

The Role of Information Technology in Empowering the Creative Economy for Sustainable Tourism

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Abstract

This research aimed to assess IT's role in the creative economy. Three goals were: to gauge creative economy impact on tourist satisfaction, identify its influence on satisfaction, and provide smart tourism advice. Using a quantitative approach, data was gathered from 100 Smart Tourism users. Hypotheses were tested via Partial Least Squares Regression using SmartPLS. The model proved valid and reliable. Findings showed positive creative economy impact on tourist satisfaction. Despite its insights, the research is limited by a small sample size, potentially causing generalizability and bias issues. Practical implications include advocating smart tech adoption for improved satisfaction, promoting sustainable tourism collaboration, involving communities for aligned development, and considering environmental impacts in initiatives.

Keywords: Creative economy; Smart Tourism; Sustainable tourism; SmartPLS

1. Introduction

Smart tourism as a form of information technology is a relatively new concept in the global tourism sector, indicating an increased reliance on the application of information and communication technology (ICT) in the identification and operation of tourism destinations, industries, and new forms of tourists through the transformation of data into value propositions [1] [2]. Although smart tourism builds important technological and business foundations for the development of tourism activities in the future, the concept has only received limited theoretical development. The term 'smart' encompasses technological, economic, and social aspects driven by the power of technology, relying on big data, open data, and expanded data channels and information exchange. The 'smart' concept is conceptualized as a process of data sharing and the application of complex modeling and visualization techniques aimed at making organizational and business operations better [3]. In the context of tourism, smart tourism implies the use of available innovative and sophisticated tourism channels and opportunities effectively and efficiently. It encompasses the use of technology that enables



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collaboration and the creation of new and advanced value, which in turn leads to increased levels of entrepreneurship, innovation, and competitiveness in the tourism sector [4] [5]. Smart tourism is considered an advancement from the processes and practices of traditional tourism towards newer and more advanced e-tourism, which is based on innovation and technological orientation, supported by information and communication technology (ICT) in tourism [6]. Despite the fact that mobile tourism is a relatively new idea, several studies contend that considerable advancements have been accomplished. One example is the realization of mobile tourism through the enhanced mobility of visitors' intake of tourism information [7]. This paper investigates the new concept of smart tourism and the potential for its adoption by start-up businesses.

This research encompasses three aspects. Firstly, the study evaluates the overall tourist satisfaction visiting businesses around local tourism from a business perspective. Secondly, the research evaluates individual characteristics of the creative economy that influence the level of tourist satisfaction. And thirdly, based on the findings from the two aforementioned scopes, recommendations are developed for creative economy entrepreneurs regarding smart tourism.

Smart tourism consists of various layers and components, which are enabled and supported by information and communication technology (ICT) [8]. These components and layers are illustrated in Figure 1 below.

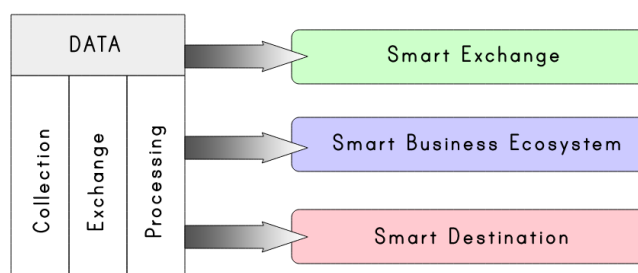


Figure 1. Smart Tourism Components and Layers

As illustrated in the above image, one important component of smart tourism is the smart business ecosystem. The smart business ecosystem is considered a crucial concept in creating comprehensive and satisfying tourism experiences [9]. This concept involves complex interactions among users, service providers, and technological infrastructure. In the smart business ecosystem, tourists' experiences are linked to the provision of quality and innovative services that can enrich their tourism experiences [10] [11]. Furthermore, the smart business ecosystem enables collaboration among businesses in the tourism industry to enhance the efficiency and effectiveness of their operations.

Furthermore, the smart business ecosystem plays a crucial role in supporting the growth of the creative economy in the tourism sector [12]. Through collaboration and partnerships among businesses in the tourism sector, synergies can be created that enhance the quality and competitiveness of tourism products and services [13]. Therefore, the development of a smart business ecosystem in the context of smart tourism is essential to improve tourist experiences and drive the growth of the creative economy in the tourism sector.

