

Dimitra Skandali / Georgios Tsourvakas

The Underlying Importance of Value in Artificial Intelligent Travel Application Acceptance Model: Combining the Value-Based Adoption Model and the Artificially Intelligent Device User Acceptance Theory

Abstract

With the rise in the popularity of travel artificial intelligence applications, more research is needed to acquire specific knowledge in the hospitality sector. This research develops a novel methodology for comprehending consumer perceptions of artificially intelligent travel applications, integrating the Value-based Adoption Model and the Artificially Intelligent Device User Acceptance framework. The proposed Artificial Intelligent Travel Applications Acceptance Model framework examines consumers' behavioral intentions regarding accepting and paying for Artificial Intelligent travel applications during their tourism activities. It delineates the perceived benefits and sacrifices that elucidate how individuals receive and are inclined to remunerate for specific Artificially Intelligent travel applications. This study offers a building block for future work investigating applications' causal relationships between the drivers of perceived value and consumer acceptance behavior.

Keywords: benefits, sacrifices, consumer acceptance behavior

1. Introduction

Mobile phone usage has become so prevalent that half of owners consider their devices indispensable, as noted by Perrin (2017). The emergence of Information and Communications Technology (ICT) has rendered these devices the most ubiquitous and frequently utilized products among consumers (Melumad & Pham, 2020). Artificial Intelligence (AI) applications (apps) have changed users' modern lives, as these software programs illustrate the essential integration with smartphones (Venkatesh et al., 2012). AI-powered travel applications offer travelers access to destination data, transportation options, lodging, flights, dining, and entertainment (Barač-Miftarević, 2023). These apps reduce energy consumption and improve performance, making them a popular field to explore for improved efficiency (Wang, 2020).

Newer studies have turned to the concern of faith in numerous cultures within hospitality amenities and the impact of the public working together remotely or with the help of robots (Shah et al., 2023; Chi et al., 2023; Choi et al., 2020). Other research continues to consider the dynamics within the guest-staff relationship—especially in guest contentment, communication, and first impressions (Lu et al., 2020). However, research on traveler's acceptance and purchase of AI travel apps and AI services for tourism and hospitality during vacations remains inadequate. Thus, this article aims to propose a research model to fill this gap.

This research presents questions that address the deficiencies in the current literature. We first examine the elements of perceived benefits (PEB) and perceived sacrifices (PES) and their influence on consumer perceptions regarding the use of apps, such as willingness to accept (WTA) and willingness to purchase (WTP).

Dimitra Skandali, PhD, Corresponding Author, National and Kapodistrian University of Athens, Business Administration, Athens, Greece; ORCID ID: <https://orcid.org/0009-0008-1728-2821>; e-mail: dskandali@ba.uoa.gr

Georgios Tsourvakas, PhD, Professor, National and Kapodistrian University of Athens, Athens, Greece; ORCID ID: <https://orcid.org/0000-0003-4234-3493>; e-mail: gtsourvakas@ba.uoa.gr

Secondly, we focus on how PEB and PES affect perceived value (PV) through AI travel applications. Finally, we examine whether PV is a mediator for the relationships between PEB-WTA and PES-WTP and affects WTA and WTP directly through these uses. In the context of AI travel apps, looking into happiness (HAP), anthropomorphism (ATP), perceived immersion (PIM), effort expectancy (EFT), trust (TST), complexity (CMP), WTA, and WTP can help answer the questions that were raised. Against this backdrop, we developed the AI Travel Apps Acceptance Model (AITRAM) by combining two established theoretical frameworks: the well-known Value-Based Adoption Theory (VAM) (Kim et al., 2007) with the innovative Artificially Intelligent Device Use Acceptance (AIDUA) framework (Gursoy et al., 2019). This article aims to position AI apps within the travel industry, presenting a hypothesis-driven development of key concepts through structural equation modelling and demonstrating quantitative data analysis results.

2. Literature review and hypothesis analysis

2.1. The importance of AI app technology in the tourism industry

As online applications, AI travel apps cater to the most common needs of travelers during their vacations by offering immaterial services (Chakraborty et al., 2023). AI travel apps provide enhanced consumer experiences with features like chat support, the option to make requests, real-time tracking, and push notifications (Powers, 2021). Using AI travel apps, people now have control over planning their trips. Therefore, traveler's experiences are changing due to the adoption of AI apps, and AI technologies are shaping human-robot interactions (Tussyadiah et al., 2018). According to Sigala (2016), social media has transformed tourists from mere recipients of messages to active participants in creating tourism experiences.

From an entrepreneurial perspective, the abundance of available technologies may challenge tourism companies in deciding which to adopt and which to reject (Tuomi et al., 2020). AI travel apps can create a competitive advantage by creating new opportunities and innovations, ameliorating processes, and augmenting productivity (Grundner & Neuhofer, 2021). Researchers have identified benefits and risks associated with AI travel apps, including the potential for fraudulent accommodations, financial deception, privacy infringements, and security concerns that significantly compromise their acceptance (Skandali et al., 2024). However, these apps have the potential to alleviate a tourist's emotional stress, thereby enhancing their destination experience through a sense of trust (Kim, 2021). Hence, understanding the importance of the acceptance model of AI travel apps may assist in the growth of a sturdy framework for online travel apps.

2.2. When VAM meets AIDUA

Davis (1989) originally developed the Technology Adoption Model (TAM), upon which Kim et al. (2007) built the VAM model. Academics and professionals have widely embraced the VAM model in a variety of studies, including virtual reality (Vishwakarma et al., 2020), social media use (Chung & Koo, 2015), augmented reality (Lau et al., 2019), and mobile payments (Mallat, 2007). Scholars have frequently demonstrated that VAM is a robust framework for understanding the roots of consumer acceptance (Sohn & Kwon, 2020). However, the absence of economically crucial items related to consumer confidence and behavior appears to be a gap between some valuable items that contribute to technological advantages and consumer enjoyment.

