

AIDA and Customer Journey Mapping in Digital Tourism

Ray Octafian¹, Sony Heru Priyanto², Tonny Hendratono³

^{1,3} Sekolah Tinggi Ilmu Ekonomi Pariwisata Indonesia, Semarang, Indonesia

² Sekolah Tinggi Pariwisata Ambarrukmo, Yogyakarta, Indonesia

¹rayoctafian@gmail.com

* Correspondence : rayoctafian@gmail.com;

Abstract

Digital transformation in the tourism industry has introduced Virtual Reality (VR) and Augmented Reality (AR) technologies as innovations that fundamentally reshape the way tourists interact with destinations. This study aims to evaluate the relevance of the AIDA model in comparison with Customer Journey Mapping in explaining the conversion mechanism from immersive virtual experiences into actual visitation decisions. Employing a systematic literature review, the study analyzed 67 high-quality articles retrieved from academic databases including Scopus, Web of Science, ProQuest, ScienceDirect, and Google Scholar, covering the period 2015–2024. The analysis reveals that the AIDA model demonstrates significant theoretical and empirical superiority over Customer Journey Mapping in the context of immersive tourism technologies. Of the 32 articles applying the AIDA framework, 87.5% reported significant causal relationships between each AIDA stage and visitation intention, whereas only 54.3% of the 35 articles employing Customer Journey Mapping showed consistent patterns. The strength of the AIDA model lies in three fundamental mechanisms: sequential causality mechanism, emotional integration capacity, and technological compatibility, all of which align with the characteristics of VR/AR technologies. This study contributes to the advancement of digital tourism theory by demonstrating that classical marketing models remain relevant and experience revitalization through immersive technologies. From a practical standpoint, the findings suggest that implementing VR/AR marketing strategies grounded in the AIDA framework yields higher conversion rates, providing strong justification for destination marketing organizations to adopt this model in optimizing investments.

Keywords: AIDA Model; Customer Journey Mapping; Digital Tourism; Virtual Reality Tourism; Immersive Technology;

INTRODUCTION

The digital transformation of the tourism industry has created a new paradigm in how tourists interact with destinations. Virtual Reality (VR) and Augmented Reality (AR) technologies are no longer merely tools for digital promotion but have evolved into integral components capable of generating deeply immersive experiences for prospective tourists. This phenomenon has become increasingly relevant as the global tourism industry reached 1.4 billion tourist arrivals in 2024, with Indonesia recording significant growth of 13.8 million international arrivals (UN Tourism, 2025). The development of immersive technologies has fundamentally changed the way tourist behavior and visitation decision-making processes are understood. Destinations in Indonesia, such as Prambanan Temple and the Geological Museum, have begun adopting VR and AR technologies both as promotional tools and as digital attractions. However, implementation in other destinations remains suboptimal, as the technologies are often applied in isolation without integration into a holistic tourism ecosystem.

The complexity of digital tourism phenomena requires a comprehensive theoretical approach to explain the conversion mechanism from immersive virtual experiences to actual visitation decisions (Chang et al., 2020; Loureiro et al., 2020; Weng et al., 2021). Customer Journey Mapping alone has proven insufficient in explaining this conversion process (Carvalho & Ivanov, 2024; Godovykh & Tasci, 2020; Gursoy et al., 2023; Rather, 2020). Research gaps reveal a lack of studies comparing VR experiences with real-world experiences, as well as limited investigations into the external validity of VR/AR applications in tourism beyond controlled laboratory settings (Balsalobre-Lorente et al., 2023; Kongbuamai et al., 2020; Pop et al., 2022; Sharpley, 2020; Teng et al., 2024; Yung et al., 2021).

The main problem identified in this study concerns the inadequacy of existing theoretical frameworks in addressing contemporary digital tourism phenomena. Customer Journey Mapping, which has been widely applied in consumer behavior studies, demonstrates fundamental limitations when applied to immersive technologies (Koussaifi et al., 2020; Panda, 2020; Patti et al., 2020; Rudkowski et al., 2020). The model is primarily descriptive and linear, failing to capture the complexity of dynamic interactions between virtual and physical dimensions in modern tourist experiences.

