Journal of Information Systems Engineering and Management
2025, 10(53s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Artificial Intelligence and Personalizing Travel Experiences: The Future of Tourism

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ARTICLE INFO

Received: 18 Dec 2024

Revised: 10 Feb 2025
Accepted: 28 Feb 2025

ABSTRACT
This paper focuses on the implication of AI for the travel industry to establish how application of AI increases the effectiveness of tourism processes with the help of applications, bots, and emotion recognition. The research takes an exploratory case study approach in developing a tourism knowledge model by employing data mining and semantic web AI method. A 4-item questionnaire survey was conducted when ethics approval was granted, and all respondents were reached via social media. The results reveal that AI enhances travel personalization whereas privacy remains a critical challenge in recommended AI applications for tourism.

Keywords: Artificial Intelligence, Travel Personalization, Tourism, Smart Technology, Future Trends, Machine Learning.

1.Introduction: Over the last few years, personal experiences have begun to take increasing relevance as sources of individual and collective growth. Specialization plays an important role nowadays when it comes to creating experiences since individuals are always looking for different, unique, and memorable moments. However, individuality is not only present regarding the offered good or service; it also has a leading role when it comes to making use of them. (Breiby et al.2020) This trend seems to be consistent with the current evolution of human values. Holism, hedonism, and immortality are part of the fundamental human actions, so the achievements of these aspects are not only satisfied at a material level. Personalization and experiences are nothing new, though until recently they were rather typical of the luxury industry. (Pantano et al.2022) Now they have democratized to such an extent that they have managed to penetrate any sector and segment of the market. In this context, the capacity of tourism to fulfill these human needs is practically unlimited if creativity, innovation, and technological development are applied in the provision and personalization of travel experiences. (Bulchand-Gidumal, 2022) These are the key pieces that allow differentiation, as well as significant added value in the process of designing, promoting, and implementing the tourist experience. Interactivity or personalization is closely related to basic aspects of tourism such as segmentation, demand analysis, and consumer behavior, since satisfying a growing number of motivations, segments, and preferences depends to a large extent on the possibility of creating and offering personalized tourist experiences. In the present research, we examine the capacity of artificial intelligence to personalize travel experiences. (Lalicic & Weismayer, 2021)The design and implementation of personalized tourist experiences involve strategic and operative decisions that some companies have been making. However, today, tourist companies must adapt to the changing consumer profile because passenger profiles and representatives have significantly changed. That is why the efforts of companies are oriented more and more towards the investigation, modeling, and innovation of the personal characteristics of the various tourist markets. (Horner & Swarbrooke, 2020) In fact, one of the main objectives of many tourist companies is to offer a service and specialized content based on multiple reasons for tourist trips; undoubtedly, the customization that potentially passes through any tool or technological system. The purpose of this work will be to analyze the capacity of artificial intelligence to realize this objective. (Jeong & Shin, 2020)

Therefore, in the first point, we will review the personalization of travel experiences. We will analyze the concepts of personalization of offers or co-creation of travel experiences, satisfaction with the tourist experience, the segmentation strategy, and we will make a special reference to artificial intelligence (Yang et al., 2024). Subsequently, we will present a brief characterization of artificial intelligence before reviewing the main uses of artificial intelligence in the tourism sector, specifically destined to personalization. Finally, we will expose our conclusions and the possible lines of future research. (Kannan2024)

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1.1 The importance of artificial intelligence in tourism:

Today, when society steps into the information age of 4.0, the development in technology is the driving force of the digital economy. Artificial intelligence (AI), one of these advancements, is transforming many facets of our personal and business lives, including the tourism industry (Lan et al.2021). Thanks to the type of AI called machine learning, which enables us to learn from data, the amount of digital imprints left by tourists' progresses continuously and can be applied in predicting tourism demand and calculating the economic consequences of tourism in geographic areas of a destination. (Loureiro et al., 2021) In response to a large number of start-ups selling and developing tourism products with the main concept of recommending travel itineraries to tourists using AI, optimization and control theory combined with data analytics are used to analyze classical questions in tourism economics and help design promising policies to regulate the tourism industry (Jeong & Shin, 2020). Additionally, AI also substitutes for human multi-purpose knowledge or becomes a multi-discipline advantage for tourism marketers because this technology is able to cover several aspects of the tourism business, such as the promotion of tourist destinations, location-based services, and the use of virtual personal assistants for tourists. (Ding, 2021)