Conversely, Gursoy et al. (2019) explored the AIDUA concept, providing a precise definition of AI services and their increasing application. From a consumer perspective, AI must be recognized as a significant trend in the current market. Researchers are also using AIDUA to find out how people feel about AI-controlled driving (Ribeiro et al., 2021), task-oriented AI devices used by consumers (Yang et al., 2022), and AI-managed services in the tourism industry, improving service quality (Chi et al., 2020). While AIDUA considers device characteristics and user needs as factors influencing potential adopters' behavior, it neglects to include

important behavioral expectation variables such as immersion, trust, and complexity—variables that could significantly affect such consumers' behaviors (Lin et al., 2020).

2.3. The AI travel apps acceptance model framework

The AITRAM framework shows travelers the many steps to accept a value-based process. It tests how PV directly affects WTA and WTP and the relationships between PEB-PV, WTA, WTP, and PES-PV with WTA and WTP. By combining the strengths of VAM's theory with AIDUA's decision-making process theory, this research connects the usage of AI travel apps with factors that positively impact WTA and WTP attitudes through a three-step acceptance generation process.

In this context, the VAM components of PEB and PES were identified as the primary appraisal stages of the AIDUA theory. The research employed recognized constructs, including happiness, anthropomorphism, and immersion, to assess benefits. This study posits that travelers perceive their efforts, trust, and complexity as sacrifices when using AI travel apps, as they may elicit negative emotions such as anger, fear, and anxiety (Rucker & Petty, 2004). Moreover, based on their primary appraisal, customers evaluate the costs and benefits of their experience through the secondary appraisal of PV. In line with the VAM's value maximization perspective, the proposed model suggests that the experienced value can motivate consumers' behavioral intentions, mediating their impact on WTA and WTP using AI travel apps (Petri & Jacob, 2017). Lastly, using AI travel apps, the outcome stage determines customers' behavior for WTA and WTP.

2.4. Hypothesis analysis

Ødeskaug et al. (2023) describe happiness as a crucial benefit subdimension. Given the expectation that customers' emotions will significantly influence their acceptance of AI services (Kuo & Wu, 2012), we propose the following hypotheses:

H1a1: Happiness has a positive impact on WTA AI travel apps.

H1a2: Happiness has a positive impact on PV.

H1a3: Happiness positively influences the WTP AI travel apps.

The conceptual framework for AI acceptance identifies anthropomorphism as a vital construct, as prior research indicates that human-like characteristics may influence consumers' perceptions of AI technology's approachability and friendliness (van Doorn et al., 2017). Consequently, we propose the hypotheses:

H2a1: Anthropomorphism has a positive impact on WTA AI travel apps.

H2a2: Anthropomorphism has a positive impact on PV.

H2a3: Anthropomorphism positively influences the WTP AI travel apps.

Zak (2022) developed an immersion algorithm to predict actions, revealing the positive correlation between immersion and YouTube metrics explaining potential consumer engagement with advertisements. Immersion occurs when consumers are physically or virtually encircled by the event (Sung et al., 2021). Given that customers' emotional states influence their intentions and behavior (Sung et al., 2021), we hypothesize:

H3a1: Immersion has a positive impact on WTA AI travel apps.

H3a2: Immersion has a positive impact on PV.

H3a3: Immersion positively influences the WTP AI travel apps.

Using AI apps requires effort, primarily based on perceived usefulness (Venkatesh et al., 2012; Lu, 2019). Consequently, when evaluating WTA AI travel apps and WTP using AI travel apps, customers should care about the skills needed before using them. Therefore, it is hypothesized that:

H4a1: The effort has a positive impact on WTA AI travel apps.

H4a2: The effort has a positive impact on PV.

H4a3: Effort positively influences the WTP AI travel apps.

Consumers are more inclined to adhere to and trust a new technology product if they can use it without incident at first (Siau & Wang, 2018). Thereby, we hypothesize:

H5a1: Consumer trust has a positive impact on WTA AI travel apps.

H5a2: Consumer trust has a positive impact on PV.

H5a3: Consumer trust positively influences the WTP AI travel apps.

When it is difficult to understand and use a particular IT innovation, product complexity creates stress for the buyer; thus, it serves as an obstacle and has a detrimental effect on its acceptance. Wang et al. (2018) found a significant inverse correlation between technical complexity and value perception in the adoption of Global Positioning System apps. However, it is hypothesized that:

H6a1: Complexity hurts WTA AI travel apps.

H6a2: Complexity harms PV.

H6a3: Complexity negatively influences the WTP AI travel apps.

Value also compares benefits with sacrifices, becoming an indicator of adoption and purchase intention. PV, which reflects a tradeoff of crucial give-and-get components, has emerged as one of the most significant indicators of virtual reality adoption (Vishwakarma et al., 2020). Several studies have established that PV significantly influences usage acceptance and purchase intention, positioning it as a desirable customer behavior (Rust et al., 2012). Prior studies examining the VAM have determined that perceived value (PV) is a significant predictor of new ICT acceptance behavior (Sohn & Kwon, 2020; Agarwal et al., 2023), resulting in the subsequent hypotheses:

H7a: Perceived value mediates the relationship between happiness and WTA AI travel apps.

H7b: Perceived value mediates the relationship between anthropomorphism and WTA AI travel apps.

H7c: Perceived value mediates the relationship between immersion and WTA AI travel apps.

H7d: Perceived value mediates the relationship between effort and WTA AI travel apps.

H7e: Perceived value mediates the relationship between trust and WTA AI travel apps.

H7f: Perceived value mediates the relationship between complexity and WTA AI travel apps.

H8a: Perceived value mediates the relationship between happiness and WTP AI travel apps.

H8b: Perceived value mediates the relationship between anthropomorphism and WTP AI travel apps.

H8c: Perceived value mediates the relationship between immersion and WTP AI travel apps.

H8d: Perceived value mediates the relationship between effort and WTP AI travel apps.

H8e: Perceived value mediates the relationship between trust and WTP AI travel apps.

H8f: Perceived value mediates the relationship between complexity and WTP AI travel apps.

Willingness to accept the use of AI apps refers to customers' inner incentives to use AI apps in the future (Hu et al., 2021). Previous positive experiences may influence consumption-related behaviors (Watson & Spence, 2007). Accordingly, the following hypothesis suggests:

H7: Perceived value has a positive impact on WTA AI travel apps.

