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AI-Powered Personalization and Sports Tourists' Behavioral Intentions in Saudi Arabia: The Mediating Roles of Engagement and Cultural Authenticity under Vision 2030

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ABSTRACT:
The study assesses how AI-powered personalization affects tourists' behavioral intentions, focusing on the potential roles of tourist engagement and cultural authenticity within the context of sports tourism in Saudi Arabia.
Using a positivist research philosophy and a quantitative cross-sectional design, structured questionnaires were distributed to domestic and international tourists attending sports events in Saudi Arabia where AI-enabled tourism applications were utilized, including recommendation engines, AI-powered event platforms, language translation tools, and navigation applications. The sample included participants from diverse cultural backgrounds, enabling the examination of perceptions toward AI-powered personalization and culturally oriented digital experiences. A total of 482 valid questionnaires were collected between January and March 2026. Structural Equation Modeling (SEM) was employed to examine the proposed relationships among the study variables.
The results revealed that there is a partially significant relationship between AI-powered personalization and behavioral intention. Personalized cultural information, experience modification, language personalization, and social connectivity positively affect behavioral intention, whereas activity recommendation does not. Moreover, AI-powered personalization positively impacts cultural authenticity and tourist engagement, but the strength of impact differs among their aspects. Besides, local traditions' respect, cultural appropriateness of AI outputs, and tourist engagement have a significant impact on behavioral intention, whereas cultural representation has no significant impact on this variable. Mediation analysis proves the partial mediation of cultural authenticity and tourist engagement in the relationship between AI-powered personalization and behavioral intention. The findings confirm the positive impact of AI-powered personalization on behavioral intentions through both direct and indirect links, making the experience of sports tourism culturally authentic and engaging. The study contributes to the expanding field of AI in tourism and can be used for designing personalized services that will help to promote the sustainable development of sports tourism in Saudi Arabia.

Keywords: smart tourism technologies, cultural experience management, tourist engagement, authenticity, sports event tourism.

1. Introduction

The tourism industry is one of the most influential sectors that affects global economies in a positive manner in terms of economic growth, employment, intercultural interaction, and sustainability (Bayih & Singh, 2020). Nonetheless, recently there has been

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a considerable shift in the perspective regarding tourism due to the quick technological revolution, especially with the emergence of Artificial Intelligence (AI) in the tourism industry and destination management. AI-related technologies are used in tourism for recommendation services, travel assistants, navigational services, translation, and adaptive digital platforms to increase user experience and interactions. Considering the foregoing, personalization of AI is seen as an indispensable element in the process of digital transformation in tourism and sports events (Das, 2024; Andrianto et al., 2025).

Most prior research has concentrated on the impact of AI-powered personalization in general tourism contexts, where travelers often seek leisure, sightseeing, or recreational experiences, even though it has emerged as a major driver of smart tourism experiences (Sabiote-Ortiz et al., 2025). Sports tourism, on the other hand, is a unique kind of travel that is defined by event-driven travel, set schedules, intense emotional engagement, and a strong reliance on real-time digital technologies prior to, during, and following athletic events (Zeng et al., 2026). When it comes to ordering tickets, navigation, live updates, language help, and customized event recommendations, sports tourists are increasingly dependent on AI-powered apps. Therefore, it is hard to directly apply research findings to general tourism contexts because the efficacy of AI-powered personalization may differ significantly between sports visitors and general tourists (Srivastava et al., 2026).

Despite the rapid integration of AI into the industry being acknowledged, the stated challenge has been largely overlooked in existing literature. Most studies have been concerned mainly with practical benefits associated with the use of AI personalization to improve efficiency and ease of use. There have been no investigations into the cultural impacts of such human-AI interactions. Research has explored the impacts that various facets of AI personalization, including cultural content personalization, dynamic experience personalization, language personalization, recommended activities, and social features, have on tourists' behavioral intentions is limited in number.

The relevance of this problem is amplified in the case of sports tourism, where tourists not only seek tangible but also intangible rewards from engaging with an AI system. Excessive use of personalized AI can create stereotypical or artificial experiences and thus produce negative attitudes toward authenticity and cultural engagement from the tourists' side. Thus, it becomes obvious that it is essential to conduct further research concerning the influence of AI personalization on the attitudes towards authenticity and culture held by tourists and their willingness to come back to the place again, recommend it to other people, and become loyal to it (Samala et al., 2020; Candra et al., 2025).

While previous literature has established a positive impact of AI-assisted personalization on tourists' satisfaction, trust, value perception, and behavior, little is known about the mechanisms by which these impacts happen. Moreover, there is no evidence available to explain whether AI personalization from the perspective of culture enhances cultural authenticity among tourists and whether, consequently, their engagement behaviors change. Lastly, most prior studies on AI and personalization have concentrated on general tourism rather than sports tourism. Since, along with attending sports events, sports tourists are interested in cultural authenticity, researching these relationships is essential. Despite the growing research on AI-enabled personalization, significant research gaps remain, as outlined below:

1. Despite the distinctive characteristics of sports tourism and its heavy reliance on smart digital services, most recent research on AI-enabled personalization has focused on general tourism contexts (Ashrafuzzaman et al., 2025: Tuomi et al., 2025: Yang et al., 2025).
2. Previous studies have largely focused on the direct relationship between tourist behavior and AI-enabled personalization, without adequately understanding the psychological processes underlying these effects. Specifically, the mediating roles of both visitor engagement and cultural authenticity within a single conceptual framework are rarely explored (Semwal et al., 2024: Vo, 2024: Vo et al., 2025).
3. There is a lack of empirical data from emerging sports tourism destinations such as Saudi Arabia, where Vision 2030 is driving the rapid growth of AI-enabled travel services.

To address these gaps, this study proposes and tests an integrated model that examines how AI-enabled personalization influences the behavioral intentions of sports tourists through the mediating roles of both cultural authenticity and tourist engagement.

2. Literature Review

The Saudi Arabian Development Vision 2030 is amongst the most ambitious schemes for change in recent history and has placed tourism development amongst its main instruments for diversifying its economy. The fact is that this emphasis on cultural conservation and modernization through the Development Vision 2030 thus provides very fertile ground in which AI technology must move in support of and not work against these traditions (Alkhanbshi, 2024). This indicates the capability of sports to go beyond cultural differences in presenting both its identity and its capability (Pratiwi and Muslikhati, 2024). The Kingdom's method in tourism development encompasses authenticity and emphasis on cultural heritage, adopting technological innovation and best practices globally (Henderson, 2021). Within the framework of research on the expansion of tourism in the Middle Eastern region, the significance of the achievement of a kind of modernization and the conservation of culture is highlighted, especially in the context of scenarios related to the development of tourism as part of national development (Henderson, 2021).

The emergence of new trends in the field of tourism in Saudi Arabia has led to an intensification of AI applications in tourism and sports-event systems. Through its initiative, Saudi Arabia has introduced significant investments in modernized technology to enhance tourists' experience and boost their competitiveness in the market. Major sporting events including the Formula 1 Saudi Arabian Grand Prix, Riyadh Season, international football tournaments, and electronic sport competitions have involved the use of digital platforms integrated with AI technologies for providing visitors with guidance, crowd control services, personalized recommendations, and multilingual support. According to Koch and Bouchon (2020), the use of artificial intelligence technologies in the Saudi tourism industry plays an essential role in boosting visitors' experience as well as helping to achieve sustainable tourism development goals.

Moreover, in relation to sports tourism, technological transformation has emerged as an indispensable component in influencing the experience of tourists prior to,

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during, and after the event. Today, more sports tourists are relying on artificial intelligence-enabled applications to assist in event planning, navigation, lodging, ticketing, and access to timely information. According to recent research, innovations in technology for sports tourists enhance their experience as well as perception of the destination as appealing and of high service quality (Buhalis and Amaranggana, 2015). However, academics have pointed out that overreliance on technological solutions can also result in an experience that is homogenous and standardized, which could negatively impact tourists' perception of authenticity if the culture is not sufficiently included in the process (Ahmed, 2026)

Given the advances in AI technology within tourism environments as well as challenges of authentic culture and tourist engagement, it is vital to analyze scientific articles on this subject matter. AI-driven personalization services are transforming the world of digital experiences in providing personalized viewpoints, suggestions, or interaction experience in e-commerce services, learning platforms, marketing platforms, and user interface design tools. By leveraging the power of machine learning algorithms, deep learning algorithms, and natural language processing technologies, AI systems can dynamically respond to the user's behavior and preferences with the aim of reaching user satisfaction and success.