1.2 Definition of artificial intelligence and its role in changing the tourism industry.

There is no accurate and generally accepted definition of the concept of artificial intelligence. This is due to the presence of a huge range of various aspects in this concept (Srivastava and Shandilya2024). One can say that there are two contemporary paradigms of defining AI: symbolic (we can create an artificial object that solves certain problems) and computable (we can copy the behavior of the human mind through the connection system between the elements). (Vilone & Longo, 2021) Artificial intelligence provides algorithms for performing conceptual analysis like pattern recognition, image processing, understanding and evaluating natural language, natural language generation, automated reasoning, prediction, decision making, and many others, which are constantly used in the information and communication industry (Hu & Li, 2023). Nowadays, artificial intelligence is actively used in different spheres of enterprise activity: banking, insurance, credit and finance, sales and marketing, document management, e-commerce, wholesale and retail, induction services, and others (Kannan2024). In the new environment, the tourism sphere is no exception. In the last decades, the use of advanced information technologies has gained a significant role in analyzing tourism markets, offering tourism products to different segments of the market, creating online market platforms, analyzing competition, taking over communication with clients, designing, and managing traveler experiences. (Knani et al.2022)These applications and technologies define the contemporary concept of eTourism, which is also called artificial intelligence in tourism. Unlike eTravel, eHospitality, or eDestination that describe links of eTourism with tourism services received before leaving for a trip, handed during the trip, and received at the trip destination, eTourism has a broader concept that includes links between all intermediaries of the tourism system, optimizing the tourism services and the major steps of a tourist trip, but also with the processes of creating and receiving tourism services. (Buhalis, 2021) Artificial intelligence creates new forms of interaction between tourists and the agency system, helps this activity to manage both competitive opportunities offered by the internet and directly from the new economy, and directly intervenes in determining the competitive advantages, both absolute and relative, offered in the market (Abdunurova et al.2022). Artificial intelligence, therefore, is the basis for establishing consumer loyalty by offering the opportunity to choose, make inquiries, and find online and up-to-date answers to their questions, to tourists and customers. (Chen et al., 2022)

1.3 Study problem

As a concept, personalizing travel experiences can be traced back to the 1990s and the rise of the personal computer, the use of electronic card payments, and the digitization of data, which allowed for the automatic identification of a customer's preferences and for the development of algorithms that could process that data in real time to suggest various personalized items (Pencarelli, 2020). What started with simple data capture and large-scale algorithms to support personalization has, in the era of big data and AI, quickly evolved into profiling specific individuals in relation to various aspects of tourism and the personalization of marketing activities and the product offer directly with them in various micro tourism systems on the supply side – transport, accommodation, and travel destinations (Kachniewska2021). General-purpose big data and the algorithms that are based on them form the basis for the development of personalization in various other industries

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and are therefore crucial building blocks for the recently established platform-type tours and activities focused OTAs, the luxury hotel chains, and the high-end, high-touch DMCs in the luxury tourism sector (Chaturvedi et al.2024). This development can help some tourists co-create micro travel experiences that are an integral part of and affect the broader travel product, although it does not solve the broader problems tourists face in the process of traditional personalization of their travel experiences. The problem is how to leverage advanced general-purpose AI to alleviate them.

2. Objectives: The analysis, synthesis, and new combination of some of the most significant information sources on the use of artificial intelligence in personalizing travel experiences allow us to know topics for this essay such as: how artificial intelligence influences and significantly personalizes the tourism processes in the chain of attention to the tourist, by better means and technologies of information and communications, enhancing mobile applications, interactive cabins, and robots; generation of new travel platforms that interact with the tourist before, during, and after learning their tastes, loyalty, and generating satisfaction; how the tourism sector applies AI in natural language and sentiment analysis in social media linked to accommodation, services offered, and shared experiences; how tourism companies generate personalized sales, advertising, customer service, prevention of fraud, or even entire games in virtual reality based on personal preferences; how the tourism sector uses AI via chatbots in substitution of both the human assistant and the phone adjustment app, with the purpose of answering questions, improving the relevance of the products and services, and managing the entire travel experience and tourist accommodation. With this information, future tourism company clients, tourism company managers, and future researchers in the business sphere are aware of the latest advances and technologies that are seen thanks to the use of AI in tourism processes, and how to improve and transform the design, sampling, conduct, business intelligence, and tourism; the satisfaction of the tourist experience, which will not only belong to great hotel chains but that each management and operation of services in the tourist chain will have AI without recognizing it.

3. Methods: **Analysis methodology and case study.**

This case study presents selected aspects of the broader research project, which applies AI techniques such as data mining, semantic web, or sentiment analysis to support the personalization of tourist experiences. The broader research problem is how to transform touristic knowledge and wisdom extracted from the web into a tourist knowledge model using AI methods and presents it contextually in order to help enrich a tourist's travel experience. One of the solutions for enhancing and personalizing a tourist's travel knowledge is a tourist knowledge model built from thematic hierarchies that address user complaints, opinions, locations, descriptors, and personalized wiki data with an algorithm of negative offer matching. The key concept of the thesis is to digitally transform plural touristic knowledge and wisdom, which cannot be found in a central or standardized way, from the web into a tourist or market protocol model and make it available without the use of current search engines.

The paper will demonstrate how semantic web-based artificial intelligence transformation of search engines will contribute to the achievement of the broader project objectives. The application of fragments in the project utilized AI methods, powered knowledge browser, and smart speaker will help to show how the personalization of tourist experience can be effectively supported in the broader project. Furthermore, its results will help to identify any issues that might arise when applying this type of AI to support tourism. In general, the case study's input is associated with the problems that focus on various steps of a research design and help to define the project's final configuration.

Data sources: Questionnaire

As aforementioned, the first and second dimensions are especially important because they allow us to specify the conditions and limitations concerning AI development and application. In this regard, the questionnaire comprises thirty-one items, which are organized into seven sections: (1) control, (2) privacy, (3) trust, (4) personalization, (5) future, (6) sociodemographic information, and (7) scale, to enable us to identify trust levels and personalization factors, taking into account travel activity, key actors, and tourist action points (pre, during, and post-travel). All the questions were measured using a Likert scale to ascertain their relative importance.