Its limitations lie in the fragmented focus on touchpoints without providing deep causal explanations of the psychological mechanisms driving transformation from awareness to action. In digital tourism, where virtual experiences serve as bridges to physical visits, this approach falls short in explaining how immersive technologies influence the continuous cognitive and affective journeys of tourists. By contrast, the AIDA model (Attention, Interest, Desire, Action) offers a more structured and causal framework for understanding the transformation of tourist behavior (Angioni et al., 2022; Garzon et al., 2022; Souto Arias et al., 2023). This model not only describes the sequential stages from awareness to action but also provides deeper insights into the psychological mechanisms underlying each transition. Nevertheless, the relevance of the AIDA model within digital tourism involving immersive technologies has yet to be comprehensively explored.

This theoretical gap underscores the urgent need for a comparative evaluation of Customer Journey Mapping and the AIDA model in explaining the application of VR and AR in tourism. The key questions to be addressed include: why AIDA is more relevant than Customer Journey Mapping in explaining the conversion mechanism from immersive virtual experiences to actual visitation decisions; how the integration of AIDA with other theoretical models could provide a more comprehensive understanding of digital tourist behavior; and to what extent an integrative AIDA-based model can provide practical guidance for the tourism industry in optimizing immersive technologies. The urgency of addressing this issue lies in its practical implications for Indonesia's tourism industry amid digital transformation. Without an adequate theoretical foundation, investments in VR and AR technologies risk yielding suboptimal returns due to the lack of an accurate understanding of how these technologies influence tourist behavior. Therefore, this study seeks to develop an integrative AIDA-based model that can explain the complex transformation mechanism from virtual experiences to actual visitation decisions while contributing theoretically to the advancement of digital tourism studies.

RESEARCH METHOD

This study adopts a systematic literature review approach to investigate the relevance of the AIDA model in explaining the use of Virtual Reality (VR) and Augmented Reality (AR) technologies in tourism. The choice of this method is grounded in the need for a comprehensive comparative evaluation of various theoretical frameworks that have been developed in academic literature, as well as to identify theoretical gaps in the understanding of contemporary digital tourist behavior.

The literature search strategy was conducted systematically across multiple academic databases, including Scopus, Web of Science, ProQuest, ScienceDirect, and Google Scholar. Search keywords combined terms such as "Virtual Reality tourism", "Augmented Reality travel", "AIDA model", "Customer Journey Mapping", "digital tourism behavior", "immersive technology tourism", and "virtual travel experience". Boolean operators (AND, OR, NOT) were employed to optimize the relevance of search results, with publication years restricted to 2019–2024 to ensure the currency of findings.

Inclusion criteria encompassed peer-reviewed journal articles published in English or Indonesian that discuss VR/AR applications in tourism, employ either the AIDA model or Customer Journey Mapping as theoretical frameworks, and provide empirical data or relevant theoretical arguments. Exclusion criteria comprised studies focusing solely on technical aspects of VR/AR without a tourism context, literature reviews lacking critical analysis, and conference proceedings without rigorous peer review.

The literature selection process followed three sequential stages to ensure the quality and relevance of the analyzed sources. The first stage involved screening by title and abstract to eliminate

irrelevant articles. The second stage consisted of full-text reading to assess compliance with inclusion and exclusion criteria. The third stage entailed methodological quality appraisal using standard criteria to evaluate the academic rigor and theoretical contributions of each article.

Data extraction was performed using a customized matrix framework developed for this study, encompassing information on study characteristics, theoretical frameworks applied, research methodologies, key findings, and theoretical contributions. Extracted data were then categorized according to their relevance to the AIDA model and Customer Journey Mapping to facilitate systematic comparative analysis. Each article was further assessed based on its level of evidence using a hierarchy of evidence to ensure that the analysis drew on sources with sufficient argumentative strength.

Data analysis employed a narrative synthesis approach, integrating findings from multiple studies to identify patterns, consistencies, and contradictions within the existing literature. Thematic coding was applied to identify key themes related to the effectiveness of the AIDA model versus Customer Journey Mapping in the context of immersive technologies. A critical appraisal was conducted for each study to assess the strengths and limitations of both theoretical reasoning and empirical evidence.

Validation of findings was achieved through source triangulation by comparing results across publication categories and time periods. Inter-rater reliability was ensured through the involvement of multiple reviewers in the data extraction and analysis process, minimizing subjective bias. The entire research process was systematically documented in accordance with PRISMA guidelines to ensure transparency and reproducibility of the applied methods.

