businesses should make strategic and long-term decisions and develop productive artificial intelligence capacities. These technologies can be used to develop new products or services, create promotional strategies, carry out operational activities, design business models, and increase competitiveness. In this context, leaders should lead the integration of artificial intelligence applications into the process. Mich & Garigliano (2023) examined the usage of ChatGPT for e-tourism activities. The results show that ChatGPT can be used in activities such as developing new products, identifying new target markets, implementing marketing strategies, designing campaigns, and supporting administrative and operational activities.

### **Satisfaction**

ChatGPT can satisfy users and customers. Relevant literature (Demir & Demir, 2023; Dwivedi et al., 2023b; Keiper, 2023; Mich & Garigliano, 2023; Remountakis et al., 2023; Wamba et al., 2023; Wang et al., 2024; Zhang et al., 2023; Zhang et al., 2024) supports this view.

ChatGPT can increase customer satisfaction. Wang et al. (2024) developed the new customer experiences scale in artificial intelligence-supported products. The results show that businesses can use a long-term development strategy by integrating artificial intelligence technology and products, better understand customer demands, improve service quality, create customer value, and strengthen brand value. Zhang et al. (2024) examined the effect of emotional expressions of chatbots with artificial intelligence on customer satisfaction. The results reveal that the emotional expressions that chatbots can use towards customers can increase customer satisfaction and prevent possible negative situations in the relationship established with chatbots. Demir & Demir (2023) examined ChatGPT for service individualization and value creation. The results show that ChatGPT supports and strengthens individual service and internalized knowledge. In this context, travel agencies can improve travel experiences and achieve customer satisfaction. If businesses do not use ChatGPT, negative consequences may occur. These are negative consequences, such as being unable to provide personalized services, decreasing productivity, and missing innovative opportunities. Mich & Garigliano (2023) examined the usage of ChatGPT for e-tourism activities. The results show that ChatGPT can be used to improve customer service and provide personalized service. Remountakis et al. (2023) examined ChatGPT as a persuasive technology in hotel sales. It has a structure that produces personalized recommendation messages. The results show that the ChatGPT system can influence guest satisfaction and sales.

ChatGPT can positively impact users' perceived value. Zhang et al. (2023) examined the effectiveness of artificial

intelligence technologies in supporting the sustainability of intangible cultural heritage. They mentioned different types of artificial intelligence, such as ChatGPT. The study results determined that products produced by artificial intelligence positively impact perceived value, cultural identity, and sustainability.

ChatGPT can create satisfaction in users during the experiential learning process. Keiper (2023) evaluated how and where ChatGPT can be used to plan activities during teaching. The results show that ChatGPT can be used in experiential learning experiences, making the process efficient and satisfying users in this aspect.

ChatGPT can create satisfaction among employees in the tourism and hospitality industry. Dwivedi et al. (2023b) examined the use and challenges of ChatGPT and artificial intelligence applications in the tourism and hospitality industry. The results predict that it can provide welfare to employees in the tourism and hospitality sectors in the long term. Additionally, the results show that it can create satisfaction behavior in this direction among sectors' employees.

ChatGPT can also create satisfaction among industry stakeholders. Wamba et al. (2023) examined the benefits, challenges, and trends of using artificial intelligence and ChatGPT in operations and supply chain management. In the results, it was determined that these technologies lead to increased satisfaction and productivity in users.

### **Interaction**

ChatGPT can provide interaction benefits to users. Relevant literature (Javaid et al., 2023; Liu et al., 2023; Mich & Garigliano, 2023; Yan et al., 2023) supports this view.