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The information collection process commenced after obtaining the necessary ethics approvals since we were dealing with private personal data. In the first phase, we carried out an assessment of the documentation available to us to collect the data related to the personalization factors, the types of AI already in use, the control mechanisms, the ethical responsibility of AI, and current regulations. Once we had this information, we created the relevant questionnaire, tested it, and adjusted it so that we could obtain the necessary information in the most efficient way possible. Finally, we used social media platforms to invite respondents to participate in the survey.

4.Results:

4.1 Socio-demographic Analysis

Table 1 Socio-demographic Data

Class	Frequency	Percent
Age		
Under 18	3	5
18-24	12	20
25-34	17	28.3
35-44	21	35
45-54	5	8.3
+55	2	3.3
Gender		
Male	14	23.3
Female	46	76.7
Educational level		
High school	6	10
Bachelor's	29	48.3
Postgraduate	25	41.7
Preferred travel mode		
Leisure	30	50
Business	6	10
Mixed	24	40

Table 1 and figure 1 are the socio-demographic analysis of participants involved in the study on Artificial Intelligence for Personalizing Travel Experiences. The largest age group is 35-44 (35%), and 25-34 (28.3%), which shows the middle-age and young adults share the highest percentage in this present study. Regarding gender, 76.7% of the respondents are female while only 23.3% are male. Most participants are educated and 90% of them possess a Bachelor‘s degree Online, 48.3% of the sample falls under one Bachelor’s category and 41.7% of the sample falls under the postgraduate category. Interests in travel include with 50% for recreation purposes, 40% for both business and recreational purpose and 10% of business purpose only. Based on this data, it is appropriate that the use of AI in personalizing travel experiences should target women with education levels, aged 35 and above as the main travelers who prefer leisure and both business and leisure travel.

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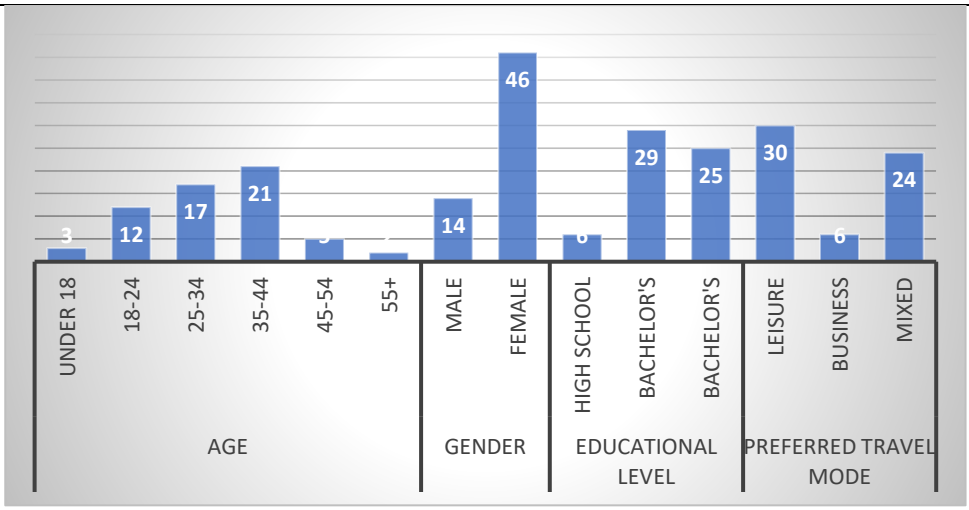

Figure 1 Socio-demographic Distribution

4.2 Questionnaire axes results

Table 2 Survey axes results

Phrase		N	Mean	Std. Deviation
Control	I feel I have sufficient control over the AI-driven tools I use for travel planning.	60	3.68	0.98
	The level of control offered by AI-based travel systems affects my decision to use them.	60	3.55	0.91
	AI-driven personalization in travel limits my ability to make independent decisions.	60	3.02	1.03
Privacy	I am concerned about the privacy of my personal data when using AI-based travel services.	60	3.68	1.07
	AI systems for travel ensure adequate protection of personal and sensitive data.	60	2.98	1.03
	I am comfortable sharing my preferences with AI tools for a personalized travel experience.	60	3.38	1.03
Trust	I trust AI systems to provide accurate and relevant travel recommendations.	60	3.52	0.83
	The transparency of AI algorithms in travel planning influences my trust in these systems.	60	3.40	0.99
	My confidence in AI-driven travel platforms has grown over time.	60	3.65	0.88
Personalization	AI tools provide tailored recommendations that align with my travel preferences.	60	3.75	0.77
	AI systems enhance my overall travel experience through personalized suggestions.	60	3.88	0.72
	The ability of AI to adapt to my preferences during travel is essential for my satisfaction.	60	3.92	0.89

The results of the questionnaire axes in Table 2 also summarize in figure 2 provide valuable insights into participants' perceptions of AI-driven travel tools across four key dimensions: It was therefore