Individuals' readiness to invest in AI travel apps is essential for comprehending purchasing intentions. Miller's (2019) study emphasizes the necessity of transparency between consumers and AI system providers, as it can advantage consumers by bridging this information gap. Notably, there is a deficiency of research specifically investigating consumer WTP for AI apps. Drawing from these insights, we anticipate that consumers will exhibit interest in procuring AI apps, prompting us to propose the hypothesis:

H8: Perceived value has a positive impact on WTP AI travel apps.

3. Methodology

3.1. Sampling

To reach an extensive number of tourists, we used a form of internet sampling, as recommended by Faisal (2017), and compensated participants using the Prolific platform. We received 498 responses, but only 373 underwent data analysis due to incomplete answers in the remaining responses. We collected these 373 responses from various locations across Europe, resulting in a response rate of 74.6 per cent. In these results, we used reflective latent measures (Mikulić & Ryan, 2018), demonstrating respondents' consensus on a five-point Likert scale.

The demographic findings show that educated, working-age individuals prefer AI travel apps, particularly those in Western and Northern Europe. The sample predominantly comprises females (56.5%), with most users aged between 31 and 40 (41.3%). Most users hold a bachelor's degree, with many also possessing a master's degree. All study participants employed AI travel apps, most allocating three hours or more to their usage. These insights can be pivotal for travel companies and app developers in understanding their target audience and tailoring their services accordingly.

3.2. Measurement instrument

The questionnaire derived items from previously validated studies to ensure reliability and validity. We redesigned all the items to align with the AI travel apps' settings. Specifically, we employed the scales from Van Boven and Gilovich (2003) to assess happiness, Lu et al.'s scales (2019) for anthropomorphism and effort expectancy, and Jennett et al.'s scale (2008) for perceived immersion. The trust scale developed by Gefen et al. (2003) was utilized, while the complexity scales from Davis (1989) and Li and Buhalis (2006) were employed. We assessed perceived value using the scales developed by Sirdeshmukh et al. (2002). We employed scales developed by Venkatesh et al. (2012), Lu et al. (2019), and Venkatesh et al. (2003) to assess the willingness to accept the utilization of AI travel applications. The Laroche et al. (2003) scale determined the desire to pay for AI travel applications. Before conducting the poll, we administered it to 44 users of travel AI apps using an online survey tool, Qualtrics. We asked four screening questions to determine whether the respondents used AI travel apps on their most recent trip. The researchers assured respondents that the questionnaire had no right or wrong answers and maintained strict adherence to confidentiality. After collecting data on demographics, education, location, and occupation, we concluded the final segment. This pilot study finalized the questionnaire structure for the primary data collection.

4. Results

4.1. Standard method bias and measurement model

We used SPSS Statistics 28.0 for this study's standard bias and demographic analysis method. Using IBM AMOS software version 28.0, we evaluated our measurement and structural model. We conducted Harman's single factor test to eliminate common method bias. The explanatory factor analysis revealed that no single factor explained most covariance between measures, indicating no standard method bias (Podsakoff et al., 2003). A single factor could explain only 32.862% of the variance, less than 50%.

The study's model indices have a good fit, as shown in Figure 1. We assessed the scales for reliability, convergent validity (CV), and discriminant validity (DV) (Henseler et al., 2015) to ensure validity. We checked factor loadings, Cronbach's alpha, and composite reliability and extracted an average variance more significant than 0.5. The research met the standard criteria, which included ensuring DV and item reliability (Table 1).