The rate at which Artificial Intelligence is adopted within the hospitality and tourism sector alters the way in which the experiences of customers are made more personal (Ahmed, 2025). Artificial Intelligence shall continue to allow for this endless number of options, whereby the results show customers served by AI-driven chat systems that will be capable of answering questions the moment they are posed, while also having the foresight of AI-driven predictive analytics that will have the capabilities to predict the desires of the customers. Hence, AI shall continue to be one of the drivers of the future hospitality sector (Awasthi, 2022).

Given that there has been a rise in the use of AI technology for personalized services in tourism, more research efforts have been made to analyze how personalization affects the behavioral outcomes and intentions of tourists. Behavioral intentions refer to the level to which an individual has consciously planned to undertake or not undertake some specific future behavior. BIs may be positive and negative. Positive Behavioral Intentions imply conative loyalty and include positive word-of-mouth (recommending), paying a price premium, spending more with the business, and loyalty. In past research, BIs were measured using three variables, namely: revisit intention, recommending, and word-of-mouth. Revisit intention refers to the likelihood of a tourist doing the same activity again or returning to the place of visit.

Current literature reveals that existing studies have investigated the impact of AI personalization on the behavioral intentions of consumers. For example, Yang et al. (2025), Ashrafuzzaman et al. (2025), and Sipos et al. (2025) findings revealed that indicated customizations driven by AI systems have positive influences on behavioral intentions via specific sets of mechanisms that mostly cite interaction, satisfaction, and trust. On the other hand, An and Ngo (2025) and Kazmi et al. (2025) confirmed that the cognitive perception of the value of the content using AI personalization had a significant influence on the behavioral intentions, though the privacy concerns might reduce the impact. These research, with their different contexts and applications, bring together similar quantitative

methodologies that of AI-powered personalization constitutes a factor influencing behavioral intentions through cognitive, emotional, and experiential paths.

Due to the importance of personalization in the process of affecting tourist behavior, some scholars state that perceptions of cultural authenticity on the part of tourists constitute one of the main factors impacting tourists' experience. In tourism, authenticity is closely associated with place and cultural origin, as a great many tourists are attracted to experiences of ways of life, customs, and environments that are unfamiliar to them. Tourists seek out what they feel are "real" or "authentic" experiences. Partly, this may arise because modern life is increasingly dominated by mass-produced, artificial, and staged elements. Hence, authentic cultural experiences offer tourists a flavor of originality, depth, and meaningfulness that they view in opposition to the artifice of everyday experience (Vannini and Williams, 2016).

Given the current surge in the growth of the global tourism sector, intangible cultural heritage can be considered an important tourism resource and attraction. Intangible cultural heritage is a valuable resource which can help to ensure economic and cultural value. Given the fact that this kind of cultural heritage has unique characteristics, the need to protect it is essential during the development stage. Overdevelopment through tourism will lead to the disappearance of intangible cultural heritage and distortion of the original system of its inheritance. Insufficient tourism development makes it difficult for intangible cultural heritage products to attract tourists. A lack of tourist support for the development of intangible cultural heritage resources and attractions can result in lack of value and resource wastage (Tian et al., 2020).

It is pertinent to note that the deployment of AI technology across different cultures needs to take into consideration values, communication patterns, and behaviors that affect technology adoption and efficiency (Xia et al., 2024). The cultural scopes of power distance, uncertainty avoidance, and individualism against collectivism have been crucial in shaping how individuals have interacted with AI (Akram and Chen, 2024). Cultural authenticity and technology-mediated experiences have become increasingly relevant with a trend toward embracing AI technology while preserving cultural authenticity. Cultural authenticity, according to scholars, is not inherent in things and experiences but arises from the relationship surrounding technology and cultural communities. This significant relationship forebodes implications for cultural authenticity related to AI technology system design and development (Xia et al., 2024).

Recent literature indicates that studies have addressed how AI-powered personalization affects users' perception of authenticity, especially in environments that carry a clear cultural dimension. For example, Vo (2024), Vo et al. (2024), and Vo et al. (2025) showed that the components of AI-powered personalization offer a huge position in enhancing cultural Authenticity through mediating mechanisms, most notably social presence, credibility, integrity, and symbolic harmony with the cultural environment. Moreover, Arora et al. (2025) and Hassan et al. (2025) found that AI-powered personalization is used to personalize messages, and the user experience enhances the cultural authenticity of the content's suitability to their culture and supports interaction emotionally and cognitively with the brand. These results have confirmed that AI-powered personalization directly contributes to enhancing cultural authenticity.

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On the other hand, recent literature analyzed how authenticity affects behavior and interaction. For example, Yeh et al. (2025) and Chen et al. (2020) demonstrated a clear consistency that confirms that the perception of authenticity, whether it is the authenticity of the place, food, or cultural environment, directly contributes to enhancing their behavioral intentions and their level of interaction and emotional immersion. In the context of tourist food experiences, Muskat et al. (2019) and Song et al. (2019) findings showed that cultural authenticity is one of the strongest variables influencing satisfaction and behavioral intentions and often outperforms its impact on the characteristics of traditional service, such as fairness of price or quality of service. Likewise, Kim et al. (2020) confirmed that signals of authenticity, such as local authenticity, cultural affiliation, and historical depth, enhance positive feelings and familiarity with the place, which ultimately leads to a higher behavioral intention.

Perceptions of tourists' involvement and cultural authenticity are considered crucial precursors of tourists' behavior. In the context of the travel industry, tourist engagement is the extent of absorption, involvement, and engagement in relation to activities, destinations, and technology interfaces. It is an examination conducted on the extent of tourist engagement with experiences in the travel industry, ranging from the analysis of cultural endeavors to the events, as well as the technology use, such as AI suggestions, among other applications (Huang and Choi, 2019).

Recent literature addressed the influence of AI-powered personalization on tourist engagement, as the study conducted by Semwal et al. (2024) revealed that instant personal recommendations contribute to enhancing cognitive and emotional interaction during the tourist experience. In the same way, Leka et al. (2025) demonstrated that artificial intelligence techniques work to raise levels of real-time participation and improve visitors' interaction across different points of the tourist journey and tourist engagement. Moreover, Awasthi (2022) and Raj et al. (2025) have consistently shown that intelligent personalization using AI is one of the most significant factors influencing tourist engagement, and in many cases, it even outperforms traditional service attributes like service quality and price appropriateness because of its capacity to dynamically adjust to the tourist's preferences and behavior. Likewise, Wong et al. (2024), ártlová and Vyšínová (2025), and Vij et al. (2024) have shown that combining personalization indicators, variables, trust, ethics, transparency, and good data management in personalization systems enhanced the tourists' emotional connection and increased tourist engagement.

Additionally, tourist engagement has emerged as a central psychological construct in tourism research that is repeatedly connected to desirable outcomes, including revisit intention, word-of-mouth, willingness to pay, and other behavioral intentions. Rather and Hollebeek (2020), for instance, found that customer engagement exerts a significant influence on enhancing customer experience. Hence, the intention to behave becomes stronger. In addition, Flavián et al. (2021) revealed that the application of immersive technologies, such as virtual reality head-mounted displays, has a significant influence on establishing stronger intentions to behave. Furthermore, research on social media indicates that online activities have effects in relation to travel intentions. For instance, Hussain et al. (2022) revealed that both affective and behavioral forms of engagement with destination image associated with social networking sites are significant predictors of users' intention to visit the destination. In addition to that, the study found that cognitive engagement does

not have a significant impact and thus suggests that emotional resonance and activeness are more convincing than information processing.

In the heritage tourism context, Seyfi et al. (2023) revealed how the dominant role of absorption is in revisit intention and interaction and identification improve WOM behavior, hence different pathways to engagement may result in different behavioral outcomes. In a similar vein, Teng (2022) proved that film tourism experiences bring about higher tourist engagement, and this, in turn, brings about a positive influence on behavioral intention. This explicitly demonstrates that engagement functions as a mediator and is a vital component in themed tourism experiences as well, thus making its cruciality evident in experience-driven tourism contexts. This concept was further developed to a crisis context by Kumar et al. (2023), who proved that destination brand engagement enhances affective attitude and pay-for-value even in a scenario like COVID-19, as it supported that affective attitude is a mediator for engagement to influence willingness to pay.