RESULTS AND DISCUSSIONS

The systematic literature search initially identified 847 articles across academic databases, which, after screening and selection, resulted in 67 articles meeting the inclusion criteria for in-depth analysis. The distribution of publications by period indicates a significant increase in immersive technology research in tourism, with 23 articles (34.3%) published between 2022 and 2024, underscoring the topicality and relevance of this research area in contemporary academic discourse.

Thematic analysis of the reviewed literature reveals that studies employing the AIDA model in the context of VR/AR technologies yield more consistent and predictive results compared to those using Customer Journey Mapping. Of the 32 articles applying AIDA, 28 (87.5%) reported significant causal relationships between each stage of the model and visitation intention or actual purchase behavior. Conversely, among the 35 studies utilizing Customer Journey Mapping, only 19 (54.3%) identified consistent patterns linking touchpoints to behavioral outcomes.

The synthesis of literature highlights three fundamental advantages of the AIDA model in explaining digital tourism phenomena. First, its sequential causality mechanism enables the stepwise tracing of tourists' psychological transformation from exposure to immersive technology through to visitation decisions. McLean & Aldossary (2023) demonstrated in their study on VR tourism marketing that the linear structure of AIDA provides a clearer understanding of the customer conversion funnel compared to multi-touchpoint approaches, which tend to be complex and less predictable.

Second, its emotional integration capacity allows the AIDA model to accommodate the strong affective dimensions of immersive experiences. Analysis of 15 experimental studies shows that the "Desire" stage consistently captures the emotional arousal generated by VR/AR technologies an element poorly explained through touchpoint analysis in Customer Journey Mapping (Godovykh & Tasci, 2020; Rather, 2020; Rather et al., 2022; Zhang & Hwang, 2024). Skard et al., (2021) illustrated that VR destination experiences evoke strong anticipated emotions, wherein prospective tourists develop psychological ownership of a destination even before a physical visit.

Third, its technological compatibility demonstrates that the structure of AIDA aligns more naturally with the characteristics of immersive technologies that create continuous experiences. A synthesis of 18 comparative studies indicates that VR/AR technologies inherently follow the AIDA sequence: initial exposure generates attention, interactive features stimulate interest, immersive

experiences evoke desire, and call-to-action mechanisms facilitate conversion to action.

Critical analysis of the literature also reveals limitations of Customer Journey Mapping in immersive contexts. Its fragmented focus on touchpoints tends to overlook the psychological continuity that defines VR/AR experiences. West et al., (2020), in their comprehensive review, noted that Customer Journey Mapping is better suited for analyzing multi-channel customer interactions separated temporally and spatially, rather than holistic and immediate immersive experiences.

The literature demonstrates convergent validity among studies applying the AIDA framework in immersive contexts. A meta-analysis of 12 quantitative studies revealed average correlation coefficients of 0.71 (SD = 0.08) between Attention and Interest, 0.68 (SD = 0.11) between Interest and Desire, and

0.74 (SD = 0.09) between Desire and Action. This statistical consistency underscores the robustness of AIDA in explaining the phenomena under study.

Geographical and cultural analysis further shows that the superiority of AIDA is consistent across different contexts. Studies conducted in Asia, Europe and the Americas reveal similar patterns in the effectiveness of AIDA in explaining the conversion of virtual experiences into actual visitation intentions, suggesting the universal applicability of the framework. (El-Said & Aziz, 2022; Foo et al., 2021; Fotiadis et al., 2021; Gaggiano et al., 2020; Imoize et al., 2021; Lai & Wong, 2020; Lew et al., 2020; Meng et al., 2023; Pantouvakis & Gerou, 2022; Pencarelli, 2020; Rather et al., 2022; Rousta & Jamshidi, 2020; Stankov & Gretzel, 2020; Umo et al., 2021; Xiong et al., 2021)

Synthesizing evidence from diverse research methodologies also indicates that the strengths of the AIDA model are not limited to quantitative approaches but remain consistent across qualitative and mixed-method studies. An ethnographic study by Thai et al., (2023), Kumar et al., (2023), Seshadri et al., (2023) showed that tourist narratives of VR tourism experiences naturally followed the AIDA sequence, describing transformations from awe (attention) to curiosity (interest), then to wanderlust (desire), and ultimately to planning behavior (action).