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conceived of as Control, Privacy, Trust, and Personalization. Perceived control over AI: Respondents do not think the AI is out of their control (mean = 3.68) while some think that the use of AI hampers their decision making prowess (Indep. t = 3.02). The presence of privacy motivationally, participants are somewhat uncomfortable in regards to data protection (mean = 2.98), but quite comfortable in sharing preferences (mean = 3.38). For the Trust axis in this study, there is an indication of a positive development as the subjects had a mean 3.52, concerning the efficiency of AI to provide the right recommendations on travel, and the mean value of 3.65 provided on the subject of the increasing confidence in AI over a period of time, though there is still a question mark over the mean value of 3.40 on willingness to be more transparent to the systems Personalization received the highest mean for the overall result and was most valued by the participants for its ability to accommodate users' preferences (M=3.75) and increase satisfaction with AI suggestions (M=3.92). These results show that AI tools benefit from customization and build trust but privacy threat and perceived control issues persist to affect the general AI acceptance.

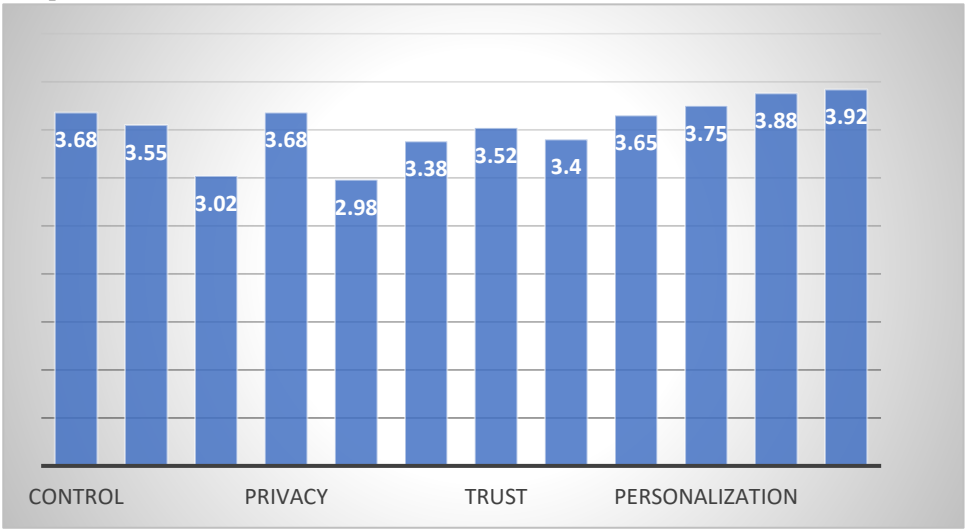

Figure 2 Questionnaire axis mean

5. Discussion

The findings of this study are most closely related to the previous research concerning the relationship between AI and travel personalization based on the control, privacy, trust, and personalization dimensions according to table 1. The control issue with AI tools s still not straightforward. Thus, it may be stated that users slightly too moderately perceive control, as the mean score was 3.68 Here, Jeong and Shin (2020) explain that one of the advantages of smart tourism technologies is control over decision-making decisions but that this also presents challenges. Likewise, in analyzing the role of AI in e-tourism, Buhalis (2021) highlights that such systems help present users with choices that appeal to them but says that perceived control over such options determines trust and eventual usage.

Some of the challenges which have been highlighted in this study highly relate to the contemporary issue of data privacy in artificial intelligent facilitated service delivery. The participants answered with a mean score of 2.98 for perceived data protection, which suggests that people are reluctant to share their information with AI systems. In Chen et al. (2022), the authors are of the opinion that data security is a key ingredient in the trust customers have in AI systems because privacy issues can erode customer confidence and use of the systems. Like the current study, Knani et al., (2022) categorise privacy concern as one of the major factors likely to hamper AI uptake in the tourism industry, necessitating proper data protection measures.

As for confidence share, the trend is relatively positive, but with average indicators, where the mean score for growing confidence in AI platforms was 3.65. This is in support of view from Loureiro et al. (2021) stating that operational reliability of the AI systems and their ability to provide clear explanations across the decision making process fosters trust in the end. Vilone and Longo (2021) also emphasize the necessity of explicability in the AI systems since transparency leads to its

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increased trust by users. However, the lower value for transparency in this study was 3.40, which implies that though confidence is gradually rising in the use of AI systems, the black-box model of initiating the systems have to be solved to further boost users' confidence.

The personalization dimension was the earliest and the highest one, getting the scoring between 3.75 and 3.92; there for intensifying the need for the application of AI in the travel industry. Bulchand-Gidumal (2022) establishes that AI enhances customer satisfaction based on trends that include personalization of services. This is in line with research by Kannan (2024) who proposed that the role of AI is to repurpose tourism again and to come up with quality tailor made services that can suit the customer's needs. Said another way; Pantano et al. (2022) points out that when personalization is an operational factor, customer engagement reaches new heights, especially in digital channels bowed by efficiency.

In general, the findings reconfirm that despite the capacity of AI-based instruments to foster individualization and promote user confidence, control and privacy issues remain problematic, as has been demonstrated earlier. To overcome the limitations underlined above, Breiby et al. (2020) and Lalicic and Weismayer (2021) proposed improving the transparency, explainability, and data security characteristics of the systems in question; further development of these aspects will be crucial for increasing user acceptance and satisfaction with AI-based travel planning tools.