Though there have been a considerable number of studies conducted in the field of personalization, cultural authenticity, and tourist involvement separately, little is known about the interaction of those constructs in sports tourism. From the reviewed literature, it is evident that AI-driven personalization has emerged as an essential factor for the development of modern tourism experiences in terms of enhancing relevance, interactivity, and user-centric service delivery. Previous studies have consistently supported the significance of personalization in relation to several outcomes, including behavioral intentions, cultural authenticity, and tourist engagement through cognitive, emotional, and experiential mechanisms. Simultaneously, cultural authenticity and engagement have also been separately identified as critical factors for determining tourists' satisfaction and post-experience behaviors. However, the existing body of research has not addressed this phenomenon in a cohesive manner, as most studies have investigated the relationships between personalization, cultural authenticity, and tourist engagement in an isolated context, often adopting a narrow, one-dimensional understanding of personalization. Furthermore, the moderating role of cultural authenticity and engagement has not received sufficient attention, particularly in the context of digital-enriched tourism experiences.

These limitations are particularly evident in emerging tourism destinations such as Saudi Arabia, where digital transformation is rapidly advancing as part of the Saudi Vision 2030. Although there is a growing trend in applying AI technologies in tourism, little research has been conducted to explore the impact of multi-dimensional personalization by AI on tourists' behavioral intentions through cultural authenticity and engagement, especially within sports tourism. Therefore, the purpose of this study is to assess how AI-powered personalization affects tourists' behavioral intentions, focusing on the mediating influence of tourist engagement and cultural authenticity within sports tourism in Saudi Arabia.

Even while previous research has emphasized the significance of AI-enhanced personalization, cultural authenticity, visitor interaction, and behavioural intents, there are still many gaps in the present literature. Most of the research has either examined these ideas separately or concentrated only on their immediate connections. Additionally, most empirical study has focused on general tourism contexts, ignoring the unique traits of sports tourists, whose travel choices are strongly dependent on real-time digital

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technology, event-driven, and emotionally charged. As a result, nothing is known about how AI-enhanced personalization influences sports tourists' behavioural intentions.

3. Theoretical Background

The relationship between AI-enabled personalization and behavioural intentions in sports tourism has not been well-supported by empirical research. In developing sports tourist destinations like Saudi Arabia, where substantial investments have been made in AI-enabled tourism services under Vision 2030, this shortcoming is especially noticeable. To explain how various aspects of AI-enabled personalization affect sports visitors' behavioural intentions through the mediating role of tourist engagement and cultural authenticity; this study constructs and empirically tests a thorough conceptual framework. The stimulus-organism-response (S-O-R) hypothesis, which describes how external environmental stimuli affects people's internal psychological states before influencing their behavioural reactions, serves as the theoretical foundation for the suggested links. The external stimulus in this study is AI-assisted personalization, which offers instant services, cultural information, linguistic adaptability, and personalized recommendations. By strengthening their sense of cultural authenticity and increasing their engagement with the area, these technology stimuli have an impact on sports tourists' internal assessments. The tourists' behavioural intentions, such as the desire to return, favorable recommendations, and location recommendations, are subsequently shaped by these internal psychological states. As a result, S-O-R theory offers a solid theoretical basis for suggesting that cultural authenticity and visitor involvement act as mediating factors in the connection between behavioural goals and AI-assisted personalization.

The Stimulus-Orient-Response (S-O-R) theory, which offers a thorough theoretical framework for explaining visitors' behavioural responses to technology stimuli, serves as the foundation for the present study. This theory holds that people's internal cognitive and emotional states are influenced by external environmental stimuli, which in turn affect how they behave. AI-assisted personalization serves as the external stimulus in this study since it influences visitors' experiences through quick services, cultural knowledge, language adaption, and personalized suggestions. The organismal element is represented by tourist engagement and cultural authenticity, which reflect the tourist's cognitive assessment and emotional involvement in the cultural experience. Lastly, the response is represented by behavioural intents, which include good recommendations, suggesting intentions, and the intention to return. As a result, the S-O-R framework offers a solid theoretical foundation for suggesting that cultural authenticity and visitor engagement serve as mediating processes connecting AI-assisted personalization to behavioural goals. Therefore, the study research framework can be illustrated in Figure 1, as follows:

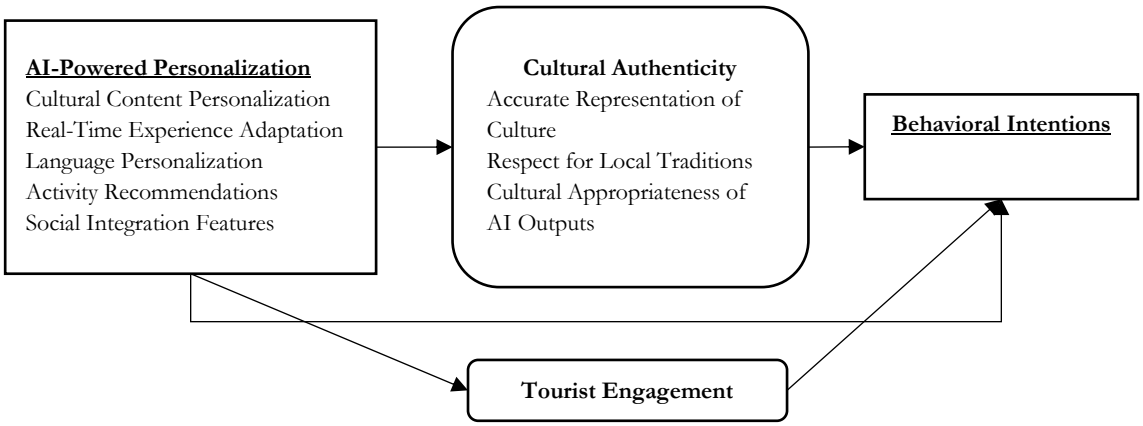

Figure 1: Research Framework

To empirically verify the hypothesized models and analyze the relationships between the study variables, the following hypotheses were developed:

The first hypothesis (H1): There is a significant relationship between AI-Powered Personalization and Behavioral Intentions.

H1a: There is a significant relationship between Cultural Content Personalization and Behavioral Intentions.

H1b: There is a significant relationship between Real-Time Experience Adaptation and Behavioral Intentions.

H1c: There is a significant relationship between Language Personalization and Behavioral Intentions.

H1d: There is a significant relationship between Activity Recommendations and Behavioral Intentions.

H1e: There is a significant relationship between Social Integration Features and Behavioral Intentions.

The second hypothesis (H2): There is a significant relationship between AI-Powered Personalization and Cultural Authenticity.

H2a: There is a significant relationship between Cultural Content Personalization and Cultural Authenticity.

H2b: There is a significant relationship between Real-Time Experience Adaptation and Cultural Authenticity.

H2c: There is a significant relationship between Language Personalization and Cultural Authenticity.

H2d: There is a significant relationship between Activity Recommendations and Cultural Authenticity.

H2e: There is a significant relationship between Social Integration Features and Cultural Authenticity.

The third hypothesis (H3): There is a significant relationship between AI-Powered Personalization and Tourist Engagement.

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H3a: There is a significant relationship between Cultural Content Personalization and Tourist Engagement.
H3b: There is a significant relationship between Real-Time Experience Adaptation and Tourist Engagement.
H3c: There is a significant relationship between Language Personalization and Tourist Engagement.
H3d: There is a significant relationship between Activity Recommendations and Tourist Engagement.
H3e: There is a significant relationship between Social Integration Features and Tourist Engagement.

The fourth hypothesis (H4): There is a significant relationship between Cultural Authenticity and Behavioral Intentions.

H4a: There is a significant relationship between Accurate Representation of Culture and Behavioral Intentions.
H4b: There is a significant relationship between Respect for Local Traditions and Behavioral Intentions.
H4c: There is a significant relationship between Cultural Appropriateness of AI Outputs and Behavioral Intentions.

The fifth hypothesis (H5): There is a significant relationship between Tourist Engagement and Behavioral Intentions.

The sixth hypothesis (H6): Cultural Authenticity mediates the relationship between AI-Powered Personalization and Behavioral Intentions.

The seventh hypothesis (H7): Tourist Engagement mediates the relationship between AI-Powered Personalization and Behavioral Intentions.

3. Methods

The current investigation assesses the impact of AI-Powered Personalization on the Behavioral Intentions of sports tourists in the Saudi Arabian context while investigating the mediating roles of both Tourist Engagement and Cultural Authenticity. The proposed study will explore the impact of AI-powered personalization related to recommendations of content and adaptive elements affecting tourist engagement levels, as well as their perception of cultural authenticity.

The study applies a positivist research philosophy that is centered on objectivity, empirical study, and the formation of hypotheses. The applicability of the positivist philosophy is attributed to the fact that the variables of AI personalization, user engagement, cultural authenticity, and behavioral intentions are quantifiable. The research uses a deductive approach that entails the formation of hypotheses through a literature review that demands the verification of the hypotheses through data. The research uses quantitative research design. The research uses a cross-sectional timeline because all the variables were quantified at a particular point in time.