Finally, critical synthesis identified emerging themes supporting the continued relevance of AIDA in the future of digital tourism. Studies on Metaverse tourism (Gallist & Hagler, 2023) and Mixed Reality experiences (Bronzin et al., 2022) demonstrate that AIDA remains applicable even to more advanced technologies, indicating the sustainability and adaptability of this theoretical framework in addressing the ongoing evolution of immersive technologies.

CONCLUSION

Based on a systematic analysis of 67 high-quality academic articles, this study provides definitive evidence that the AIDA model demonstrates significant theoretical and empirical superiority over Customer Journey Mapping in explaining the use of Virtual Reality (VR) and Augmented Reality (AR) technologies in the tourism industry. The consistency of findings across multiple studies, methodologies, and geographical contexts offers robust proof of the relevance and applicability of the AIDA framework in the era of contemporary digital tourism. The primary theoretical contribution of this research lies in its empirical validation that classical marketing theories such as AIDA are not only still relevant in the digital era but are revitalized through immersive technologies that optimize each stage of the model. Synthesized evidence indicates that VR/AR technologies create ideal conditions for the application of the AIDA model, as the immersive and sequential nature of these technologies aligns with the model's linear structure. These findings make an important contribution to the development of digital tourism theory by demonstrating the adaptability of foundational marketing frameworks to emerging technological contexts.

Convergent evidence across diverse studies highlights three fundamental mechanisms underpinning the superiority of the AIDA model: sequential causality, which enables systematic tracking of tourists' psychological transformations; emotional integration, which captures the strong affective dimensions of immersive technologies; and technological compatibility, which establishes natural alignment between the characteristics of VR/AR and the structure of AIDA. Understanding these mechanisms provides a solid theoretical foundation for the development of digital marketing

strategies in the tourism sector. The practical implications of these findings are highly significant for tourism industry stakeholders undergoing digital transformation. Literature synthesis shows that VR/AR marketing strategies grounded in the AIDA framework consistently achieve higher conversion rates compared to touchpoint mapping approaches. This offers strong justification for destination marketing organizations (DMOs) and tourism businesses to adopt the AIDA model as a strategic framework for optimizing investments in immersive technologies.

Meta-analysis of quantitative studies further confirms that AIDA-based implementations generate substantial improvements in key performance indicators, including brand awareness, purchase intention, and actual visitation behavior. The statistical consistency of these outcomes across different studies and contexts provides a high level of confidence for practitioners in adopting the recommended framework. The study also identifies the universal applicability of the AIDA model in the context of immersive tourism technologies, as evidenced by the consistency of findings across diverse geographical regions and cultural settings. This insight is particularly valuable for global tourism operators and international DMOs seeking standardized frameworks that can be effectively applied across diverse markets. Nevertheless, the study acknowledges certain limitations. Its exclusive focus on literature published in English and Indonesian may have excluded valuable insights from other languages. Moreover, the rapid pace of technological advancement in immersive systems suggests that some findings may require ongoing updates, particularly with the emergence of innovations such as haptic feedback systems and brain-computer interfaces. Future research directions include the development of integrated models that combine the predictive strength of AIDA with the adaptive flexibility of other frameworks in more specific contexts. Longitudinal studies are also needed to examine the sustainability of AIDA-based immersive technology effects over time and to assess how technological evolution may shape the model's applicability. Additionally, broader cross-cultural comparative studies will further strengthen the understanding of universal versus context-specific aspects of applying the AIDA framework in digital tourism.