1.1 Sustainable Tourism Industry

Sustainable smart tourism is becoming an increasingly important topic in the global tourism industry. Sustainable smart tourism involves the use of information and communication technology to enhance tourist experiences and promote economic growth without damaging the environment or local culture [14]. One of the goals of sustainable smart tourism is to create more positive and socially and environmentally responsible tourism experiences [15] [16]. Recent research suggests that sustainable smart tourism can help reduce the negative

impacts of tourism on the environment, including carbon emissions and energy consumption [17].

However, the implementation of sustainable smart tourism still requires further research and collaboration among various stakeholders. There is a need to integrate sustainable smart tourism strategies into tourism development plans and foster collaboration among governments, the tourism industry, and local communities [18]. Additionally, sustainable smart tourism can also contribute to sustainable tourism development and create new job opportunities [19]. However, achieving this requires a collaborative approach among the tourism industry, governments, and local communities. Furthermore, the adoption of sustainable practices might initially entail higher costs for businesses, especially in terms of infrastructure and operational changes, which could deter their commitment. Lastly, the rapid growth of tourism in some areas might outpace sustainable infrastructure development, causing strain on local resources and ecosystems.

1.2 Creative Economy in the Tourism Industry

Tourism has become one of the major economic sectors in many countries worldwide, and its contribution is further enhanced by the development of the creative industry. According to the European Commission publication, the creative industry encompasses sectors such as arts and culture, publishing, media, entertainment, architecture, and design. The creative industry can support economic growth, create jobs, and enrich cultural life [20]. In the context of tourism, the creative industry can contribute to the development of more innovative and appealing tourism products and services. The creative industry in tourism in China, integrating the tourism sector with the creative industry can enhance the quality of tourist experiences, expand the tourism market, and accelerate tourism development [21]. Companies with higher creative industry capabilities generated higher revenues and experienced faster growth compared to companies with lower creative industry capabilities.

Another study on the development of the creative economy in the tourism industry in Taiwan showed that the creative economy can enhance the added value of tourism products and services [22]. They suggested that to implement the creative economy in the tourism industry, companies should focus on developing unique and tailored tourism products and services that meet the needs of modern tourists. The study also found that companies that apply creative economy strategies in the development of tourism products and services tend to be more successful and capable of creating sustainable competitive advantages in the tourism industry. In the conclusion of their study, it is recommended that companies and governments in Taiwan and other countries strengthen their collaboration in building a sustainable and creative tourism industry [23].

While the creative economy has the potential to enhance the tourism industry, there are challenges to consider. Integrating creative industries with tourism might lead to gentrification, where local cultures are commodified and the authenticity of a destination is compromised. Moreover, the success of creative endeavors is subjective and reliant on consumer preferences, making it unpredictable and potentially unsustainable. Balancing the desire for economic growth with the preservation of local traditions and authenticity can be challenging, as the focus on profit might overshadow cultural sensitivity. Additionally, not all destinations may have the necessary infrastructure or resources to support creative initiatives, limiting their widespread adoption and impact.

1.3 Smart Approach in the Tourism Industry

The concept of a "smart" approach in the tourism industry refers to the strategic integration of information and communication technology (ICT) with various aspects of the industry to enhance efficiency, customer experience, and sustainability [24]. This approach leverages technology's capabilities to transform how destinations, businesses, and tourists interact, resulting in improved services, optimized resource utilization, and enriched visitor experiences. In a smart approach, data-driven insights and real-time information are used to

make informed decisions, streamline operations, and offer personalized services that cater to the preferences and needs of individual tourists.

At its core, a smart approach in tourism involves the utilization of IoT (Internet of Things), data analytics, mobile applications, and other cutting-edge technologies to create interconnected systems that enhance various aspects of the travel experience. This can range from using sensors to monitor crowd densities at popular tourist spots and adjust traffic flow in real-time to developing mobile apps that provide travelers with personalized itineraries, recommendations, and seamless booking processes. Moreover, smart destination management systems enable authorities to make data-driven decisions for sustainable resource allocation, waste reduction, and infrastructure development, contributing to both visitor satisfaction and the preservation of the local environment [25].