This research was conducted within the Kingdom of Saudi Arabia during the major sporting tourism activities that took place as per the goals specified in Saudi Vision 2030. This is because Saudi Arabia was considered an ideal context for this research due to the growing investment by this country in the areas of sports tourism, smart tourism,

and AI-based personalized services to enhance tourism competitiveness and develop its economy. This is why this time frame seemed suitable for conducting this research, considering that AI-based tourism applications started to be used in sporting activities internationally and locally.

The population targeted was domestic as well as foreign visitors who participated in prominent sports events in the Kingdom of Saudi Arabia and used or were exposed to AI-assisted tourism or sports events applications, such as but not limited to recommendation application software, AI-powered sports events guides, translation applications, ticketing applications, or real-time navigation applications.

A non-probability convenience sampling method was used in this study for respondent recruitment. Data collection in the current research was done among both domestic and international sports tourists visiting major sporting events in Saudi Arabia. The selected respondents participated in the study on a voluntary basis. However, respondents had to be familiar with the use of AI tourism apps or had to have an interaction with them before their participation in the survey. Some examples of such apps include recommendation apps, digital ticketing applications, navigational apps, translation apps, and event guide apps.

The non-probability convenience sampling method was used due to the lack of a comprehensive sampling framework for sports tourists attending sporting events in Saudi Arabia. The Riyadh Season, the Formula 1 Saudi Grand Prix, the Diriyah E-Venture, and international football matches were among the prominent sporting events that attracted both domestic and foreign sports visitors. Direct recruitment of participants occurred at the event locations, when they were contacted and asked to take part in the survey. Respondents had to fulfil three requirements in order for the sample to be considered suitable: they had to be at least eighteen years old, attend the sporting event as a sports tourist or spectator, and use at least one AI-powered tourism application while there, such as digital ticketing, recommendation apps, navigation, translation, or event guides.

510 of the 560 questionnaires that were sent were returned, yielding a response rate of 91.1%. 28 surveys were eliminated during data evaluation because they were incomplete or did not fit the eligibility requirements. For the final analysis, 482 valid questionnaires remained. The inclusion of both domestic and foreign sports tourists in several high-profile sporting events improves sample diversity and offers a reasonable representation of sports tourists using AI technologies in Saudi Arabia, even though the convenience sampling method restricts the statistical generalisability of the results.

Table 1 below presents the demographic profile of the participants in the study. The results offered that the demographics of 482 participants, are mostly men (82.6%) and young travelers, with the majority being of the age range 26-35 years (48.5%), followed by respondents under the age of 25 years (38.4%). Educational level-wise, most of the respondents were having a bachelor's degree (50.4%), while 27.6% had postgraduate degrees and 22% were educated up to secondary or diploma levels. The monthly income of most respondents was within the range of 5,000-10,000 SAR (48.5%), while 38.4% had a monthly income of less than 5,000 SAR.

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Table 1: Respondent profile

Category	Frequency	Percent	Total
Gender			482
Male	398	82.6%	
Female	84	17.4%	
Age			482
Below 25 years	185	38.4%	
26–35 years	234	48.5%	
36–45 years	36	7.5%	
46–55 years	27	5.6%	
Education Level			482
Secondary or Diploma	106	22.0%	
Bachelor's Degree	243	50.4%	
Postgraduate Degree	133	27.6%	
Monthly Income (SAR)			482
Below 5000	185	38.4%	
5000–10000	234	48.5%	
10000–15000	40	8.3%	
Above 15000	23	4.8%	

It should be emphasized that participation in the survey was purely voluntary and the consent of all the respondents was received before any data gathering procedure. The purpose of the study and its scientific nature were explained to the respondents in detail and their anonymity and confidentiality were guaranteed. No identification data was gathered during the survey and the data gathered had a purely scientific character. Besides, the research was performed following the ethical norms for the institution regarding the research on humans.

The quantitative study employed a structured questionnaire for acquiring data. The responses were acquired through a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), thus enabling respondents to give varying levels of agreement to acquire greater precision. It should be stated that the questionnaire questions were taken from already validated measurement scales applied by scholars in previous studies regarding the topics of artificial intelligence-supported personalization (Gollner et al., 2016; Lee and Jan, 2022; Tuomi et al., 2025; Abbass, 2019), tourist engagement (Georgiou et al., 2017), cultural authenticity (Kolar and Zabkar, 2010), and behavioral intentions (Wang and Tsai, 2022). It was vital to adapt the questions to apply the developed measurement tool to the

specific Saudi sports tourism setting, and the use of artificial intelligence technologies within the tourism industry is presented in the research. The questionnaire itself was designed briefly enough to facilitate its understanding by the respondents.

A pilot study was conducted before actual data collection to measure the suitability of the statements on the questionnaires regarding clarity, accuracy, and appropriateness of the statements in relation to the research problem associated with sports tourism in Saudi Arabia. More specifically, the questionnaires' statements had been reviewed by certain respondents and academicians to evaluate whether they are clearly written and well formulated to measure the research variables. Certain modifications had been made in accordance with collected feedback that included the modification and deletion of irrelevant and repetitive statements to increase clarity of the questionnaires. Eventually, it should be noted that the results obtained from conducting reliability and validity tests were quite positive, as reliability and validity coefficients exceeded the required levels.

Table 2: Pilot Study Test

Variable	Statement	Factor Loading	AVE	Cronbach's Alpha
Cultural Content Personalization	CCP1	0.847	81.906	0.887
	CCP2	0.800		
	CCP3	0.811		
Real-Time Experience Adaptation	REA1	0.882	85.789	0.917
	REA2	0.829		
	REA3	0.863		
Language Personalization	LP1	0.845	84.115	0.904
	LP2	0.862		
	LP3	0.816		
Activity Recommendations	AR1	0.723	80.642	0.879
	AR2	0.845		
	AR3	0.834		
Social Integration Features	SIF1	0.777	79.266	0.912
	SIF2	0.755		
	SIF3	0.811		
	SIF4	0.827		
Accurate Representation of Culture	ARC1	0.592	70.607	0.894
	ARC2	0.818		
	ARC3	0.780		
	ARC4	0.678		
	ARC5	0.733		
Respect for Local Traditions	RFLT1	0.916	88.403	0.933
	RFLT2	0.872		
	RFLT3	0.864		
Cultural Appropriateness of AI Outputs	CAA1	0.859	85.756	0.916
	CAA2	0.817		
	CAA3	0.897		
Tourist Engagement	TE1	0.732	75.857	0.946
	TE2	0.824		

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	TE3	0.736		
	TE4	0.723		
	TE5	0.790		
	TE6	0.675		
	TE7	0.830		
Behavioral Intentions	BI1	0.697	76.407	0.845
	BI2	0.824		
	BI3	0.771		

4. Results

Validity and Reliability analysis in Table 3 demonstrate strong construct validity and reliability across all constructs. (AVE) values range from 54.868% to 79.628%, well above the 50% threshold, confirming adequate convergent validity. Factor loadings for all items fell between 0.802 to 0.844, exceeding the recommended 0.4 cutoff, which indicates robust item representation. Reliability is further established through Cronbach's Alpha coefficients spanning 0.899 to 0.798, demonstrating excellent internal consistency. These findings collectively validate the measurement model's robustness for subsequent analysis.

Table 3: Validity and Reliability Test

Variable	Statement	Factor Loading	AVE%	KMO	Cronbach's Alpha
The Independent Variable: AI-Powered Personalization					
Cultural Content Personalization	CCP1	0.888	89.04%	0.77	0.938
	CCP2	0.899			
	CCP3	0.884			
Real-Time Experience Adaptation	REA1	0.877	88.30%	0.768	0.934
	REA2	0.888			
	REA3	0.884			
Language Personalization	LP1	0.901	90.31%	0.774	0.946
	LP2	0.900			
	LP3	0.908			
Activity Recommendations	AR1	0.857	85.48%	0.76	0.915
	AR2	0.851			
	AR3	0.857			
Social Integration Features	SIF1	0.839	83.97%	0.868	0.936
	SIF2	0.843			
	SIF3	0.844			
	SIF4	0.832			
Mediator Variable: Cultural Authenticity					
Accurate Representation of Culture	ARC1	0.851	85.57%	0.921	0.958
	ARC2	0.84			
	ARC3	0.863			
	ARC4	0.861			
	ARC5	0.863			

Respect for Local Traditions	RFLT1	0.883	88.28%	0.768	0.933
	RFLT2	0.89			
	RFLT3	0.875			
Cultural Appropriateness of AI Outputs	CAA1	0.898	89.95%	0.773	0.944
	CAA2	0.896			
	CAA3	0.904			
Mediator Variable: Tourist Engagement					
Tourist Engagement	TE1	0.862	85.94%	0.963	0.973
	TE2	0.859			
	TE3	0.862			
	TE4	0.854			
	TE5	0.864			
	TE6	0.854			
	TE7	0.861			
Dependent Variable					
Behavioral Intentions	BI1	0.891	88.70%	0.769	0.936
	BI2	0.893			
	BI3	0.877			

The Fornell-Larcker criterion served as the method used to evaluate the discriminant validity. In this case, the square root of the Average Variance Extracted (AVE) for each construct was greater than its inter-construct correlations, showing that the construct has higher correlation with its own indicators compared to other constructs. The findings supported the validity of sufficient discrimination and showed that each structure measures a different notion from the others by confirming that the square root of the extracted mean variance for each structure exceeded its correlations with all other structures.