AI in Tourism Marketing and Customer Engagement

Advanced advertising techniques and customer contact methods help tourism marketing today through AI technology. Machine learning tools use buying habits data to develop customized promotions for users. AI systems like chatbots and recommendation engines show travel options instantly based on what a user has seen before and what others post on social media. Buhalis and Sinarta (2019) prove that AI-based marketing creates personal promotional offers to boost customer interaction which yields better conversion results.

The Role of Generative AI in Enhancing Tourism Content

Through generative AI technology tourism providers make customized travel plans and destination suggestions plus design marketing assets for their visitors. AI systems GPT and DALL-E produce top-quality personalized media content that matches traveler preferences. According to Xiang et al. (2023) AI technology boosts visitor enjoyment because travelers prefer custom content that matches their preferences. Travel companies use AI systems to create custom deals that meet what each customer wants and what the market demands.

Predictive AI in Tourism: Enhancing Loyalty and Retention

AI solutions help travel companies strengthen their customer relations by studying user trends ahead of time to make individualized suggestions. By using AI analytics to check travel records AI analyzes booking histories and person travel facts along with customer reviews to show future customer actions for business customization. Research from Gursoy et al. (2021) shows that predictive artificial intelligence helps businesses keep customers longer when it delivers them tailored benefits and travel convenience

Conclusions:

In conclusion, the findings thus support that AI tools have immense possibilities for changing the travel experience through better I, better trust and betters user experience. However, problems associated with control and privacy remains to be the significant issues that hamper the progress of more extensive public usage. When built on principles that embrace the elements of the three T's—transparency, explain ability and effective data protection, AI systems help create trust and increase user confidence. Based on the above-presented literature, we found that an appropriate blend of technological advancement and users' concerns will be deemed crucial for the future adoption of the AI in the tourism industry.

The next research should explore how AI programs develop as platforms for forecasting consumer spending and customer loyalty systems. Research teams at this time need to test whether machine learning tools can automatically develop better ways to connect with customers through tailored suggestions and bonus programs. Research should study how to make AI-based decision systems fair for all guests and users throughout the tourism industry. Continuous research into the both the positive and negative effects of AI automation on workers and services will help develop sustainable AI practices.

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INTRODUCTION

Over the last few years, personal experiences have begun to take increasing relevance as sources of individual and collective growth. Specialization plays an important role nowadays when it comes to creating experiences since individuals are always looking for different, unique, and memorable moments. However, individuality is not only present regarding the offered good or service; it also has a leading role when it comes to making use of them. (Breiby et al.2020) This trend seems to be consistent with the current evolution of human values. Holism, hedonism, and immortality are part of the fundamental human actions, so the achievements of these aspects are not only satisfied at a material level. Personalization and experiences are nothing new, though until recently they were rather typical of the luxury industry. (Pantano et al.2022) Now they have democratized to such an extent that they have managed to penetrate any sector and segment of the market. In this context, the capacity of tourism to fulfill these human needs is practically unlimited if creativity, innovation, and technological development are applied in the provision and personalization of travel experiences. (Bulchand-Gidumal, 2022) These are the key pieces that allow differentiation, as well as significant added value in the process of designing, promoting, and implementing the tourist experience. Interactivity or personalization is closely related to basic aspects of tourism such as segmentation, demand analysis, and consumer behavior, since satisfying a growing number of motivations, segments, and preferences depends to a large extent on the possibility of creating and offering personalized tourist experiences. In the present research, we examine the capacity of artificial intelligence to personalize travel experiences. (Lalicic & Weismayer, 2021)The design and implementation of personalized tourist experiences involve strategic and operative decisions that some companies have been making. However, today, tourist companies must adapt to the changing consumer profile because passenger profiles and representatives have significantly changed. That is why the efforts of companies are oriented more and more towards the investigation, modeling, and innovation of the personal characteristics of the various tourist markets. (Horner & Swarbrooke, 2020) In fact, one of the main objectives of many tourist companies is to offer a service and specialized content based on multiple reasons for tourist trips; undoubtedly, the customization that potentially passes through any tool or technological system. The purpose of this work will be to analyze the capacity of artificial intelligence to realize this objective. (Jeong & Shin, 2020)
Therefore, in the first point, we will review the personalization of travel experiences. We will analyze the concepts of personalization of offers or co-creation of travel experiences, satisfaction with the tourist experience, the segmentation strategy, and we will make a special reference to artificial intelligence (Yang et al., 2024). Subsequently, we will present a brief characterization of artificial intelligence before reviewing the main uses of artificial intelligence in the tourism sector, specifically destined to personalization. Finally, we will expose our conclusions and the possible lines of future research. (Kannan2024)

The importance of artificial intelligence in tourism:

Today, when society steps into the information age of 4.0, the development in technology is the driving force of the digital economy. Artificial intelligence (AI), one of these advancements, is transforming many facets of our personal and business lives, including the tourism industry (Lan et al.2021). Thanks to the type of AI called machine learning, which enables us to learn from data, the amount of digital imprints left by tourists' progresses continuously and can be applied in predicting tourism demand and calculating the economic consequences of tourism in geographic areas of a destination. (Loureiro et al., 2021) In response to a large number of start-ups selling and developing tourism products with the main concept of recommending travel itineraries to tourists using AI, optimization and control theory combined with data analytics are used to analyze classical questions in tourism economics and help design promising policies to regulate the tourism industry (Jeong & Shin, 2020). Additionally, AI also substitutes for human multi-purpose knowledge or becomes a multi-discipline advantage for tourism marketers because this technology is able to cover several aspects of the tourism business, such as the promotion of tourist destinations, location-based services, and the use of virtual personal assistants for tourists. (Ding, 2021)

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Study problem

As a concept, personalizing travel experiences can be traced back to the 1990s and the rise of the personal computer, the use of electronic card payments, and the digitization of data, which allowed for the automatic identification of a customer's preferences and for the development of algorithms that could process that data in real time to suggest various personalized items (Pencarelli, 2020). What started with simple data capture and large-scale algorithms to support personalization has, in the era of big data and AI, quickly evolved into profiling specific individuals in relation to various aspects of tourism and the personalization of marketing activities and the product offer directly with them in various micro tourism systems on the supply side – transport, accommodation, and travel destinations (Kachniewska2021). General-purpose big data and the algorithms that are based on them form the basis for the development of personalization in various other industries and are therefore crucial building blocks for the recently established platform-type tours and activities focused OTAs, the luxury hotel chains, and the high-end, high-touch DMCs in the luxury tourism sector (Chaturvedi et al.2024). This development can help some tourists co-create micro travel experiences that are an integral part of and affect the broader travel product, although it does not solve the broader problems tourists face in the process of traditional personalization of their travel experiences. The problem is how to leverage advanced general-purpose AI to alleviate them.

OBJECTIVES

The analysis, synthesis, and new combination of some of the most significant information sources on the use of artificial intelligence in personalizing travel experiences allow us to know topics for this essay such as: how artificial intelligence influences and significantly personalizes the tourism processes in the chain of attention to the tourist, by better means and technologies of information and communications,

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METHODS

Research design: Analysis methodology and case study.

This case study presents selected aspects of the broader research project, which applies AI techniques such as data mining, semantic web, or sentiment analysis to support the personalization of tourist experiences. The broader research problem is how to transform touristic knowledge and wisdom extracted from the web into a tourist knowledge model using AI methods and presents it contextually in order to help enrich a tourist's travel experience. One of the solutions for enhancing and personalizing a tourist's travel knowledge is a tourist knowledge model built from thematic hierarchies that address user complaints, opinions, locations, descriptors, and personalized wiki data with an algorithm of negative offer matching. The key concept of the thesis is to digitally transform plural touristic knowledge and wisdom, which cannot be found in a central or standardized way, from the web into a tourist or market protocol model and make it available without the use of current search engines.

The paper will demonstrate how semantic web-based artificial intelligence transformation of search engines will contribute to the achievement of the broader project objectives. The application of fragments in the project utilized AI methods, powered knowledge browser, and smart speaker will help to show how the personalization of tourist experience can be effectively supported in the broader project. Furthermore, its results will help to identify any issues that might arise when applying this type of AI to support tourism. In general, the case study's input is associated with the problems that focus on various steps of a research design and help to define the project's final configuration.

Data sources: Questionnaire

As aforementioned, the first and second dimensions are especially important because they allow us to specify the conditions and limitations concerning AI development and application. In this regard, the questionnaire comprises thirty-one items, which are organized into seven sections: (1) control, (2) privacy, (3) trust, (4) personalization, (5) future, (6) sociodemographic information, and (7) scale, to enable us to identify trust levels and personalization factors, taking into account travel activity, key actors, and tourist action points (pre, during, and post-travel). All the questions were measured using a Likert scale to ascertain their relative importance.

The information collection process commenced after obtaining the necessary ethics approvals since we were dealing with private personal data. In the first phase, we carried out an assessment of the documentation available to us to collect the data related to the personalization factors, the types of AI already in use, the control mechanisms, the ethical responsibility of AI, and current regulations. Once we had this information, we created the relevant questionnaire, tested it, and adjusted it so that we could obtain the necessary information in the most efficient way possible. Finally, we used social media platforms to invite respondents to participate in the survey.

Journal of Information Systems Engineering and Management
2025, 10(53s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

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RESULTS

Socio-demographic Analysis

Table 3 Socio-demographic Data

Class	Frequency	Percent
Age		
Under 18	3	5
18-24	12	20
25-34	17	28.3
35-44	21	35
45-54	5	8.3
+55	2	3.3
Gender		
Male	14	23.3
Female	46	76.7
Educational level		
High school	6	10
Bachelor's	29	48.3
Postgraduate	25	41.7
Preferred travel mode		
Leisure	30	50
Business	6	10
Mixed	24	40

Table 1 and figure 1 are the socio-demographic analysis of participants involved in the study on Artificial Intelligence for Personalizing Travel Experiences. The largest age group is 35-44 (35%), and 25-34 (28.3%), which shows the middle-age and young adults share the highest percentage in this present study. Regarding gender, 76.7% of the respondents are female while only 23.3% are male. Most participants are educated and 90% of them possess a Bachelor‘s degree Online, 48.3% of the sample falls under one Bachelor’s category and 41.7% of the sample falls under the postgraduate category. Interests in travel include with 50% for recreation purposes, 40% for both business and recreational purpose and 10% of business purpose only. Based on this data, it is appropriate that the use of AI in personalizing travel experiences should target women with education levels, aged 35 and above as the main travelers who prefer leisure and both business and leisure travel.