One of the key benefits of adopting a smart approach in tourism is its potential to create a virtuous cycle of innovation and economic growth. By integrating technology, businesses can offer unique and enhanced services that attract tech-savvy travelers, thereby driving demand and revenue [26]. Additionally, a smart approach fosters collaboration among stakeholders, including businesses, governments, and local communities, to collectively work towards sustainable tourism practices that balance economic growth with environmental preservation [27]. However, successful implementation requires overcoming challenges such as digital divide, data privacy concerns, and ensuring that the benefits are accessible to all, regardless of their technological proficiency. In essence, a smart approach in the tourism industry holds the promise of revolutionizing how we travel, experience destinations, and contribute to the local economies and ecosystems we engage with.

2. Research Method

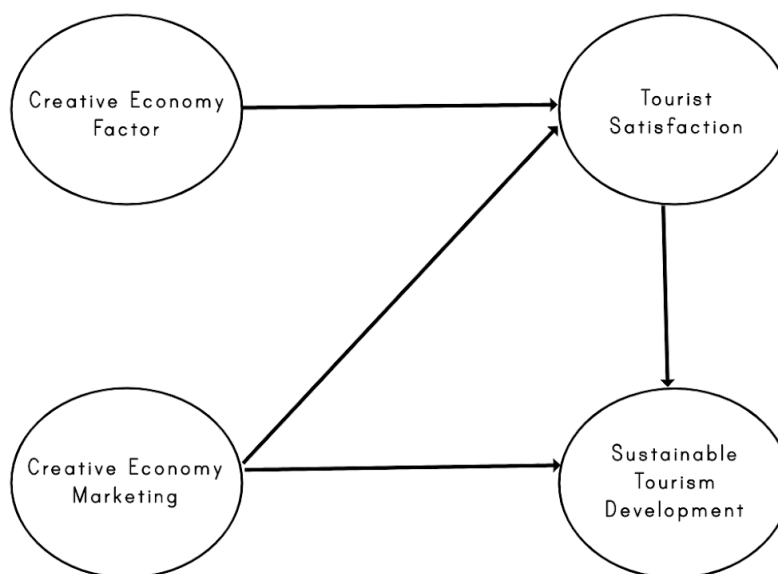


Figure 2. Conceptual Framework

Based on the conceptual framework depicted in Figure 2, three hypotheses are proposed:

Hypothesis 1 (H1): Creative economy factors in the local tourism environment have a positive influence on tourist satisfaction.

Hypothesis 2 (H2): Creative economy marketing in the local tourism environment has a positive influence on tourist satisfaction and the development of the local economy.

Hypothesis 3 (H3): Based on the level of tourist satisfaction, smart tourism is driven by surrounding businesses.

To evaluate the influence of the creative economy as a representation of smart tourism on tourist satisfaction and potential smart tourism recommendations for creative economy entrepreneurs, this research applies quantitative techniques [28]. Three hypotheses have been previously proposed, and primary data is collected from creative economy visitors

through a structured questionnaire with a 5-point Likert scale [29] [30]. A total of 100 respondents are used as a representative sample, and the data is evaluated using reliability and validity techniques before analysis. Partial least squares regression (PLS) and path analysis are used to evaluate the influence of independent variables on dependent variables, and SmartPLS is used as software to perform the tests.