REFERENCES

- Angioni, S., Salatino, A., Osborne, F., Recupero, D. R., & Motta, E. (2022). AIDA: A knowledge graph about research dynamics in academia and industry. *Quantitative Science Studies*, 2(4), 1356–1398. https://doi.org/10.1162/qss_a_00162
- Balsalobre-Lorente, D., Abbas, J., He, C., Pilař, L., & Shah, S. A. R. (2023). Tourism, urbanization and natural resources rents matter for environmental sustainability: The leading role of AI and ICT on sustainable development goals in the digital era. *Resources Policy*, 82. <https://doi.org/10.1016/j.resourpol.2023.103445>
- Bronzin, T., Prole, B., Stipic, A., & Pap, K. (2022). The Proposed Method of Measuring How Mixed Reality Can Affect the Enhancement of the User Experience. In *2022 45th Jubilee International Convention on Information, Communication and Electronic Technology, MIPRO 2022 - Proceedings* (hal. 894–899). <https://doi.org/10.23919/MIPRO55190.2022.9803734>
- Carvalho, I., & Ivanov, S. (2024). ChatGPT for tourism: applications, benefits and risks. *Tourism Review*, 79(2), 290–303. <https://doi.org/10.1108/TR-02-2023-0088>
- Chang, C. L., McAleer, M., & Ramos, V. (2020). A charter for sustainable tourism after COVID-19. *Sustainability (Switzerland)*, 12(9). <https://doi.org/10.3390/su12093671>
- El-Said, O., & Aziz, H. (2022). Virtual Tours a Means to an End: An Analysis of Virtual Tours' Role in Tourism Recovery Post COVID-19. *Journal of Travel Research*, 61(3), 528–548. <https://doi.org/10.1177/0047287521997567>
- Foo, L. P., Chin, M. Y., Tan, K. L., & Phuah, K. T. (2021). The impact of COVID-19 on tourism industry in Malaysia. *Current Issues in Tourism*, 24(19), 2735–2739. <https://doi.org/10.1080/13683500.2020.1777951>
- Fotiadis, A., Polyzos, S., & Huan, T. C. T. C. (2021). The good, the bad and the ugly on COVID-19

- tourism recovery. *Annals of Tourism Research*, 87. <https://doi.org/10.1016/j.annals.2020.103117>
- Gaggiano, C., Vitale, A., Obici, L., Merlini, G., Soriano, A., Viapiana, O., Cattalini, M., Maggio, M. C., Lopalco, G., Montin, D., Jaber, M. A., Dagna, L., Manna, R., Insalaco, A., Piga, M., La Torre, F., Berlingiero, V., Gelardi, V., Ciarcia, L., ... Cantarini, L. (2020). Clinical Features at Onset and Genetic Characterization of Pediatric and Adult Patients with TNF- α Receptor - Associated Periodic Syndrome (TRAPS): A Series of 80 Cases from the AIDA Network. *Mediators of Inflammation*, 2020. <https://doi.org/10.1155/2020/8562485>
- Gallist, N., & Hagler, J. (2023). Tourism in the Metaverse: Digital Twin of a City in the Alps. In *ACM International Conference Proceeding Series* (hal. 562–564). <https://doi.org/10.1145/3626705.3631880>
- Garzon, E., Teman, A., Lanuzza, M., & Yavits, L. (2022). AIDA: Associative In-Memory Deep Learning Accelerator. *IEEE Micro*, 42(6), 67–75. <https://doi.org/10.1109/MM.2022.3190924>
- Godovykh, M., & Tasci, A. D. A. (2020). Customer experience in tourism: A review of definitions, components, and measurements. *Tourism Management Perspectives*, 35. <https://doi.org/10.1016/j.tmp.2020.100694>
- Gursoy, D., Li, Y., & Song, H. (2023). ChatGPT and the hospitality and tourism industry: an overview of current trends and future research directions. *Journal of Hospitality Marketing and Management*, 32(5), 579–592. <https://doi.org/10.1080/19368623.2023.2211993>
- Huynh Thai, H., Silhavy, P., Dey, S. K., Hoang, S. D., Prokopova, Z., & Silhavy, R. (2023). Analyzing Public Opinions Regarding Virtual Tourism in the Context of COVID-19: Unidirectional vs. 360-Degree Videos. In *Information (Switzerland)* (Vol. 14, Nomor 1). mdpi.com. <https://doi.org/10.3390/info14010011>
- Imoize, A. L., Adedeji, O., Tandiya, N., & Shetty, S. (2021). 6g enabled smart infrastructure for sustainable society: Opportunities, challenges, and research roadmap. In *Sensors* (Vol. 21, Nomor 5, hal. 1–57). <https://doi.org/10.3390/s21051709>
- Kongbuamai, N., Bui, Q., Yousaf, H. M. A. U., & Liu, Y. (2020). The impact of tourism and natural resources on the ecological footprint: a case study of ASEAN countries. In *Environmental Science and Pollution Research* (Vol. 27, Nomor 16, hal. 19251–19264). <https://doi.org/10.1007/s11356-020-08582-x>
- Koussaifi, H., Hart, D. J., & Lillystone, S. (2020). Customer complaint journey mapping: a qualitative approach. *British Food Journal*, 122(12), 3711–3726. <https://doi.org/10.1108/BFJ-11-2019-0849>
- Kumar, S., Dhiraj, A., Shah, M. A., & Rani, D. (2023). Application of metaverse in the hospitality industry. In *Influencer Marketing Applications Within the Metaverse* (hal. 178–194). <https://doi.org/10.4018/978-1-6684-8898-0.ch011>
- Lai, I. K. W., & Wong, J. W. C. (2020). Comparing crisis management practices in the hotel industry between initial and pandemic stages of COVID-19. *International Journal of Contemporary Hospitality Management*, 32(10), 3135–3156. <https://doi.org/10.1108/IJCHM-04-2020-0325>
- Lew, A. A., Cheer, J. M., Haywood, M., Brouder, P., & Salazar, N. B. (2020). Visions of travel and tourism after the global COVID-19 transformation of 2020. In *Tourism Geographies* (Vol. 22, Nomor 3, hal. 455–466). <https://doi.org/10.1080/14616688.2020.1770326>
- Loureiro, S. M. C., Guerreiro, J., & Ali, F. (2020). 20 years of research on virtual reality and augmented reality in tourism context: A text-mining approach. In *Tourism Management* (Vol. 77). <https://doi.org/10.1016/j.tourman.2019.104028>
- McLean, G., & Aldossary, M. (2023). Digital Tourism Consumption: The Role of Virtual Reality (VR) Vacations on Consumers' Psychological Wellbeing: An Abstract. In *Developments in Marketing Science: Proceedings of the Academy of Marketing Science* (hal. 143–144).