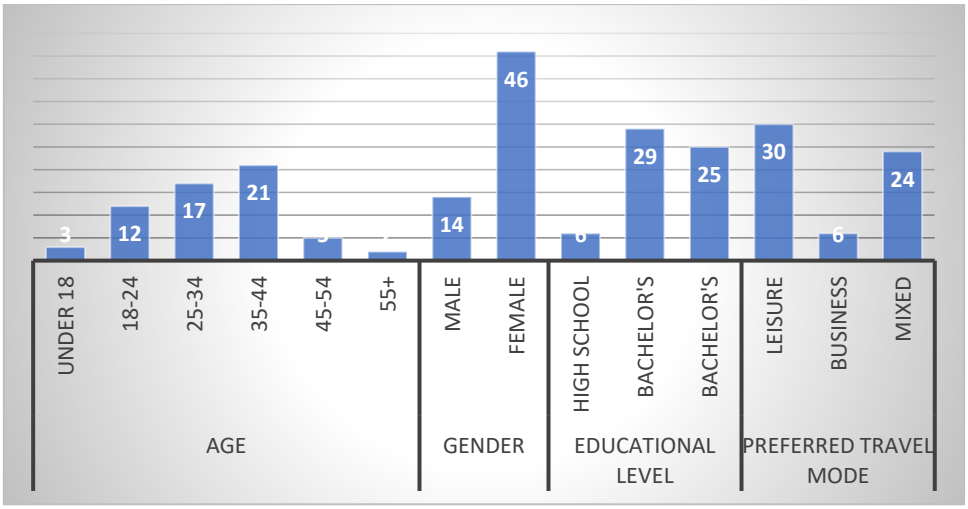

Figure 3 Socio-demographic Distribution

Journal of Information Systems Engineering and Management
2025, 10(53s)
e-ISSN: 2468-4376
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Questionnaire axes results

Table 4 Survey axes results

Phrase		N	Mean	Std. Deviation
Control	I feel I have sufficient control over the AI-driven tools I use for travel planning.	60	3.68	0.98
	The level of control offered by AI-based travel systems affects my decision to use them.	60	3.55	0.91
	AI-driven personalization in travel limits my ability to make independent decisions.	60	3.02	1.03
Privacy	I am concerned about the privacy of my personal data when using AI-based travel services.	60	3.68	1.07
	AI systems for travel ensure adequate protection of personal and sensitive data.	60	2.98	1.03
	I am comfortable sharing my preferences with AI tools for a personalized travel experience.	60	3.38	1.03
Trust	I trust AI systems to provide accurate and relevant travel recommendations.	60	3.52	0.83
	The transparency of AI algorithms in travel planning influences my trust in these systems.	60	3.40	0.99
	My confidence in AI-driven travel platforms has grown over time.	60	3.65	0.88
Personalization	AI tools provide tailored recommendations that align with my travel preferences.	60	3.75	0.77
	AI systems enhance my overall travel experience through personalized suggestions.	60	3.88	0.72
	The ability of AI to adapt to my preferences during travel is essential for my satisfaction.	60	3.92	0.89

The results of the questionnaire axes in Table 2 also summarize in figure 2 provide valuable insights into participants' perceptions of AI-driven travel tools across four key dimensions: It was therefore conceived of as Control, Privacy, Trust, and Personalization. Perceived control over AI: Respondents do not think the AI is out of their control (mean = 3.68) while some think that the use of AI hampers their decision making prowess (Indep. t = 3.02). The presence of privacy motivationally, participants are somewhat uncomfortable in regards to data protection (mean = 2.98), but quite comfortable in sharing preferences (mean = 3.38). For the Trust axis in this study, there is an indication of a positive development as the subjects had a mean 3.52, concerning the efficiency of AI to provide the right recommendations on travel, and the mean value of 3.65 provided on the subject of the increasing confidence in AI over a period of time, though there is still a question mark over the mean value of 3.40 on willingness to be more transparent to the systems Personalization received the highest mean for the

Journal of Information Systems Engineering and Management
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overall result and was most valued by the participants for its ability to accommodate users' preferences (M=3.75) and increase satisfaction with AI suggestions (M=3.92). These results show that AI tools benefit from customization and build trust but privacy threat and perceived control issues persist to affect the general AI acceptance.