Figure 1
Measurement model of the AITRAM

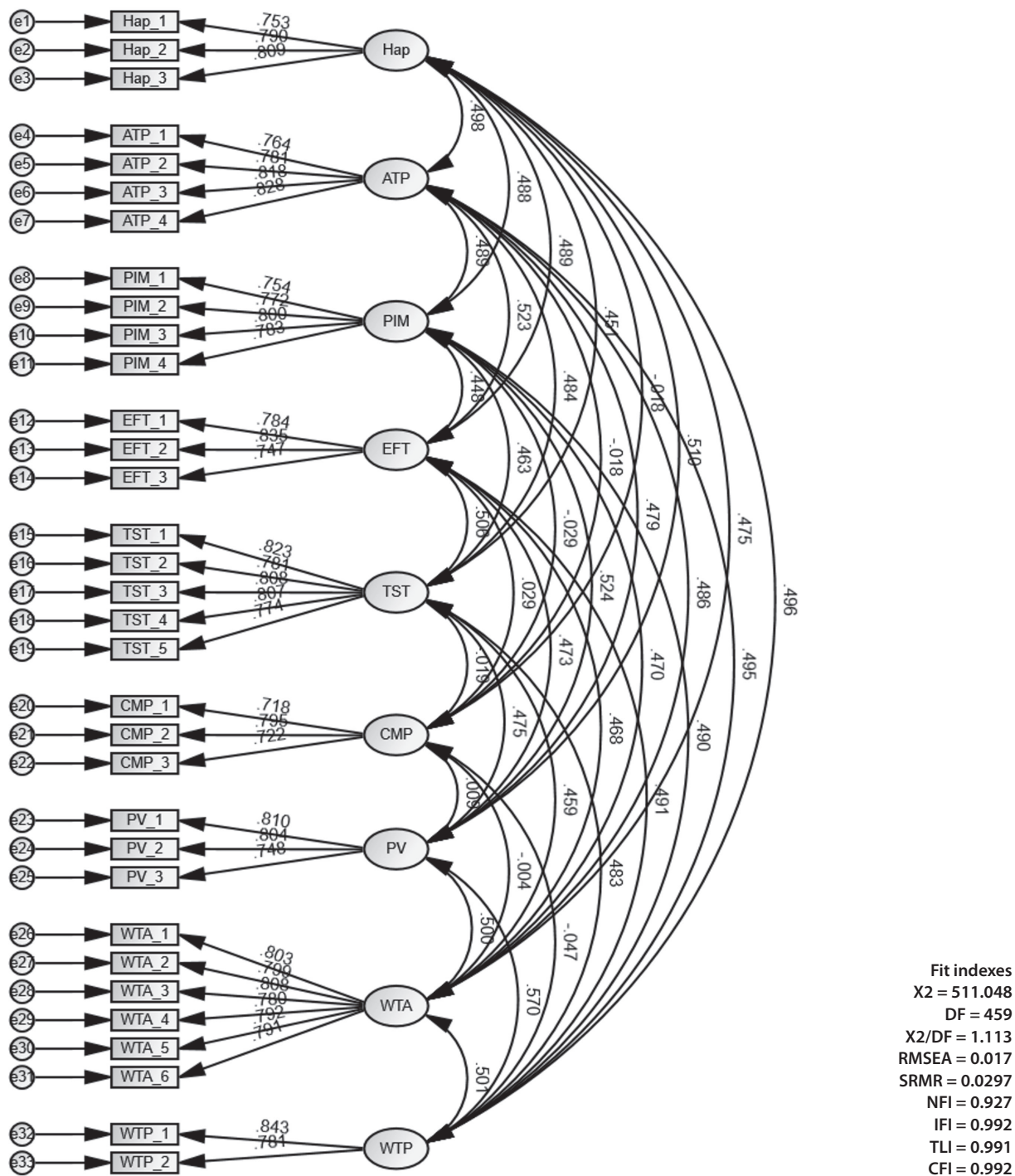


Table 1
Alpha, composite reliability, and average variance values

Constructs	Items	Loadings	Alpha	CR	AVE
Happiness	HAP_1	0.753***	0.828	0.827	0.615
	HAP_2	0.790***			
	HAP_3	0.809***			
Anthropomorphism	ATP_1	0.764***	0.875	0.875	0.637
	ATP_2	0.781***			
	ATP_3	0.818***			
	ATP_4	0.828***			
Perceived immersion	PIM_1	0.754***	0.859	0.859	0.604
	PIM_2	0.772***			
	PIM_3	0.800***			
	PIM_4	0.783***			
Effort expectancy	EFT_1	0.784***	0.832	0.832	0.623
	EFT_2	0.835***			
	EFT_3	0.747***			
Trust	TST_1	0.823***	0.898	0.898	0.638
	TST_2	0.781***			
	TST_3	0.808***			
	TST_4	0.807***			
	TST_5	0.774***			
Complexity	CMP_1	0.718***	0.789	0.790	0.557
	CMP_2	0.795***			
	CMP_3	0.722***			
Perceived value	PV_1	0.810***	0.830	0.831	0.621
	PV_2	0.804***			
	PV_3	0.748***			
Willingness to accept	WTA_1	0.803***	0.912	0.912	0.633
	WTA_2	0.799***			
	WTA_3	0.808***			
	WTA_4	0.780***			
	WTA_5	0.792***			
	WTA_6	0.791***			
Willingness to pay	WTP_1	0.843***	0.792	0.795	0.66
	WTP_2	0.781***			

*Indicates significant paths: *p<0.05, **p<0.01, ***p<0.001, NS = not significant

Our research confirms DV when the square root of each latent variable's AVE surpasses the correlation coefficient (Table 2). We also examined the Variance Inflation Factor (VIF) to detect multicollinearity in the regression analysis. Because the data were below the 5-point cutoff, multicollinearity was considered acceptable for the study.

Table 2
Discriminant validity analysis

Constructs	1	2	3	4	5	6	7	8	9
Happiness	0.784								
Anthropomorphism	0.498	0.798							
Immersion	0.488	0.489	0.777						
Effort	0.489	0.523	0.448	0.789					
Trust	0.451	0.484	0.463	0.506	0.799				
Complexity	-0.018	-0.018	-0.029	0.029	-0.019	0.746			
Perceived value	0.510	0.479	0.524	0.473	0.475	0.009	0.788		
Willingness to accept	0.475	0.486	0.47	0.468	0.459	-0.004	0.500	0.796	
Willingness to pay	0.496	0.495	0.49	0.491	0.483	-0.047	0.570	0.501	0.813

4.2. Assessment of structural model

The study used path coefficients and R-squared values to examine covariance-based structural equation model assumptions. The results show that endogenous components PV (0.508), WTA (0.450), and WTP (0.563) create moderate effects in the regression model (Hair et al., 2010).

The study used a statistical bootstrapping method with a 5000-sample size to test hypotheses (Henseler et al., 2015). The study demonstrated that the desire for happiness (H1a1–H1a3) serves as a primary motivation for individuals to utilize AI technology, aligning with the findings of Venkatesh et al. (2012) (Table 3). The findings suggest that hypotheses H3a1–H3a3 directly enhance customers' adoption of AI travel apps and WTP, implying that tourists are more likely to commit successfully when they experience immersion. Claims H4a1–H4a3 assert that the effort required to use and learn about AI apps influences WTA and WTP (Heerink et al., 2010). This is supported by the fact that EFT was found to be $\beta=0.124$. The results also indicated that trust, which supports H5a1–H5a3, positively impacts WTA, PV, and WTP. This suggests that trust, akin to a psychological incentive to be in a committed relationship, significantly influences adoption. Testing H6a1–H6a3 revealed that complexity has a negative and insignificant impact on WTA, PV, and WTP, as evidenced by the significant negative association between adopting new apps and their complexity (Rogers, 1995). The results showed that hypotheses H7 and H8—examining how people felt about using AI travel apps (Gursoy et al., 2019) and how likely they were to buy a subscription to use AI travel apps (Lazarus, 1991)—had a direct effect on WTA and WTP attitudes.