Confirmatory factor analysis (CFA) is an essential step since it confirms the component structure that the researcher constructed as a unit of measurement for each of the dimensions. The AMOS 24 application and the ML technique were employed to display the factor loading for all variables and how well their models fit. The model fit of the confirmatory factor analysis was utilized for calculating the minimum difference, or CMIN/DF, which was found to be 1.037 by dividing the chi-square by the total number of degrees of freedom. The goodness of fit (GFI) remained at .939, and the p-value indicated that there was a .262 chance of finding a bigger disparity than the one discovered in the current sample. The adjusted goodness of fit index (AGFI) remained at .926, and the CFI (comparative fit index) stayed unchanged at .999 as well. The model's incremental fit in contrast to a null model was good, as shown by the Bentler-Bonett normed fit index (NFI) and Tucker-Lewis's index (TLI), which stayed at .974 and .999, respectively.

Furthermore, the sample variances in addition to covariances deviated from the values they had acquired based on the assumption that the model is accurate by .020, as measured by the root mean square residual (RMR); and the root mean square of approximation (RMSEA) was found to be .009, suggesting a useful standard in covariance structure modelling that evaluates the degree of precision that exists while trying to determine the population (Hair et al., 2016).

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Figure 2 shows the results of the confirmatory factor analysis (CFA). The arrows pointing to the factor loadings denote good factor loadings (Factor Loadings > 0.4) regarding the confirmatory factor evaluation. This demonstrates the adequate validity of the research's hypotheses by showing that all factor loadings (FL), which measure the magnitude of individuals' loadings on respective variables, were above 0.40. The associated statements are significant to their constructions, as all the P-values are less than 0.05.

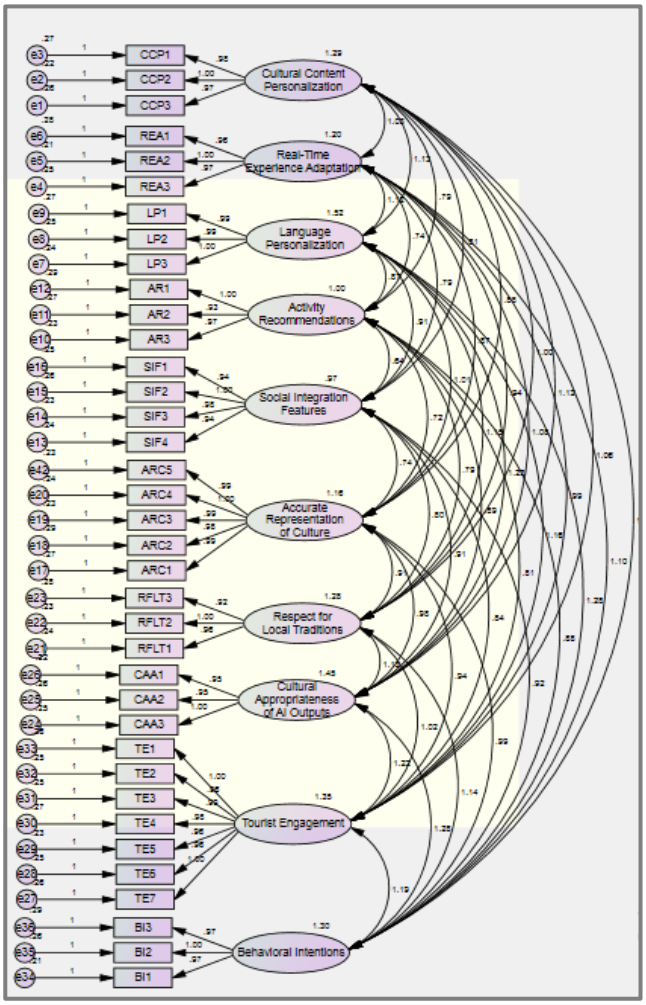

Figure 2: CFA for the Measurement Model

Table 4 below offers the descriptive statistics of the variables utilized in this investigation with reference to the valid responses provided by the 482 participants who did not leave any variable unanswered. The mean values for the variables utilized in this study lie between 2.7801 and 3.4544. This means that the participants gave moderate to somewhat positive responses to the questions asked. From the variables analyzed, Behavioral Intentions (BI) has the highest mean value of 3.4544, while the mean value of

Real-Time Experience Adaptation (REA) and Language Personalization (LP) is 3.2510. The lowest mean value is 2.7801 in the case of Social Integration Features (SIF).

Table 4: Descriptive Analysis of Research Variables

Statistic	CCP	REA	LP	AR	SIF	ARC	RFLT	CAA	TE	BI
Mean	3.224	3.251	3.251	2.863	2.780	3.037	3.015	3.042	2.921	3.454
Std. Dev.	1.219	1.172	1.370	1.064	1.054	1.153	1.199	1.284	1.255	1.216
Minimum	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Maximum	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000

Normality tests, as depicted in Table 5, reveal that data on all research variables are nearly normally distributed. This makes the data ready to move towards further parametric tests.

Table 5: Normality Test for Research Variables

Variable	Skewness	Kurtosis
Cultural Content Personalization (CCP)	-0.284	-0.920
Real-Time Experience Adaptation (REA)	-0.420	-0.719
Language Personalization (LP)	-0.411	-0.900
Activity Recommendations (AR)	0.016	-0.373
Social Integration Features (SIF)	-0.193	-0.616
Accurate Representation of Culture (ARC)	-0.171	-0.810
Respect for Local Traditions (RFLT)	-0.115	-0.889
Cultural Appropriateness of AI Outputs (CAA)	-0.024	-0.953
Tourist Engagement (TE)	-0.016	-0.955
Behavioral Intentions (BI)	-0.186	-0.956

Table 6 includes the Variance Inflation Factor (VIF) statistics for all independent variables that were used in the regression analysis. The minimum VIF statistic was 2.449, while the maximum value was 6.098. In statistics, when conducting analysis, a VIF below 10 is acceptable, although some people prefer using the stricter criteria of VIF below 5 so that there can be no suspicions of collinearity at all. All but two variables have VIF values far below the stricter criteria of 5; hence, multicollinearity is not a problem in these cases. The variables CAA and TE have higher VIF statistics (6.098 and 5.850 correspondingly). Still, these values are far below 10 that is the institutional conservative criteria, which means that data is acceptable for parametric regression analysis.

Table 6: Multicollinearity Test for Research Variables

Independent Variable	VIF
Cultural Content Personalization (CCP)	3.653
Real-Time Experience Adaptation (REA)	3.644
Language Personalization (LP)	4.038
Activity Recommendations (AR)	2.449
Social Integration Features (SIF)	2.823
Accurate Representation of Culture (ARC)	3.230
Respect for Local Traditions (RFLT)	3.357
Cultural Appropriateness of AI Outputs (CAA)	6.098
Tourist Engagement (TE)	5.850

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Testing Research Hypotheses

The Pearson Correlation test performed in Table 7 utilized 482 valid cases. According to the results, there were notable and strong positive correlations between the constructs of AI-powered personalization and cultural authenticity, with coefficient values falling within the range of 0.660 to 0.805 ($p < 0.01$). This implies that these constructs have a robust relationship with one another, showing that higher levels of AI-powered personalization are strongly associated with enhanced perceptions of cultural authenticity. Furthermore, Behavioral Intentions correlated strongly and positively with all dimensions of AI-powered personalization and cultural authenticity, with correlation coefficients varying from 0.769 to 0.913 ($p < 0.01$). Similarly, Tourist Engagement demonstrated very strong positive correlations with all the other study constructs, ranging from 0.703 to 0.911 ($p < 0.01$).

The concepts of Cultural Content Personalization, Real-Time Experience Adaptation, Language Personalization, Activity Suggestions, and Social Features correlate strongly with the authentic culture attributes of Accurate Representation of Culture, Respect for Local Customs, and Cultural Appropriateness of AI Outputs. In other words, there is a direct link between the implementation of good personalization strategies and the high level of cultural authenticity of the AI experience.