Users can dialogue and interact with ChatGPT. Liu et al. (2023) examined the knowledge-based dialogue creation model. Study results show that ChatGPT-based models have good adaptability. It can also be used in the field of tourism to create dialogue. Yan et al. (2023) examined the trends regarding ChatGPT. The results indicate that questions can be answered, inappropriate requests can be rejected, high-quality dialogues can be established, complex reasoning processes can be provided, and chains of thought (CoT) can be established with ChatGPT. Javaid et al. (2023) examined the potential, possibilities, and background of ChatGPT. ChatGPT applications include virtual assistants, chatbots, content creation, language translation, and automated customer service. The results show that such technologies can be an effective tool for improving interaction and automating business processes in the future. It has been evaluated as a usable technology in the hospitality and tourism industry. Mich & Garigliano (2023) examined the usage of ChatGPT for e-tourism activities. The results can be used to support ChatGPT's administrative and operational activities, improve customer services, and provide personalized service. It is considered a technology that can be used to interact with customers.

### **Ethics**

As ChatGPT begins to become widespread, the ethical issue arises. Relevant literature (Dwivedi et al., 2023a; Joksimovic et al., 2023; Lee et al., 2023; Ma & Huo, 2023; Stahl & Eke, 2024; Wamba et al., 2023) supports this view.

Joksimovic et al. (2023) examined the role of artificial intelligence in solving complex problems. The study recommends investigating the ethical and social responsibilities of ChatGPT applications and applying them to complex real-world problems in human-machine collaboration. Lee et al. (2023) examined research trends regarding service chatbots. The results reveal that studies on chatbots have increased rapidly since 2021, and many studies have

been conducted associating chatbots with ethics, security, and bias. However, it is suggested that there are deficiencies in studies related to individual factors affecting the adoption of chatbots. Stahl & Eke (2024) examined the ethical problems of ChatGPT. ChatGPT is a conversational and productive artificial intelligence system. Possible concerns of this system are discussed. The results suggest that ChatGPT can deliver social and ethical benefits. However, ethical concerns regarding social justice, autonomy, identity, and the environment should also be considered.

Wamba et al. (2023) examined the benefits, challenges, and trends of using artificial intelligence and ChatGPT in operations and supply chain management. The results reveal concerns about ethics, risk, and security. Ma & Huo (2023) examined the acceptance of ChatGPT by users. The study also emphasizes that technological developments should include ethical and humane elements. Dwivedi et al. (2023a) examined the opportunities, challenges, and effects of ChatGPT. The results show that the productivity of ChatGPT can be an important tool to improve activities such as marketing and management in the tourism and hospitality sectors. The application may have biases such as security and privacy. In this respect, it is recommended to research information, digital transformation, learning, ethics, legal dimension, and transparency.

### **Credibility**

Another possible problem with ChatGPT is credibility. Relevant literature (Ali et al., 2023; Dogru et al., 2023; Dwivedi et al., 2023a; Lee et al., 2023; Stahl & Eke, 2024; Wamba et al., 2023) supports this view.

Lee et al. (2023) stated that studies on chat robots have increased rapidly since 2021. They revealed that many studies have linked chatbots to ethics, security, and bias and addressed their impact on humanity. Stahl & Eke (2024) examined the ethical problems of ChatGPT. ChatGPT is a conversational and productive artificial intelligence system. Possible concerns of this system are discussed. The most prominent concerns include participation, social cohesion, responsibility, security, autonomy, bias, environmental impacts, and accountability. When developing applications, risks and benefits need to be considered from a holistic perspective.

Wamba et al. (2023) evaluated ChatGPT as a technology whose use is becoming widespread, including in the hospitality and tourism sectors. They also revealed concerns about ethics, risk, and security. Dogru et al. (2023) examined productive artificial intelligence applications in the tourism and hospitality sectors. The results show that over-reliance on the artificial intelligence system may destroy a collaborative organizational environment and lose business reputation and customer trust due to incorrect information provided by artificial intelligence. Dwivedi et al. (2023a) examined the opportunities, challenges, and effects of ChatGPT. As a result, ChatGPT may have biases such as security and privacy. In this respect, it is recommended to work on information, digital transformation, learning, ethics, legal dimensions, and transparency. Ali et al. (2023) examined the antecedents of travelers' trust in ChatGPT's travel recommendations. The results show that recommendations' relevance, usefulness, reliability, and intelligence positively influence trust. Perceived trust affects behavioral intention.