Table 3
Hypotheses testing direct effects

Hypothesis	Direct	Std.	Std.	P
	Relationships	Beta	Error	Values
H1a1	HAP → WTA	0.138	0.043	**
H1a2	HAP → PV	0.228	0.042	***
H1a3	HAP → WTP	0.127	0.039	**
H2a1	ATP → WTA	0.148	0.042	***
H2a2	ATP → PV	0.116	0.043	**
H2a3	ATP → WTP	0.120	0.043	**
H3a1	PIM → WTA	0.124	0.057	*
H3a2	PIM → PV	0.265	0.037	***
H3a3	PIM → WTP	0.110	0.040	**
H4a1	EFT → WTA	0.124	0.039	**
H4a2	EFT → PV	0.131	0.052	**
H4a3	EFT → WTP	0.136	0.039	**
H5a1	TST → WTA	0.111	0.041	**
H5a2	TST → PV	0.146	0.041	***
H5a3	TST → WTP	0.116	0.039	**
H6a1	CMP → WTA	0.001	0.026	NS
H6a2	CMP → PV	0.024	0.027	NS
H6a3	CMP → WTP	-0.051	0.031	NS
H7	PV → WTA	0.196	0.044	***
H8	PV → WTP	0.320	0.037	***

*Indicates significant paths: * $p<0.05$, ** $p<0.01$, *** $p<0.001$, NS = not significant

Table 4 presents the mediation hypotheses that support the results. The results showed that perceived value is the link between H7a and H7e. For instance, the hypotheses H7a –H7e were all supported, while H7f was not supported ($\beta=0.005$).

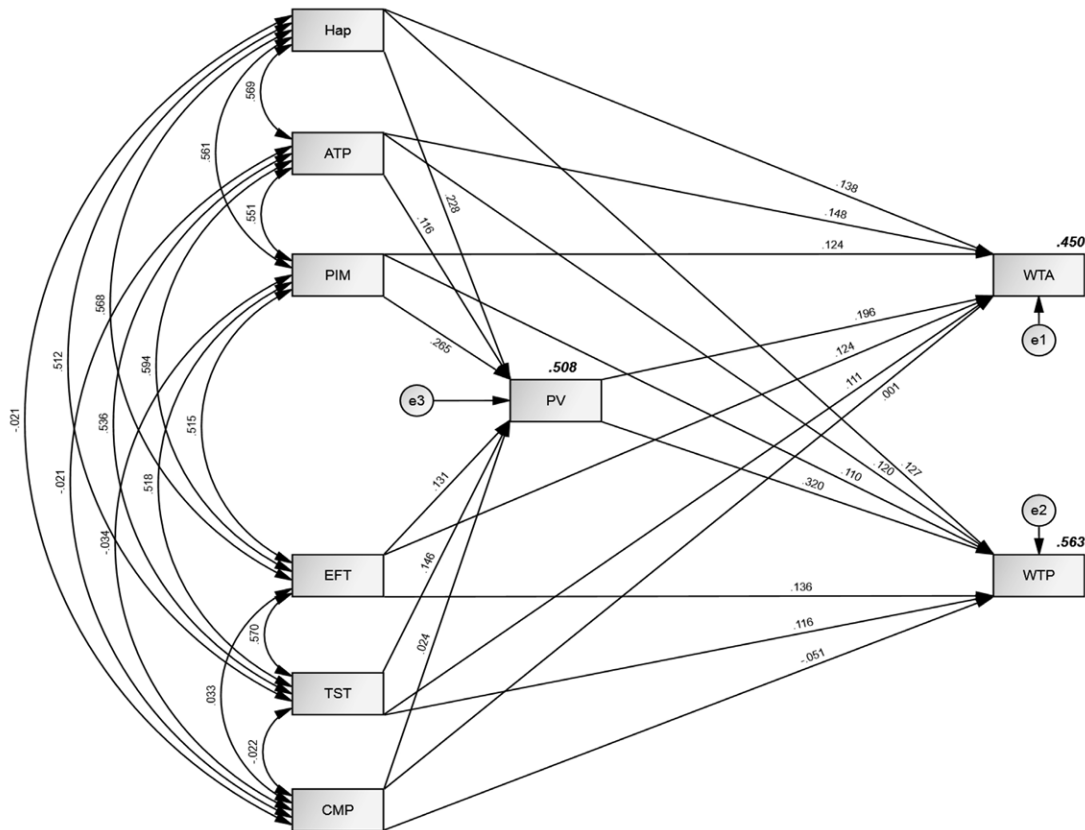
Table 4
Mediation testing

Hypothesis	Direct	Std.	Std.	P
	Relationships	Beta	Error	Values
H7a	HAP → PV → WTA	0.045	0.014	***
H7b	ATP → PV → WTA	0.023	0.010	**
H7c	PIM → PV → WTA	0.052	0.016	***
H7d	EFT → PV → WTA	0.026	0.012	**
H7e	TST → PV → WTA	0.029	0.008	***
H7f	CMP → PV → WTA	0.005	0.006	NS
H8a	HAP → PV → WTP	0.073	0.017	***
H8b	ATP → PV → WTP	0.037	0.015	**
H8c	PIM → PV → WTP	0.085	0.018	***
H8d	EFT → PV → WTP	0.042	0.017	**
H8e	TST → PV → WTP	0.047	0.013	***
H8f	CMP → PV → WTP	0.008	0.011	NS

*Indicates significant paths: *p<0.05, **p<0.01, ***p<0.001, NS = not significant

These findings are reasonable because when consumers perceive value, they are more satisfied and willing to adopt and pay for those tested AI travel apps (Doss, 2015). The results also support hypotheses H8a-H8e, as PV mediates their relationship. The hypothesis that is not supported is H8f ($\beta = 0.008$). We can consider the perceived complexity of AI travel apps as a barrier to their value evaluation, which clarifies these nonsignificant relationships. Figure 2 illustrates the structural model.

Figure 2
Graphical representation of AITRAM structural model



5. Discussion

The research investigated how beneficial and sacrificial factors in consumers' attitudes affect tourists' acceptance and purchase behavior for AI travel apps while on vacation. Using the proposed AITRAM conceptual model, we analyze traveler's attitudes toward AI travel apps. We have identified PIM, HAP, and TST as the key factors influencing the acceptance of AI travel apps. These findings suggest that consumers only appreciate the value proposition of AI travel apps once they have experienced positive emotional experiences, like exhilaration and eagerness. The primary data analysis of the decision-making process revealed that beneficial human-technology interactions are crucial for successfully adopting AI travel apps.