As far as the dependent variable, Behavioral Intentions, is concerned, the findings indicate highly significant positive correlations with a host of independent and mediating variables. Specifically, Cultural Appropriateness of AI Outputs ($r = 0.913$), Tourist Engagement ($r = 0.911$), and Language Personalization ($r = 0.886$) demonstrate the highest degree of positive correlation with Behavioral Intentions, with p-values of less than 0.01. The findings show that there is a statistically significant, powerful positive relationship between AI-enabled personalization, cultural authenticity factors, and Behavioral Intentions. In other words, a high level of personalization and cultural authenticity was found to be related to a high level of Behavioral Intentions. This result perfectly confirms the initial assumption about the existence of a positive relationship among these constructs.

There is also a very high and significant positive correlation between Tourist Engagement and the other variables used in the study, particularly with Behavioral Intentions ($r = 0.911$, $p < 0.01$) and Cultural Appropriateness of AI Outputs ($r = 0.883$, $p < 0.01$). This implies that Tourist Engagement is deeply embedded within the proposed conceptual model and likely serves as a critical explanatory mechanism linking AI-based personalization to Behavioral Intentions. The mediation hypothesis for Tourist Engagement is thus strongly supported by these bivariate associations, establishing a clear justification for advanced structural validation.

The outcome of correlation analysis revealed that there existed very significant and very strong positive relations among all the variables that had been tested in the study. Both the variables of personalized AI and cultural authenticity were found to have very strong positive relations among themselves, while Behavioral Intentions was found to have exceptionally strong positive relations with all dimensions of personalized AI and cultural authenticity. This indicates that the relations are very significant and very precisely pointing in the direction indicated by the hypotheses of the study. Therefore, further detailed analysis through Structural Equation Modeling (SEM) is absolutely justified.

Table 7: Correlation Test of Research Variables

		CCP	REA	LP	AR	SIF	ARC	RFLT	CAA	TE	BI
CCP	Pearson Correlation	1									
	Sig. (2-tailed)										
	N	482									
REA	Pearson Correlation	.784**	1								
	Sig. (2-tailed)	.000									
	N	482	482								
LP	Pearson Correlation	.755**	.775**	1							
	Sig. (2-tailed)	.000	.000								
	N	482	482	482							
AR	Pearson Correlation	.688**	.653**	.682**	1						
	Sig. (2-tailed)	.000	.000	.000							
	N	482	482	482	482						
SIF	Pearson Correlation	.703**	.709**	.716**	.642**	1					
	Sig. (2-tailed)	.000	.000	.000	.000						
	N	482	482	482	482	482					
ARC	Pearson Correlation	.717**	.710**	.750**	.660**	.703**	1				
	Sig. (2-tailed)	.000	.000	.000	.000	.000					
	N	482	482	482	482	482	482				
RFLT	Pearson Correlation	.717**	.703**	.769**	.678**	.700**	.731**	1			
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000				
	N	482	482	482	482	482	482	482			
CAA	Pearson Correlation	.776**	.786**	.805**	.722**	.750**	.760**	.786**	1		
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000			
	N	482	482	482	482	482	482	482	482		
TE	Pearson Correlation	.789**	.774**	.795**	.703**	.740**	.783**	.764**	.883**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		
	N	482	482	482	482	482	482	482	482	482	
BI	Pearson Correlation	.855**	.849**	.886**	.769**	.813**	.833**	.841**	.913**	.911**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	482	482	482	482	482	482	482	482	482	482

**. Correlation is significant at the 0.01 level (2-tailed).

By conducting the SEM analysis to examine the impact of the research variables, it was observed through the results demonstrated in Table 8 that:

For the first hypothesis **"*There is a significant relationship between AI-Powered Personalization and Behavioral Intentions*".** Based on the sub-dimensions of this hypothesis, it has been found that Cultural Content Personalization (Estimate = 0.145, $p < 0.001$) is highly significant, Real-Time Experience Adaptation (Estimate = 0.115, $p = 0.004$) is highly significant, Language Personalization (Estimate = 0.166, $p < 0.001$) is highly significant, Social Integration Features (Estimate = 0.102, $p = 0.003$) is

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highly significant, and Activity Recommendations (Estimate = 0.053, p = 0.093) is the only sub-dimension that has a non-significant direct effect. Accordingly, the data show that H1 is partially supported, as four out of five dimensions exert significant direct positive effects

For the second hypothesis **"*There is a significant relationship between AI-Powered Personalization and Cultural Authenticity*".** It is observed that Accurate Representation of Culture (ARC) is significantly influenced by Real-Time Experience Adaptation (Estimate = 0.168, p = 0.015), Language Personalization (Estimate = 0.263, p < 0.001), Activity Recommendations (Estimate = 0.169, p = 0.001), and Social Integration Features (Estimate = 0.201, p < 0.001). Cultural Content Personalization is non-significant (Estimate = 0.090, p = 0.156). Moreover, Respect for Local Traditions (RFLT) is significantly influenced by Cultural Content Personalization (Estimate = 0.217, p < 0.001), Language Personalization (Estimate = 0.399, p < 0.001), Activity Recommendations (Estimate = 0.165, p = 0.001), and Social Integration Features (Estimate = 0.146, p = 0.008). Real-Time Experience Adaptation is non-significant (Estimate = 0.028, p = 0.673). Additionally, Cultural Appropriateness of AI Outputs (CAA) is significantly and positively impacted by all five dimensions: Cultural Content Personalization (Estimate = 0.235, p < 0.001), Real-Time Experience Adaptation (Estimate = 0.186, p = 0.003), Language Personalization (Estimate = 0.254, p < 0.001), Activity Recommendations (Estimate = 0.213, p < 0.001), and Social Integration Features (Estimate = 0.217, p < 0.001). Accordingly, the second hypothesis is partially supported.

For the third hypothesis **"*There is a significant relationship between AI-Powered Personalization and Tourist Engagement*".** The findings show that: Cultural Content Personalization (Estimate = 0.282, p < 0.001), Language Personalization (Estimate = 0.288, p < 0.001), Activity Recommendations (Estimate = 0.160, p < 0.001), Social Integration Features (Estimate = 0.178, p < 0.001) all are is highly significant; however, Real-Time Experience Adaptation (Estimate = 0.103, p = 0.100) did not show a statistically significant influence on Tourist Engagement. Accordingly, the third hypothesis is partially supported.

For the fourth hypothesis **"*There is a significant relationship between Cultural Authenticity and Behavioral Intentions*".** The findings indicated that: Respect for Local Traditions (Estimate = 0.125, p < 0.001) and Cultural Appropriateness of AI Outputs (Estimate = 0.204, p < 0.001) both exert a significant, positive impact on Behavioral Intentions. On the other hand, Accurate Representation of Culture (Estimate = 0.025, p = 0.398) does not show a statistically significant direct relationship with Behavioral Intentions. Based on the sub-dimensions, H4 is partially supported.

For the fifth hypothesis **"*There is a significant relationship between Tourist Engagement and Behavioral Intentions*".** The findings revealed a significant and positive impact of Tourist Engagement on Behavioral Intentions (Estimate = 0.153, p < 0.001), and this supported H5 and indicated that the higher the Tourist Engagement, the greater the Behavioral Intentions. Therefore, the hypothesis H5 is supported.

For the sixth and seventh hypothesis **"*Cultural Authenticity mediates the relationship between AI-Powered Personalization and Behavioral Intentions*"** and **"Tourist Engagement mediates the relationship between AI-Powered Personalization and Behavioral Intentions"**, it could be observed that the output of the SEM analysis reveals that both the direct effects of the personalization sub-dimensions

on Behavioral Intention are statistically significant (confirmed in H1), as well as their effect on the mediators (highly significant in H2 and H3). Along with the fact that the Sobel tests have revealed statistically significant indirect effects via Cultural Authenticity and Tourist Engagement, the model can be categorized as partial mediation.

It is evident that although AI-Powered Personalization influences tourists' Behavioral Intention directly, there is also a significant share of this effect transferred indirectly via Cultural Authenticity and Tourist Engagement. Consequently, H6 and H7 are partially supported. Since the suggested structural model is theoretically sound and shows good model fit indices, there was no need for estimating competing structural models because the purpose of this research was to test the hypotheses and not to compare different theoretical approaches.