### **Design Features**

Users can benefit from ChatGPT effectively if its design is user-oriented. Relevant literature (Ali et al., 2023; Chaturvedi et al., 2023; Dogru et al., 2023; Gursoy et al., 2023; Keiper, 2023; Kim et al., 2023; Ma & Huo, 2023; Yu et al., 2024; Zhang et al., 2024) supports this view.

Chaturvedi et al. (2023) examined the relationship between artificial intelligence and social friendship. ChatGPT applications are among these artificial intelligence elements. The study suggests that these applications can be used in every sector, including tourism. These technologies should also be designed in an empathetic structure, which can increase their usefulness. Yu et al. (2024) examined the effect of virtual influencers created by artificial intelligence on users. The results reveal the impact of the designs on users. The importance of emotional expressions in AI-supported influencers should be addressed. In this context, marketing professionals are important.

Zhang et al. (2024) examined the effect of emotional expressions of chatbots with artificial intelligence on customer satisfaction. The results reveal that emotional expression should be addressed in the design of chatbots. In this context, machine learning algorithms can be an effective way to learn the personality structures of customers. Ma & Huo (2023) examined the acceptance of ChatGPT by users. The results found that user acceptance of new technologies is associated with new content and unprecedented experiences. Unique and innovative features can attract the attention of the target audience. It is also emphasized that technological developments should include human elements. Kim et al. (2023) conducted experimental research on the artificial intelligence-supported ChatGPT application. The results highlight that system design can be an important factor in user preferences. In this context, user-friendly applications should be designed according to user demands and expectations. Additionally, ChatGPT can be integrated into traditional online shopping.

Dogru et al. (2023) examined productive artificial intelligence applications in the tourism and hospitality sector. The results reveal that incomplete, faulty, or incorrect implementation of a generative artificial intelligence system can lead to serious consequences. Examples include loss of business reputation and customer trust due to incorrect information provided by artificial intelligence. In this context, the application's database must be up-to-date and sufficient. Ali et al. (2023) examined the antecedents of travelers' trust in ChatGPT's travel recommendations. The results show that the usefulness, relevance, and intelligence of the recommendations in the app positively influence trust. Perceived trust affects behavioral intention. Gursoy et al. (2023) examined the current and possible situation of ChatGPT in the tourism and hospitality sector. The results show that if ChatGPT's infrastructure is robust, it will contribute to the detection of real-time changes in users' requests and needs. Keiper (2023) evaluated how and where ChatGPT can be used to plan activities during teaching. The results show a need for ChatGPT customization, and personalized elements are important in its design.

The determinants of ChatGPT in the tourism and accommodation sector have been identified. The findings were evaluated in 6 themes. Summary information about these themes is included in Table 2.

**Table 2.** Determinants of the Usage of ChatGPT in the Tourism and Hospitality Sector

Determinants	Effects
Quality of Experience	Customer Experience Solving Complex Problems Tourist Experiences Guidance/Direction Capacity Supply Chain Performance Experiential Learning Positive Impact on Sector Employees Promoting Digital Transformation

**Table 2.** Determinants of the Usage of ChatGPT in the Tourism and Hospitality Sector (cont.)

Satisfaction	Customer Satisfaction Perceived Value Experiential Learning Satisfaction on Sector Employees Satisfaction in Supply Chain
Interaction	User-Business Interaction Operational and Managerial Interaction User/Tourist Oriented Interaction
Ethics	Individual Ethics Social Ethics
Credibility	Reliability of Data Privacy of Personal Data
Design Features	User-Friendly Design Personalized Equipment/Elements Empathic Approach/The Importance of Emotional Expressions Strong and Updatable Infrastructure/Hardware

**Source:** own elaboration

Six main themes were determined regarding the usage of ChatGPT in the tourism and hospitality sectors. These; They are summarized in Table 2. Accordingly, ChatGPT is a technology that contributes to users' experience quality and satisfaction. It provides interaction benefits. Among the prominent problems are ethics and security. It becomes easier to use with its user-oriented and personalized design.