Furthermore, the sacrifice and encounter components are relevant for the initial adoption and continued use of AI travel apps because they nurture confidence within users by interacting with the app. Complexity can inhibit users from developing the readiness to accept and adopt similar AI apps, as Jang et al.'s (2018) work has also demonstrated. The secondary data analysis shows that these apps' benefit and sacrifice aspects align with a value maximization view. Value mediation can change people's buying habits, affecting how well AI travel apps work.

The results demonstrate that travelers rely on AI travel applications to experience heightened sensations of happiness, adventure, and contentment while gaining various emotional and sensory benefits. The fact that feelings of dependability and immersion also serve as vital factors that 'push' visitors to use and purchase AI travel apps highlights the significance of collecting favorable sensations as a crucial component of the tourist experience. Additionally, empirical evidence of the acceptance of AI apps demonstrates the mediating role of perceived value, potentially boosting sales and contributing to business success.

6. Conclusion

By combining the strengths of VAM and AIDUA theory, the study reveals an innovative technique for understanding consumers' acceptance of AI apps. While AI travel app involvement and knowledge may not directly contribute to engagement, these attributes can still influence motivation, mediating customer satisfaction. The findings offer critical proof that AI travel apps significantly influence consumer preferences, increase consumption of tourist goods, and advance our understanding of tourist motivations.

6.1. Managerial implications

Practitioners in the tourism industry should be aware of the mediating role of perceived value orientation on tourism apps, emphasizing the significance of customer acceptance in implementing Technologies' 4.0 innovations. As a result, travel apps seeking to improve their customers' acceptance must carefully adopt an orientation to ensure that they create feelings of happiness, trust, and perceived immersion in their users. Therefore, we suggest that apps with human-like characteristics could reduce the effort required during use. Thus, hospitality services rely on interpersonal encounters to generate customer value and enhancing the client experience will necessitate the integration of technology inspiration into various service elements (Lu, 2019).

The research results also support studies that emphasize the importance of implementing AI in tourism marketing. This involves understanding customer emotions, defining manufacturing opportunities for AI, explaining and fulfilling consumer needs, fostering electronic word-of-mouth awareness, enhancing merchandise achievements, utilizing AI in strategic marketing, monitoring and improving consumer loyalty and reliance, integrating AI into services, and transforming the consumer's entire experience, thereby advancing the field of marketing (Mustak et al., 2021).

6.2. Limitations and directions for research

The existing research is subject to various restrictions. First, we evaluated the participation of foreign tourists using a standardized questionnaire. Future research may employ a mixed-methods strategy to avoid limiting tourists' freedom of expression. Second, we concentrated on all AI travel app users. Future research could focus on specific types of AI tourism apps. Thirdly, this study examined how happiness, anthropomorphism, immersion, effort, trust, complexity, and perceived value influence users' willingness to accept and pay for these apps. However, since the rise in popularity of AI travel apps increasingly offers opportunities for more research, the relationships investigated are by no means exhaustive. More research could provide specific knowledge on how traveler's intentional behavior affects the resonance of digital marketing in hospitality and tourism companies and how to increase repurchase intentions and benefit from manifestations of personalized AI app acceptance behavior. Further studies should assess this orientation and other essential marketing constructs, such as customer feedback, pleading, customer-to-customer suggestion, and permissiveness in non-pleasant experiences.

References

- Agarwal, S., Malik, P., & Gautam, S. (2023). Analysis of customer satisfaction and experience in digital payments: A meta-analysis review. *International Journal of Business Science & Applied Management*, 18(1), 1–17. <https://doi.org/10.69864/ijbsam.18-1.168>
- Barač-Miftarević, S. (2023). Undertourism vs. overtourism: A systematic literature review. *Tourism: An International Interdisciplinary Journal*, 71(1), 178–192. <https://doi.org/10.37741/t.71.1.11>
- Chakraborty, D., Babu Singu, H., Kumar Kar, A., & Biswas, W. (2023). From fear to faith in the adoption of medicine delivery application: An integration of SOR framework and IRT theory. *Journal of Business Research*, 166, Article 114140. <https://doi.org/10.1016/j.jbusres.2023.114140>
- Chi, O.H., Chi, C.G., Gursoy, D., & Nunkoo, R. (2023). Customers' acceptance of Artificially Intelligent Service Robots: The influence of trust and culture. *International Journal of Information Management*, 70, Article 102623. <https://doi.org/10.1016/j.ijinfomgt.2023.102623>
- Chi, O.H., Gursoy, D., & Chi, C.G. (2020). Tourists' attitudes toward the use of artificially intelligent (AI) devices in tourism service delivery: Moderating role of service value seeking. *Journal of Travel Research*, 61(1), 170–185. <https://doi.org/10.1177/0047287520971054>
- Choi, Y., Oh, M., Choi, M., Kim, S., (2020). Exploring the influence of culture on tourist experiences with robots in service delivery environment. *Current Issues in Tourism*, 24(5), 717–733. <https://doi.org/10.1080/13683500.2020.1735318>
- Chung, N., & Koo, C. (2015). The use of social media in travel information search. *Telematics and Informatics*, 32(2), 215–229. <https://doi.org/10.1016/j.tele.2014.08.005>
- Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of Information Technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Doss, S.K. (2015). "Spreading the good word": Toward an understanding brand evangelism. In M. Conway Dato-on (Ed.), *The Sustainable Global Marketplace* (pp. 444–444). Springer International Publishing. https://doi.org/10.1007/978-3-319-10873-5_259
- Faisal, M.I. (2017). Predicting the quality of contests on crowdsourcing-based software development platforms. *SAC '17: Proceedings of the Symposium on Applied Computing* (pp. 1305–1306). <https://doi.org/10.1145/3019612.3019923>
- Gefen, D., Karahanna, E., & Straub, D. (2003). Trust and TAM in online shopping: An integrated mode. *MIS Quarterly*, 27(1), 51–90.
- Grundner, L., & Neuhofer, B. (2021). Artificial Intelligence's bright and dark sides: A futures perspective on tourist destination experiences. *Journal of Destination Marketing and Management*, 19, Article 100511. <https://doi.org/10.1016/j.jdmm.2020.100511>