Table 8: SEM Analysis for Research Variables

			Estimate	**S.E.**	**C.R.**	**P**
Accurate_Representation_of Culture	<---	Cultural Content_Personalization	.090	.063	1.420	.156
Accurate_Representation_of Culture	<---	Real-Time_Experience Adaptation	.168	.069	2.425	.015
Accurate_Representation_of Culture	<---	Language_Personalization	.263	.061	4.322	***
Accurate_Representation_of Culture	<---	Activity_Recommendations	.169	.052	3.240	.001
Accurate_Representation_of Culture	<---	Social Integration_Features	.201	.057	3.518	***
Respect for_Local Traditions	<---	Cultural Content_Personalization	.217	.062	3.512	***
Respect for_Local Traditions	<---	Real-Time_Experience Adaptation	.028	.067	.422	.673
Respect for_Local Traditions	<---	Language_Personalization	.399	.060	6.674	***
Respect for_Local Traditions	<---	Activity_Recommendations	.165	.051	3.262	.001
Respect for_Local Traditions	<---	Social Integration_Features	.146	.056	2.637	.008
Cultural_Appropriateness_of AI Outputs	<---	Cultural Content_Personalization	.235	.058	4.046	***
Cultural_Appropriateness_of AI Outputs	<---	Real-Time_Experience Adaptation	.186	.063	2.934	.003
Cultural_Appropriateness_of AI Outputs	<---	Language_Personalization	.254	.056	4.580	***
Cultural_Appropriateness_of AI Outputs	<---	Activity_Recommendations	.213	.048	4.474	***
Cultural_Appropriateness_of AI Outputs	<---	Social Integration_Features	.217	.052	4.154	***
Tourist Engagement	<---	Cultural Content_Personalization	.282	.058	4.878	***
Tourist Engagement	<---	Real-Time_Experience Adaptation	.103	.063	1.643	.100
Tourist Engagement	<---	Language_Personalization	.288	.055	5.210	***
Tourist Engagement	<---	Activity_Recommendations	.160	.047	3.398	***
Tourist Engagement	<---	Social Integration_Features	.178	.052	3.444	***
Behavioral Intentions	<---	Cultural Content_Personalization	.145	.039	3.744	***
Behavioral Intentions	<---	Real-Time_Experience Adaptation	.115	.039	2.919	.004
Behavioral Intentions	<---	Language_Personalization	.166	.041	4.035	***
Behavioral Intentions	<---	Activity_Recommendations	.053	.032	1.680	.093

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Behavioral Intentions	<---	Social Integration_Features	.102	.034	2.981	.003
Behavioral Intentions	<---	Accurate_Representation_of Culture	.025	.029	.845	.398
Behavioral Intentions	<---	Respect for_Local Traditions	.125	.035	3.584	***
Behavioral Intentions	<---	Cultural_Appropriateness_of AI Outputs	.204	.038	5.329	***
Behavioral Intentions	<---	Tourist Engagement	.153	.033	4.647	***

As a result, Figure 4 shows how the SEM model applied to the research variables is represented.

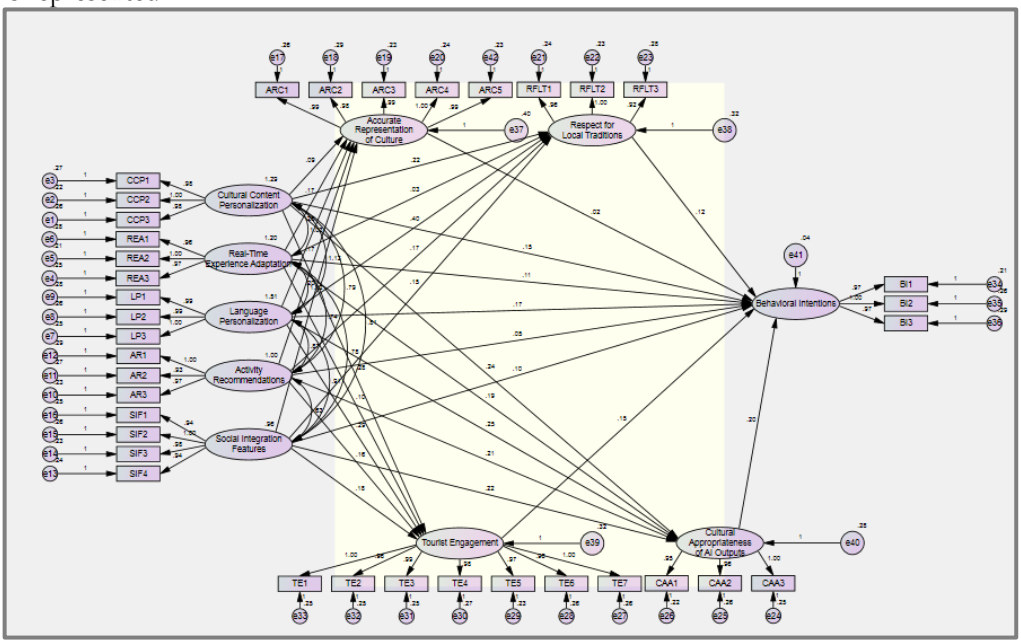

Figure 1: SEM for Research Variables

5. Discussion

The current investigation assesses how AI-powered personalization affects tourists' behavioral intentions, focusing on the mediating influence of tourist engagement and cultural authenticity within sports tourism in Saudi Arabia. Several significant patterns emerged through SEM analysis.

The results show that AI-enabled personalization has a positive impact on tourists' Behavioral Intentions. Specifically, out of five constructs of AI personalization, four constructs: Cultural Content Personalization, Real-Time Experience Adaptation, Language Personalization, and Social Integration Features had a statistically significant positive direct impact on Behavioral Intentions, but Activity Recommendations did not. As a result, the relationship between AI personalization and Behavioral Intentions can be considered to have partial support from empirical evidence. Generally, the results obtained in this study align with prior literature that has shown that personalized AI experience

influences users' behavior positively. In other words, there are many works conducted by Yang et al. (2025), Ashrafuzzaman et al. (2025), Sipos et al. (2025), An and Ngo (2025), and Kazmi et al. (2025) showing the existence of a positive direct impact between AI-enabled personalization and behavior through trust, satisfaction, and perceived value mechanisms. The results in this study suggest that, within the Saudi sports tourism context, tourists react especially positively to those features of AI that allow to personalize cultural content, languages, adaptive experiences, and social interaction.

In this case, it shows that the sports tourists appreciate AI technologies more when these technologies add some value to the experience by providing personalized services and recommendations. The lack of significance of the activity recommendations feature could be explained by the fact that the sports tourists follow the set schedule of events. The study reveals a significant distinction between leisure travelers and sports tourists in general. Sports tourists usually organize their vacations around predetermined sporting events with set schedules, in contrast to leisure travelers, whose plans are frequently changeable and affected by location suggestions. Because their main goal is to attend or participate in the sporting event rather than to investigate other tourist activities, AI-generated activity recommendations may therefore have little effect on their behavioural intentions. According to this research, broad destination activity recommendations should be subordinated to event-specific services like schedule management, location navigation, and personalized event information in AI applications for sports tourism.

Findings also indicate that AI-driven personalization is crucial in improving Cultural Authenticity. Yet, the impacts differ from one dimension to another in Cultural Authenticity. While Language Personalization showed a significant effect on all dimensions of Cultural Authenticity, Cultural Content Personalization, Real-Time Experience Adaptation, Activity Recommendation, and Social Integration Features had significant impacts on certain dimensions but not others. Thus, Cultural Content Personalization was unable to make a significant impact on Accurate Representation of Culture, and Real-Time Experience Adaptation was unable to have a significant impact on Respect for Local Traditions. Yet, all five dimensions of personalization made a significant contribution to making the AI Output Culturally Appropriate. Therefore, the second hypothesis was only partly supported. The research results support the outcomes of previous research works carried out by Vo (2024), Vo et al. (2024, 2025), Arora et al. (2025), and Hassan et al. (2025) who proved that AI-driven personalization contributed to improving the perception of cultural authenticity.