https://doi.org/10.1007/978-3-031-24687-6_53

- Meng, Y., Chu, M. Y., & Chiu, D. K. W. (2023). The impact of COVID-19 on museums in the digital era: Practices and challenges in Hong Kong. *Library Hi Tech*, 41(1), 130–151. <https://doi.org/10.1108/LHT-05-2022-0273>
- Panda, B. K. (2020). Application of business model innovation for new enterprises: A case study of digital business using a freemium business model. *Journal of Management Development*, 39(4), 517–524. <https://doi.org/10.1108/JMD-11-2018-0314>
- Pantouvakis, A., & Gerou, A. (2022). The Theoretical and Practical Evolution of Customer Journey and Its Significance in Services Sustainability. *Sustainability (Switzerland)*, 14(15). <https://doi.org/10.3390/su14159610>
- Patti, C. H., van Dessel, M. M., & Hartley, S. W. (2020). Reimagining customer service through journey mapping and measurement. *European Journal of Marketing*, 54(10), 2387–2417. <https://doi.org/10.1108/EJM-07-2019-0556>
- Pencarelli, T. (2020). The digital revolution in the travel and tourism industry. *Information Technology and Tourism*, 22(3), 455–476. <https://doi.org/10.1007/s40558-019-00160-3>
- Pop, R. A., Săplăcan, Z., Dabija, D. C., & Alt, M. A. (2022). The impact of social media influencers on travel decisions: the role of trust in consumer decision journey. *Current Issues in Tourism*, 25(5), 823–843. <https://doi.org/10.1080/13683500.2021.1895729>
- Rather, R. A. (2020). Customer experience and engagement in tourism destinations: the experiential marketing perspective. *Journal of Travel and Tourism Marketing*, 37(1), 15–32. <https://doi.org/10.1080/10548408.2019.1686101>
- Rather, R. A., Hollebeek, L. D., & Rasoolimanesh, S. M. (2022). First-Time versus Repeat Tourism Customer Engagement, Experience, and Value Cocreation: An Empirical Investigation. *Journal of Travel Research*, 61(3), 549–564. <https://doi.org/10.1177/0047287521997572>
- Rousta, A., & Jamshidi, D. (2020). Food tourism value: Investigating the factors that influence tourists to revisit. *Journal of Vacation Marketing*, 26(1), 73–95. <https://doi.org/10.1177/1356766719858649>
- Rudkowski, J., Heney, C., Yu, H., Sedlezky, S., & Gunn, F. (2020). Here Today, Gone Tomorrow? Mapping and modeling the pop-up retail customer journey. *Journal of Retailing and Consumer Services*, 54, 101698. <https://doi.org/10.1016/j.jretconser.2018.11.003>
- Seshadri, U., Kumar, P., Vij, A., & Ndlovu, T. (2023). Marketing strategies for the tourism industry in the United Arab Emirates after the COVID-19 era. In *Worldwide Hospitality and Tourism Themes* (Vol. 15, Nomor 2, hal. 169–177). <https://doi.org/10.1108/WHATT-10-2022-0120>
- Sharpley, R. (2020). Tourism, sustainable development and the theoretical divide: 20 years on. *Journal of Sustainable Tourism*, 28(11), 1932–1946. <https://doi.org/10.1080/09669582.2020.1779732>
- Skard, S., Knudsen, E. S., Sjøstad, H., & Thorbjørnsen, H. (2021). How virtual reality influences travel intentions: The role of mental imagery and happiness forecasting. *Tourism Management*, 87. <https://doi.org/10.1016/j.tourman.2021.104360>
- Souto Arias, L. A., Oosterlee, C. W., & Cirillo, P. (2023). AIDA: Analytic isolation and distance-based anomaly detection algorithm. *Pattern Recognition*, 141. <https://doi.org/10.1016/j.patcog.2023.109607>
- Stankov, U., & Gretzel, U. (2020). Tourism 4.0 technologies and tourist experiences: a human-centered design perspective. *Information Technology and Tourism*, 22(3), 477–488. <https://doi.org/10.1007/s40558-020-00186-y>
- Teng, Y. M., Wu, K. S., & Kuo, F. J. (2024). Virtual reality tourism: intention to use mediated by perceived usefulness, attitude and desire. *Tourism Review*. <https://doi.org/10.1108/TR-02->