- Gursoy, D., Chi, O.H., Lu, L., & Nunkoo, R. (2019). Consumers acceptance of artificially intelligent (AI) device use in service delivery. *International Journal of Information Management*, 49, 157–169. <https://doi.org/10.1016/j.ijinfomgt.2019.03.008>
- Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate data analysis: A global perspective* (7th ed.). Pearson Education.
- Heerink, M., Kröse, B., Evers, V., & Wielinga, B. (2010). Assessing acceptance of assistive social agent technology by older adults: The Almere model. *International Journal of Social Robotics*, 2(4), 361–375. <https://doi.org/10.1007/s12369-010-0068-5>
- Henseler, J., Ringle, C.M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hu, Q., Lu, Y., Pan, Z., Gong, Y., & Yang, Z. (2021). Can AI artifacts influence human cognition? The effects of artificial autonomy in intelligent personal assistants. *International Journal of Information Management*, 56, Article 102250. <https://doi.org/10.1016/j.ijinfomgt.2020.102250>
- Jang, S., Kitchen, P.J., & Kim, J. (2018). The effects of gamified customer benefits and characteristics on behavioral engagement and purchase: Evidence from mobile exercise application uses. *Journal of Business Research*, 92, 250–259. <https://doi.org/10.1016/j.jbusres.2018.07.056>
- Jennett, C., Cox, A.L., Cairns, P., Dhoparee, S., Epps, A., Tijs, T., & Walton, A. (2008). Measuring and defining the experience of immersion in games. *International Journal of Human-Computer Studies*, 66(9), 641–661. <https://doi.org/10.1016/j.ijhcs.2008.04.004>
- Kim, H.-W., Chan, H.C., & Gupta, S. (2007). Value-based adoption of mobile internet: An empirical investigation. *Decision Support Systems*, 43(1), 111–126. <https://doi.org/10.1016/j.dss.2005.05.009>
- Kim, H., Koo, C., & Chung, N. (2021). The role of mobility apps in memorable tourism experiences of Korean tourists: Stress-coping theory perspective. *Journal of Hospitality and Tourism Management*, 49, 548–557. <https://doi.org/10.1016/j.jhtm.2021.11.003>
- Kuo, Y.-F., & Wu, C.-M. (2012). Satisfaction and post-purchase intentions with service recovery of online shopping websites: Perspectives on perceived justice and emotions. *International Journal of Information Management*, 32(2), 127–138. <https://doi.org/10.1016/j.ijinfomgt.2011.09.001>
- Laroche, M., Bergeron, J., & Goutaland, C. (2003). How intangibility affects perceived risk: The moderating role of knowledge and involvement. *Journal of Services Marketing*, 17(2), 122–140. <https://doi.org/10.1108/08876040310467907>
- Lau, C.K., Chui, C. F., & Au, N. (2019). Examination of the adoption of augmented reality: A VAM approach. *Asia Pacific Journal of Tourism Research*, 24(10), 1005–1020. <https://doi.org/10.1080/10941665.2019.1655076>
- Lazarus, R.S. (1991). *Emotion and adaptation*. Oxford University Press.
- Li, L., & Buhalis, D. (2006). E-commerce in China: The case of travel. *International Journal of Information Management*, 26(2), 153–166. <https://doi.org/10.1016/j.ijinfomgt.2005.11.007>
- Lin, H., Chi, O.H., & Gursoy, D. (2020). Antecedents of customers' acceptance of artificially intelligent robotic device use in Hospitality Services. *Journal of Hospitality Marketing and Management*, 29(5), 530–549. <https://doi.org/10.1080/19368623.2020.1685053>
- Lu, L., Cai, R., & Gursoy, D. (2019). Developing and validating a service robot integration willingness scale. *International Journal of Hospitality Management*, 80, 36–51. <https://doi.org/10.1016/j.ijhm.2019.01.005>
- Lu, V.N., Wirtz, J., Kunz, W.H., Paluch, S., Gruber, T., Martins, A., & Patterson, P.G. (2020). Service robots, customers and service employees: what can we learn from the academic literature and where are the gaps? *Journal of Service Theory and Practice*, 30(3), 361–391. <https://doi.org/10.1108/jstp-04-2019-0088>
- Mallat, N. (2007). Exploring consumer adoption of mobile payments – a qualitative study. *The Journal of Strategic Information Systems*, 16(4), 413–432. <https://doi.org/10.1016/j.jsis.2007.08.001>
- Melumad, S., & Pham, M.T. (2020). The smartphone as a pacifying technology. *Journal of Consumer Research*, 47(2), 237–255. <https://doi.org/10.1093/jcr/ucaa005>