The SEM results also indicate that the role of AI-driven personalization partially affects Tourist Engagement. The variables of Cultural Content Personalization, Language Personalization, Activity Recommendations, and Social Interaction Features had significant impacts on Tourist Engagement, while Real-Time Experience Adaptation did not have any significant impact on Tourist Engagement. Hence, Hypothesis 3 is partially supported. These results are consistent with the findings of earlier research carried out by Semwal et al. (2024), Leka et al. (2025), Awasthi (2022), Raj et al. (2025), Wong et al. (2024), Ártlová and Vyšínová (2025), and Vij et al. (2024). The emphasis made by the previous researchers was on the role of personalization in enhancing tourist engagement. Yet, the lack of significant effect of Real-Time Experience Adaptation on tourist engagement

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indicates that there are different AI personalization features that do not have similar impacts on the engagement of sports tourists. This indicates that tourism engagement is less about the real-time adjustment of the system and much more about personalized content and interaction. Hence, artificial intelligence solutions must give priority to personalized communications and interactions. One explanation could be that sports tourists typically follow official event schedules and pre-planned itineraries, which reduces the possibility of making last-minute changes to affect their engagement. Adaptive suggestions may increase accessibility, but they don't always foster deeper psychological or emotional ties to the location. The results of general smart tourism research, which show that quick adaptation frequently increases user engagement, are somewhat at odds with this theory. This disparity might be a reflection of the distinctive features of sports tourism, where participation is primarily driven by planned sporting events rather than impulsive travel choices.

Moreover, the results suggest a complicated interaction between Cultural Authenticity, Tourist Engagement, and Behavioral Intentions. Among the factors of Cultural Authenticity, Respect for Local Traditions and Cultural Appropriateness of AI Outputs positively affected Behavioral Intentions, but Accurate Representation of Culture did not have a significant impact on it. This result implies that merely giving sports tourists appropriate cultural information is not enough to affect their future behavioural intentions. Travelers seem to seek engaging and meaningful cultural encounters that enable them to feel linked to local customs throughout their stay rather than just being given information about the local way of life. This explains why behavioural intentions are more strongly influenced by respect for regional customs and culturally relevant AI results. This result lends credence to the increasingly prevalent claim in the tourism literature that passive cultural information presentation has less impact on visitors' behaviour than experiential authenticity. Moreover, Tourist Engagement had a positive impact on Behavioral Intentions. Thus, the fourth hypothesis was only partially confirmed, while the fifth one was confirmed entirely. The results are mostly aligned with the studies by Yeh et al. (2025), Chen et al. (2020), Muskat et al. (2019), Song et al. (2019), Kim et al. (2020), Rather and Hollebeek (2020), Flavián et al. (2021), Hussain et al. (2022), Seyfi et al. (2023), Teng (2022), and Kumar et al. (2023).

The findings of the mediation analysis showed that the influence of AI personalization on Behavioral Intentions occurs not only directly but also indirectly. Based on the SEM analysis, several dimensions of AI personalization were found to have a direct impact on Behavioral Intentions, whereas having an indirect influence on both Cultural Authenticity and Tourist Engagement. Moreover, the results of the Sobel test showed that the indirect effects through both mediators were significant and statistically significant; thus, mediation is partially rather than fully mediated, confirming hypotheses H6 and H7. This means that AI personalization enhances the Behavioral Intentions of tourists not only directly but also indirectly through Cultural Authenticity and Tourist Engagement. In other words, the effectiveness of AI personalization increases when tourists get engaged with the authentic culture. These results highlight the significance of creating AI-powered travel services that consider the special features of sports travel rather than using strategies created for leisure travel in general.

6. Implications and further research

The current research offered a variety of research implications that are divided into two levels: the academic and practical point of view. For the academic implications, the research enhances the ever-increasing body of research literature on AI-powered personalization in tourism by pointing towards cultural authenticity and tourist engagement as mediating factors affecting behavioral intentions in tourism influenced by AI. The findings open avenues for more complex models in future research in tourism and AI. From a theoretical perspective, these findings suggest that technology adoption models in tourism should integrate both cultural and engagement-related constructs to better explain tourists' behavioral responses in AI-assisted tourism environments. This study also shows how personalization based on the use of artificial intelligence technology positively affects tourist engagement, but not every personalization dimension affects it to the same extent. The cultural content personalization, language personalization, activity recommendations, and social integration features have been found to increase tourist engagement, while real-time experience adaptation does not. Using SEM with sub-dimensions for each of AI-powered personalization, cultural authenticity, and tourist engagement, this study serves as a methodological blueprint for future empirical research in AI-enhanced tourism.

For the practical implications, the findings suggest that tourism operators and AI designers must therefore focus more on culturally relevant elements such as accurate depiction of culture and culturally acceptable outputs for AI. This will make tourists experience authenticity when they visit holiday destinations. Just providing individualized AI functionalities does not meet the need. When travelers are actively engaged through immersive and relevant experiences, this will evoke Behavioral Intentions. Real-time recommendation systems or gamified experiences can be used to engage them. Moreover, tourism companies and AI providers need to continue with their investment in social integration features, since they play a vital role in ensuring cultural authenticity, tourist engagement, and behavioral intentions. Interaction technologies, thus, should be geared towards helping tourists connect and at the same time support cultural values. Furthermore, tourism professionals should note that AI personalization will affect the Behavioral Intentions of tourists in both direct and indirect ways. Therefore, personalization via AI should not only aim at giving personalized experiences to tourists but should also boost Cultural Authenticity and Tourist Engagement.

There are some limitations related to this research that cannot be ignored. First of all, since the research was conducted according to a cross-sectional research design, it is impossible to trace changes in the perception and behavior of the tourists. Secondly, this research focuses solely on the analysis of the sports tourists in Saudi Arabia; thus, the possibility of its generalization becomes rather limited. Due to the use of the self-reported questionnaire data, it is possible to speak about some kind of bias in respondents' answers and about the existence of Common Method Variance (CMV). Moreover, the authors focused solely on certain aspects of AI-assisted personalization and did not take into account other innovative technologies, such as VR, Predictive Analytics, and Emotion-Driven AI.

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Taking into account these limitations, it would be recommended to use a longitudinal research design for the identification of changes in tourists' perception of AI-assisted personalization services. It would also be necessary to analyze sports tourists in both domestic and international settings and in different sports tourism environments. Additionally, a cross-cultural study involving tourists with different cultural backgrounds from different countries will be useful for analyzing the impact of cultural background and adoption of technologies on the creation of the said associations. Apart from that, further research is recommended to enhance the proposed research model by adding some more variables pertaining to technology and psychology, including trust in artificial intelligence (AI), privacy concerns, digital literacy, technology readiness, intrusiveness of the personalized service offered through AI, destination attachment, and perceived control.

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Appendix A
Questionnaire Measurements

Variable	Statements	Reference
The Independent Variable: AI-Powered Personalization		
Cultural Content Personalization	1. The cultural information provided by the AI system was relevant to my interests. 2. The cultural explanations given by the system were clear and useful. 3. The AI recommendations deepened my understanding of Saudi culture.	Gollner et al. (2016)
Real-Time Experience Adaptation	1. The recommendations of the AI system were adapted by my real-time location. 2. AI support allowed me to better direct the course of the event. 3. The real-time updates enhanced my experience of the event.	Lee and Jan (2022)
Language Personalization	1. The AI spoke in a language that was comfortable for me. 2. Translations were accurate and culturally appropriate. 3. The system allowed me to interact easily regardless of my language.	Tuomi et al. (2025)
Activity Recommendations	1. The AI suggested activities that matched my personal interests. 2. The recommended activities were relevant and enjoyable. 3. The activity recommendations increased the value of my visit.	Lee and Jan (2022)
Social Integration Features	1. The AI system helped me connect with other visitors or groups. 2. Social features enriched my participation in the event. 3. The AI applications were related to the social environment. 4. The AI features encouraged meaningful social interactions.	Abbass (2019)
Mediator Variable: Cultural Authenticity		

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Accurate Representation of Culture	1. I liked special arrangements, events, concerts, celebrations connected to the site. 2. This visit provided a thorough insight into 3. the cultural scheme. 4. During the visit I felt the related history, legends and historical personalities. 5. I liked the calm and peaceful atmosphere during the visit	Kolar and Zabkar (2010)
Respect for Local Traditions	1. I enjoyed the unique religious and spiritual experience. 2. I liked the way the site blends with the attractive landscape in town. 3. I liked the information about the site and found it interesting	Kolar and Zabkar (2010)
Cultural Appropriateness of AI Outputs	1. The AI content felt culturally appropriate and sensitive. 2. The AI system avoided culturally inappropriate suggestions. 3. The AI system was adequate for the events.	Kolar and Zabkar (2010)
Tourist Engagement	1. I liked the activity because it was novel 2. I wanted to spend time participating in the activity 3. The topic of the activity made me want to find out more about it 4. I wanted to spend the time to complete the activity successfully 5. I liked the type of activity. 6. The AI application employed captured my attention 7. I did not have difficulties in controlling the AI application	Georgiou et al. (2017)
Dependent Variable		
Behavioral Intentions	1. I intend to revisit similar AI-enhanced sports tourism events in the future. 2. I would recommend AI-enhanced tourism services to others. 3. I am willing to use AI-powered tourism systems again in future trips.	Wang and Tsai (2022)