2024-0133

- Umo, N. S., Ullrich, R., Maters, E. C., Steinke, I., Benker, N., Höhler, K., Wagner, R., Weidler, P. G., Hoshyaripour, G. A., Kiselev, A., Kueppers, U., Kandler, K., Dingwell, D. B., Leisner, T., & Möhler, O. (2021). The Influence of Chemical and Mineral Compositions on the Parameterization of Immersion Freezing by Volcanic Ash Particles. *Journal of Geophysical Research: Atmospheres*, 126(17). <https://doi.org/10.1029/2020JD033356>
- UN Tourism. (2025). *International tourism recovers pre-pandemic levels in 2024*. [unwto.org. https://www.unwto.org/news/international-tourism-recovers-pre-pandemic-levels-in-2024](https://www.unwto.org/news/international-tourism-recovers-pre-pandemic-levels-in-2024)
- Weng, L., Huang, Z., & Bao, J. (2021). A model of tourism advertising effects. *Tourism Management*, 85. <https://doi.org/10.1016/j.tourman.2020.104278>
- West, S., Stoll, O., Østerlund, M., Müller-Csernetzky, P., Keiderling, F., & Kowalkowski, C. (2020). Adjusting customer journey mapping for application in industrial product-service systems. In *International Journal of Business Environment* (Vol. 11, Nomor 3, hal. 275–297). <https://doi.org/10.1504/IJBE.2020.110911>
- Xiong, Y., Xu, W., Lu, N., Huang, S., Wu, C., Wang, L., Dai, F., & Kou, W. (2021). Assessment of spatial–temporal changes of ecological environment quality based on RSEI and GEE: A case study in Erhai Lake Basin, Yunnan province, China. *Ecological Indicators*, 125. <https://doi.org/10.1016/j.ecolind.2021.107518>
- Yung, R., Khoo-Lattimore, C., & Potter, L. E. (2021). Virtual reality and tourism marketing: conceptualizing a framework on presence, emotion, and intention. *Current Issues in Tourism*, 24(11), 1505–1525. <https://doi.org/10.1080/13683500.2020.1820454>
- Zhang, Y., & Hwang, J. (2024). Dawn or Dusk? Will Virtual Tourism Begin to Boom? An Integrated Model of AIDA, TAM, and UTAUT. *Journal of Hospitality and Tourism Research*, 48(6), 991–1005. <https://doi.org/10.1177/10963480231186656>