## Discussion

ChatGPT is one of the productive artificial intelligence technologies. It is a newly developing technology. Its use became widespread in 2023. In this research, determinants of the usage of ChatGPT in the accommodation and tourism sector were identified. A systematic literature review was carried out within the scope of the research. A model for ChatGPT in the accommodation and tourism industry has been proposed. As a result of the data obtained, six determinants regarding the usage of ChatGPT were identified. These are experience quality, satisfaction, interaction, ethics, credibility, and design features. These variables will affect users' perceived usefulness and ease of use. Therefore, it will affect usage behavior. The model is based on the Technology Acceptance Model. Relevant literature shows a need for models, scales, and empirical studies that include the unique structure of ChatGPT (Dogru et al., 2023). This research will contribute to filling the gap in the literature in this context.

One of the prominent findings of the study is that ChatGPT can positively contribute to the quality of experience. Experience quality will positively trigger perceived usefulness and ease of use. The findings are in line with the literature (Koc et al., 2023; Mich & Garigliano, 2023; Wang et al., 2024). ChatGPT is a versatile technology that can benefit users (Hughes, 2023). Another variable is satisfaction. ChatGPT will provide a positive increase in user satisfaction. The literature supports this view (Koc et al., 2023; Wang et al., 2024). ChatGPT is a multifaceted technology that can interact with users. In this respect, it can create interaction benefits and carry out the process effectively and quickly. Relevant literature supports this view (Hughes, 2023; Korzynski et al., 2023).

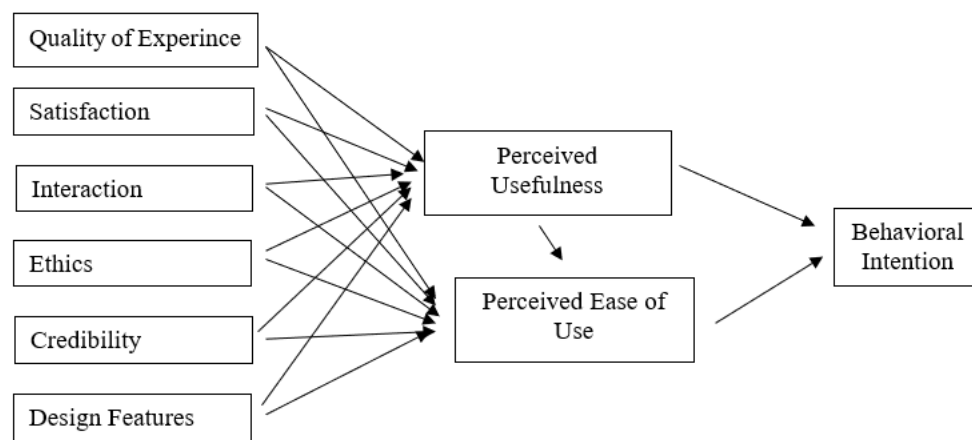
Although the general opinion regarding using ChatGPT in the accommodation and tourism sector is positive, ethics, credibility, and design features are important determinants. ChatGPT is a newly developed and widespread technology. Ethical principles and standards still need to exist entirely. Ethical principles and standards may need to be clarified for users. The literature also mentions the importance of ethical principles (Helberger & Diakopoulos,

2023; Hughes, 2023; Lund et al., 2023). Another area for improvement is credibility. ChatGPT must provide users with reliable information and not mislead users. The literature also supports this view (Dogru et al., 2023; Dwivedi et al., 2023a). This is possible with comprehensive and high-quality data (Kasneci et al., 2023; Paul et al., 2023). Another variable is design features. The design must be customizable and easy to use. It should also contain an up-to-date and powerful database. Relevant literature supports this view (Carvalho & Ivanov, 2023; Iskender, 2023; Sallam, 2023).