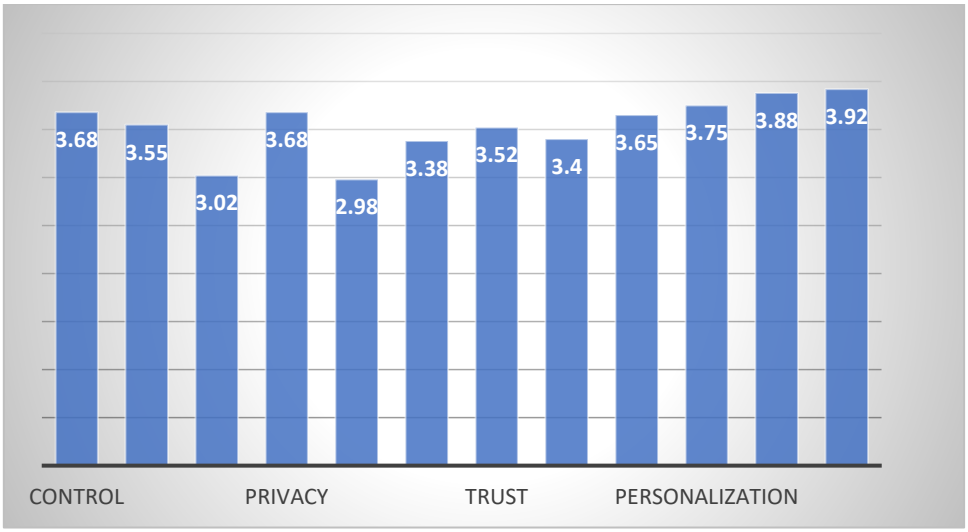

Figure 4 Questionnaire axis mean

DISCUSSION

The findings of this study are most closely related to the previous research concerning the relationship between AI and travel personalization based on the control, privacy, trust, and personalization dimensions according to table 1. The control issue with AI tools s still not straightforward. Thus, it may be stated that users slightly too moderately perceive control, as the mean score was 3.68 Here, Jeong and Shin (2020) explain that one of the advantages of smart tourism technologies is control over decision-making decisions but that this also presents challenges. Likewise, in analyzing the role of AI in e-tourism, Buhalis (2021) highlights that such systems help present users with choices that appeal to them but says that perceived control over such options determines trust and eventual usage.

Some of the challenges which have been highlighted in this study highly relate to the contemporary issue of data privacy in artificial intelligent facilitated service delivery. The participants answered with a mean score of 2.98 for perceived data protection, which suggests that people are reluctant to share their information with AI systems. In Chen et al. (2022), the authors are of the opinion that data security is a key ingredient in the trust customers have in AI systems because privacy issues can erode customer confidence and use of the systems. Like the current study, Knani et al., (2022) categorise privacy concern as one of the major factors likely to hamper AI uptake in the tourism industry, necessitating proper data protection measures.

As for confidence share, the trend is relatively positive, but with average indicators, where the mean score for growing confidence in AI platforms was 3.65. This is in support of view from Loureiro et al. (2021) stating that operational reliability of the AI systems and their ability to provide clear explanations across the decision making process fosters trust in the end. Vilone and Longo (2021) also emphasize the necessity of explicability in the AI systems since transparency leads to its increased trust by users. However, the lower value for transparency in this study was 3.40, which implies that though confidence is gradually rising in the use of AI systems, the black-box model of initiating the systems have to be solved to further boost users' confidence.

The personalization dimension was the earliest and the highest one, getting the scoring between 3.75 and 3.92; there for intensifying the need for the application of AI in the travel industry. Bulchand-Gidumal (2022) establishes that AI enhances customer satisfaction based on trends that include personalization of services. This is in line with research by Kannan (2024) who proposed that the role

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of AI is to repurpose tourism again and to come up with quality tailor made services that can suit the customer's needs. Said another way; Pantano et al. (2022) points out that when personalization is an operational factor, customer engagement reaches new heights, especially in digital channels bowed by efficiency.

In general, the findings reconfirm that despite the capacity of AI-based instruments to foster individualization and promote user confidence, control and privacy issues remain problematic, as has been demonstrated earlier. To overcome the limitations underlined above, Breiby et al. (2020) and Lalicic and Weismayer (2021) proposed improving the transparency, explainability, and data security characteristics of the systems in question; further development of these aspects will be crucial for increasing user acceptance and satisfaction with AI-based travel planning tools.

AI in Tourism Marketing and Customer Engagement

Advanced advertising techniques and customer contact methods help tourism marketing today through AI technology. Machine learning tools use buying habits data to develop customized promotions for users. AI systems like chatbots and recommendation engines show travel options instantly based on what a user has seen before and what others post on social media. Buhalis and Sinarta (2019) prove that AI-based marketing creates personal promotional offers to boost customer interaction which yields better conversion results.

The Role of Generative AI in Enhancing Tourism Content

Through generative AI technology tourism providers make customized travel plans and destination suggestions plus design marketing assets for their visitors. AI systems GPT and DALL-E produce top-quality personalized media content that matches traveler preferences. According to Xiang et al. (2023) AI technology boosts visitor enjoyment because travelers prefer custom content that matches their preferences. Travel companies use AI systems to create custom deals that meet what each customer wants and what the market demands.

Predictive AI in Tourism: Enhancing Loyalty and Retention

AI solutions help travel companies strengthen their customer relations by studying user trends ahead of time to make individualized suggestions. By using AI analytics to check travel records AI analyzes booking histories and person travel facts along with customer reviews to show future customer actions for business customization. Research from Gursoy et al. (2021) shows that predictive artificial intelligence helps businesses keep customers longer when it delivers them tailored benefits and travel convenience.

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