The researchers employed path analysis and Partial Least Squares (PLS) regression, facilitated by the SmartPLS software, to analyze data and evaluate the reliability and validity of their research model. Path analysis was crucial for understanding the direct and indirect relationships among variables within their research model, uncovering causal pathways and effects. It allowed them to quantitatively assess the impact of creative economy factors and marketing on tourist satisfaction and sustainable tourism development. PLS regression, a potent method for complex models with small sample sizes, validated the relationships between constructs, estimating path coefficients to measure variable relationships. Using SmartPLS, the researchers visualized these relationships, calculated coefficients, and interpreted results, shedding light on how creative economy factors and marketing influence sustainable tourism development. Through SmartPLS, they conducted both reliability and validity assessments. For reliability, Cronbach's Alpha values were generated to measure the internal consistency of measurement items within constructs such as Creative Economy Factor, Creative Economy Marketing, Sustainable Tourism Development, and Tourist Satisfaction. Discriminant validity was also assessed using SmartPLS to ensure that constructs were distinct from each other. The software compared the square root of the Average Variance Extracted (AVE) with correlations between constructs as part of the Fornell-Larcker criterion. SmartPLS facilitated the evaluation of the model's overall fit, including path coefficients and R-squared values, helping researchers gauge the alignment of proposed relationships with collected data. The software's capability to perform path analysis was utilized to analyze how changes in one construct influenced others, particularly relevant for understanding causal relationships in research hypotheses. In essence, their study harnessed these analytical techniques through SmartPLS to explore intricate construct relationships and validate hypotheses concerning the empowerment of the creative economy for sustainable tourism.

3. Result and Discussion

3.1 Control Variable

In the research exploring the role of IT in the creative economy and its impact on tourist satisfaction, potential control variables for addressing confounding factors are implied but not explicitly listed. Drawing from the study's scope and variables, several key control variables could have been considered. Demographic factors like age, gender, income, and education level, along with cultural background, might influence perceptions of smart tourism and creative economy offerings. Travel-related variables such as travel purpose, experience, and length of stay could shape tourists' interactions with these concepts. Additionally, technological proficiency and awareness of environmental concerns could also play a role. Considering local infrastructure, seasonal variations, local regulations, and policies are essential for contextualizing the findings. By accounting for these control variables, researchers could better elucidate the specific impacts of smart tourism and the creative economy on tourist satisfaction while mitigating potential confounding effects.

Incorporating these control variables would enhance the research's validity and applicability, providing a more comprehensive understanding of the relationships between creative economy factors, smart tourism, and tourist satisfaction. Such an approach would bolster the study's findings by isolating the effects of the variables of interest from external factors that might influence the outcomes.

3.2 Model Evaluation

In the analysis, the first step is to evaluate the model's fit. This evaluation involves three measurement techniques: reliability analysis, validity analysis, and the calculation of

the proportion of the dependent variable's variation explained by the independent variables. Reliability evaluation is performed using Cronbach's Alpha, while validity analysis employs the Discriminant Validity (DV) method. Additionally, the proportion of the dependent variable's variation explained by the independent variables is measured using r-squared. To interpret Cronbach's Alpha, criteria indicating the level of reliability and internal consistency are applied.

Table 1. Reliability Testing Criteria

Cronbach's Alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Table 2. Model Evaluation Test

Reliability Analysis Result				
	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Creative Economy Factor	0.878	0.914	0.924	0.802
Creative Economy Marketing	0.910	0.914	0.933	0.738
Sustainable Tourism Development	0.820	0.871	0.881	0.654
Tourist Satisfaction	0.758	0.799	0.890	0.802
Validity Analysis Results				
	Creative Economy Factor	Creative Economy Marketing	Sustainable Tourism Development	Tourism Satisfaction
Creative Economy Factor				
Creative Economy Marketing	0.655			
Sustainable Tourism Development	0.739	0.899		
Tourist Satisfaction	0.624	0.787	0.862	
R-Squared Results				

	R-square	R-square adjusted
Sustainable Tourism Development	0.695	0.689
Tourist Satisfaction	0.473	0.462

The table provides the results of the reliability analysis conducted on the variables included in the study. The findings show that all factors, namely Creative Economy Factor, Creative Economy Marketing, Sustainable Tourism Development, and Tourist Satisfaction, exhibit good internal consistency and reliability. The Cronbach's alpha values range from 0.758 to 0.910, indicating strong internal consistency. Similarly, the composite reliability values (ρ_a and ρ_c) range from 0.799 to 0.933, indicating good reliability. The average variance extracted (AVE) values range from 0.654 to 0.802, indicating good convergent validity. Overall, these results suggest that the measurement items used to assess the factors are reliable and internally consistent, providing a sound foundation for the study's analysis.