### Theoretical Contribution

Recent technological developments support the usability of ChatGPT in the hospitality and tourism industry (Koc et al., 2023; Mich & Garigliano, 2023; Wang et al., 2024). However, ChatGPT is still in its infancy in the hospitality and tourism industry (Tourism and Hospitality Market Forecast, 2023). In this context, it is suggested that ChatGPT-hospitality-tourism studies should be carried out (Carvalho & Ivanov, 2023; Demir & Demir, 2023; Dogru et al., 2023; Gursoy et al., 2023; Shin & Kang, 2023). In this regard, this research will contribute to the literature.

In this research, determinants of the usage of ChatGPT in the tourism and accommodation sector were identified. These are quality of experience, satisfaction, interaction, ethics, credibility, and design features. These determinants affect the usage of ChatGPT in the tourism and accommodation sector. As a result of the findings, the model proposal developed for using ChatGPT in the tourism and accommodation sector is shown in Figure 4. The model was evaluated from the perspective of the Technology Acceptance Model.



**Figure 4.** Model Proposal for the Usage of ChatGPT in the Tourism and Hospitality Sectors from the Perspective of the Technology Acceptance Model

**Source:** own elaboration

In this research, determinants of the usage of ChatGPT in the tourism and hospitality sectors were identified. These are quality of experience, satisfaction, interaction, ethics, credibility, and design features. These determinants affect the usage of ChatGPT in the tourism and hospitality sectors. As a result of the findings, the model proposal developed for using ChatGPT in the tourism and hospitality sectors is shown in Figure 4. The model was evaluated from the perspective of the Technology Acceptance Model.

### Practical Implication

Tourism and hospitality producers must be prepared for new developments and technologies because these

technologies can provide operational and process benefits to the industry. It can create fast and high-quality support. It may be beneficial for businesses to prepare themselves for innovation. It can provide an advantage to businesses in the intensely competitive environment of the tourism and accommodation industry. Speed and automation can be achieved in processes. Quality service can be produced and can help businesses increase their market share.

### **Limitation and Further Research**

In this research, determinants of the usage of ChatGPT in the tourism and accommodation sector were identified. A model proposal has been made from the perspective of the Technology Acceptance Model. ChatGPT is a new technology for the tourism and hospitality industry. Its use will likely become widespread in the future. In this context, empirical studies can be conducted using ChatGPT in the tourism and accommodation sector. The opinions of industry producers and consumers can be examined. The subject can be researched with different variables.

This research is a systematic literature review. Future research could examine the issue qualitatively and quantitatively. The opinions of tourism sector stakeholders can be examined.

The use of ChatGPT will become widespread. Its impact on the travel movement and its usability in the tourism sector can be examined.

### **Conclusion**

ChatGPT is a productive artificial intelligence technology. The number of users is increasing. This research examined the use of ChatGPT in the tourism and hospitality industry. Determinants of the use of ChatGPT have been identified. In this context, six determinants regarding the usability of ChatGPT have been identified. These are experience quality, satisfaction, interaction, ethics, credibility, and design features. These determinants have an impact on users' behavioral intentions. These affect users' behavioral intentions positively or negatively. ChatGPT can solve customers' complex problems. It can improve the quality of experience for tourists. It can positively impact the learning experience. It can help businesses with digital transformation. It can increase customers' satisfaction and perceived value. It can create a satisfactory experience for stakeholders and industry employees. It can provide interaction benefits to users. In order to provide all these benefits, it is necessary to ensure ethical principles, create a user-friendly design, and provide a reliable experience.

This research demonstrates the usability of productive artificial intelligence applications such as ChatGPT in the tourism and hospitality industry. In this respect, integration of artificial intelligence applications can be achieved with user-oriented and appropriate design. These developments can also aid the digital transformation of businesses. Marketing activities can be carried out more effectively. When considered consumer-oriented, tourists can be provided with access to accurate information. Therefore, consumer satisfaction can be increased. Considering all this, ChatGPT is likely to become widespread in the tourism and accommodation sector.

### **Declaration**

All authors of the article contributed equally to the article process. The authors have no conflicts of interest to declare. All authors of the article contributed equally to the article process.

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