- Mikulić, J., & Ryan, C. (2018). Reflective versus formative confusion in SEM based tourism research: A critical comment. *Tourism Management*, 68, 465–469. <https://doi.org/10.1016/j.tourman.2018.05.002>
- Miller, T. (2019). Explanation in artificial intelligence: Insights from the Social Sciences. *Artificial Intelligence*, 267, 1–38. <https://doi.org/10.1016/j.artint.2018.07.007>
- Mustak, M., Salminen, J., Plé, L., & Wirtz, J. (2021). Artificial Intelligence in marketing: Topic modeling, scientometric analysis, and research agenda. *Journal of Business Research*, 124, 389–404. <https://doi.org/10.1016/j.jbusres.2020.10.044>
- Ødeskaug, C., Gjertsen, T.V., Gupta, S., & Pappas, I.O. (2023). Exploring willingness to adopt contact tracing applications: A study with Norwegian citizens. *International Journal of Business Science & Applied Management*, 18(2), 1–16. <https://doi.org/10.69864/ijbsam.18-2.173>
- Perrin, A., (2017, June 28). *10 Facts about Smartphones as the iPhone Turns 10*. Pew Research Center. <https://www.pewresearch.org/short-reads/2017/06/28/10-facts-about-smartphones/>
- Petri, J., & Jacob, F. (2017). Hunting for value: How to enable value-in-use? A conceptual model. *Journal of Creating Value*, 3(1), 50–62. <https://doi.org/10.1177/2394964317694780>
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y., & Podsakoff, N.P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Powers, Z. (2021). The proliferation of the online sales of tourism activities. *Tourism: An International Interdisciplinary Journal*, 69(4), 630–634. <https://doi.org/10.37741/t.69.4.10>
- Ribeiro, M.A., Gursoy, D., & Chi, O.H. (2021). Customer acceptance of autonomous vehicles in travel and Tourism. *Journal of Travel Research*, 61(3), 620–636. <https://doi.org/10.1177/0047287521993578>
- Rogers, E.M. (1995). Diffusion of innovations: Modifications of a model for telecommunications. In M.-W. Stoetzer & Mahler, A. (Eds.), *Die Diffusion von Innovationen in der Telekommunikation* (pp. 25–38). Springer. https://doi.org/10.1007/978-3-642-79868-9_2
- Rucker, D.D., & Petty, R.E. (2004). Emotion specificity and consumer behavior: Anger, sadness, and preference for activity. *Motivation and Emotion*, 28(1), 3–21. <https://doi.org/10.1023/b:moem.0000027275.95071.82>
- Rust, R.T., & Huang, M.-H. (2012). Optimizing service productivity. *Journal of Marketing*, 76(2), 47–66. <https://doi.org/10.1509/jm.10.0441>
- Shah, S.A.A., Fianto, B.A., Sridadi, A.R., & Kayani, U.N. (2023). A master conceptual framework of research in Halal tourism. *Tourism: An International Interdisciplinary Journal*, 71(1), 121–144. <https://doi.org/10.37741/t.71.1.8>
- Siau, K., & Wang, W. (2018). Building trust in artificial intelligence, machine learning, and robotics. *Cutter Business Technology Journal*, 31(2), 47–53.
- Sigala, M. (2016). Social media and the co-creation of tourism experiences. In M. Sotiriadis & D. Gursoy (Eds.), *The Handbook of Managing and Marketing Tourism Experiences* (pp. 85–111). Emerald Group Publishing Limited. <https://doi.org/10.1108/978-1-78635-290-320161033>
- Sirdeshmukh, D., Singh, J., & Sabol, B. (2002). Consumer trust, value, and loyalty in relational exchanges. *Journal of Marketing*, 66(1), 15–37. <https://doi.org/10.1509/jmkg.66.1.15.18449>
- Skandali, D., Magoutas, A., & Tsourvakas, G. (2024). Consumer behaviour on AI applications for services: Measuring the impact of value-based adoption model on luxurious AI resorts' applications. *Review of Marketing Science*, 2(1), 57–85. <https://doi.org/10.1515/roms-2023-0099>
- Sohn, K., & Kwon, O. (2020). Technology acceptance theories and factors influencing artificial intelligence-based intelligent products. *Telematics and Informatics*, 47, Article 101324. <https://doi.org/10.1016/j.tele.2019.101324>
- Sung, E.(C), Bae, S., Han, D.-I.D., & Kwon, O. (2021). Consumer engagement via interactive artificial intelligence and mixed reality. *International Journal of Information Management*, 60, Article 102382. <https://doi.org/10.1016/j.ijinfomgt.2021.102382>

- Tuomi, A., Tussyadiah, I.P., & Stienmetz, J. (2020). Leveraging LEGO® Serious Play® to embrace AI and robots in tourism. *Annals of Tourism Research*, 81, Article 102736. <https://doi.org/10.1016/j.annals.2019.06.003>
- Tussyadiah, I.P., Wang, D., Jung, T.H., & Dieck, M.C. (2018). Virtual reality, presence, and attitude change: Empirical evidence from tourism. *Tourism Management*, 66, 140–154. <https://doi.org/10.1016/j.tourman.2017.12.003>
- Van Boven, L. & Gilovich, T. (2003). To do or to have? That is the question. *Journal of Personality and Social Psychology* 85(6), 1193-1202. <https://doi.org/10.1037/0022-3514.85.6.1193>
- Van Doorn, J., Mende, M., Noble, S.M., Hulland, J., Ostrom, A.L., Grewal, D., & Petersen, J.A. (2017). Domo arigato Mr. Roboto: Emergence of automated social presence in organizational frontlines and customers' service experiences. *Journal of Service Research*, 20(1), 43–58. <https://doi.org/10.1177/1094670516679272>
- Venkatesh, V., Morris, M.G., Davis, G.B., & Davis, F.D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478. <https://doi.org/10.2307/30036540>
- Venkatesh, V., Thong, J.Y.L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157–178. <https://doi.org/10.2307/41410412>
- Vishwakarma, P., Mukherjee, S., & Datta, B. (2020). Travelers' intention to adopt virtual reality: A consumer value perspective. *Journal of Destination Marketing & Management*, 17, Article 100456. <https://doi.org/10.1016/j.jdmm.2020.100456>
- Wang, Y.-Y., Lin, H.-H., Wang, Y.-S., Shih, Y.-W., & Wang, S.-T. (2018). What drives users' intentions to purchase a GPS Navigation app: The moderating role of perceived availability of free substitutes. *Internet Research*, 28(1), 251–274. <https://doi.org/10.1108/intr-11-2016-0348>
- Wang, R.J.-H. (2020). Branded mobile application adoption and customer engagement behavior. *Computers in Human Behavior*, 106, Article 106245. <https://doi.org/10.1016/j.chb.2020.106245>
- Watson, L., & Spence, M.T. (2007). Causes and consequences of emotions on consumer behaviour. *European Journal of Marketing*, 41(5/6), 487–511. <https://doi.org/10.1108/03090560710737570>
- Yang, Y., Luo, J., & Lan, T. (2022). An empirical assessment of a modified artificially intelligent device use acceptance model - From the task-oriented perspective. *Frontiers in Psychology*, 13, Article 975307. <https://doi.org/10.3389/fpsyg.2022.975307>
- Zak, P.J. (2022). *Immersion: The science of the extraordinary and the source of happiness*. Lioncrest Publishing.

Submitted: September 23, 2023

Revised: November 01, 2024

Accepted: January 07, 2025