The table also presents the results of the validity analysis conducted on the variables included in the study. The findings demonstrate the discriminant validity between the variables. The diagonal values represent the square root of the average variance extracted (AVE) for each variable, while the off-diagonal values represent the correlations between the variables. The square root of the AVE values is higher than the correlation values between the variables, indicating good discriminant validity. This suggests that the measurement items within each variable are distinct from the other variables, supporting the validity of the measurement model. Specifically, the Creative Economy Factor has a square root of AVE value of 0.802, higher than its correlations with Creative Economy Marketing (0.655), Sustainable Tourism Development (0.739), and Tourist Satisfaction (0.624). Similarly, Creative Economy Marketing has a square root of AVE value of 0.738, higher than its correlations with Sustainable Tourism Development (0.787) and Tourist Satisfaction (0.787). Additionally, Sustainable Tourism Development has a square root of AVE value of 0.862, higher than its correlation with Tourist Satisfaction (0.862). These results indicate that the measurement items within each variable have good convergent and discriminant validity.

The R-squared results presented in the table indicate that the independent variables in the model have a moderate to strong influence on Sustainable Tourism Development and Tourist Satisfaction. The variables in the model explain approximately 69.5% of the variance in Sustainable Tourism Development and around 47.3% of the variance in Tourist Satisfaction. These findings highlight the significant impact of the independent variables on these outcomes and emphasize the importance of considering these factors for promoting sustainable tourism development and enhancing tourist satisfaction.

3.3 Analysis of results and hypothesis testing

In this study, Partial least squares regression (PLS) was used to evaluate the three hypotheses described in the previous section. Specifically, the study examined how creative economic factors influence tourist satisfaction, how creative marketing in the local tourism environment positively affects tourist satisfaction and sustainable tourism development, and how smart tourism is driven by the surrounding efforts based on tourist satisfaction levels. Figure 3 presents the PLS path analysis.

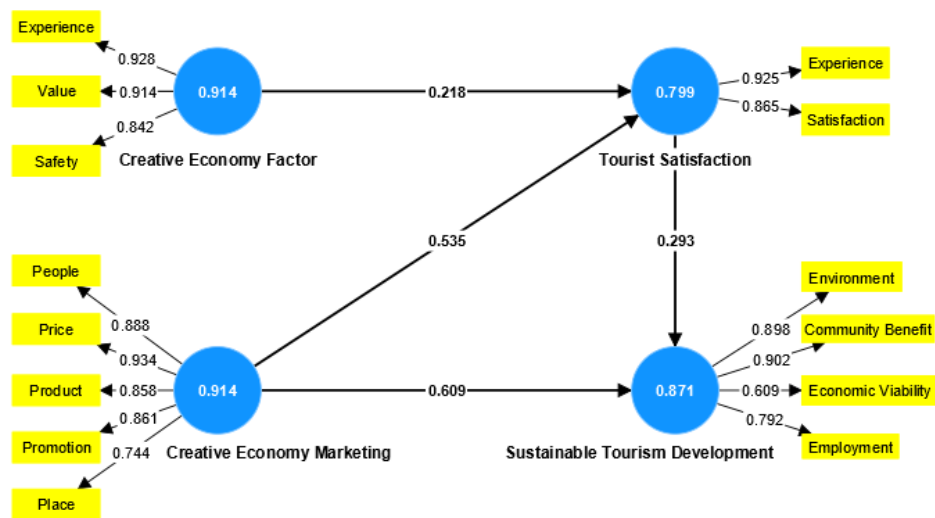


Figure 3. PLS Model Results

From these results, the variables Creative Economy Factor and Creative Marketing explain 79.9% of the variation in Tourist Satisfaction. Meanwhile, Creative Marketing and Tourist Satisfaction explain 87.1% of the variation in Sustainable Tourism Development.

Considering the individual variables, the path coefficients indicate that the Creative Economy Factor has a positive influence of 21.8% on tourist Satisfaction, while Creative Marketing has a significant influence of 53.5% on Tourist Satisfaction. The path coefficients also show that Creative Economy Marketing has a significant influence of 60.9% on Sustainable Tourism Development, while Tourist Satisfaction has a positive influence of 29.3% on Sustainable Tourism Development.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O /STDEV)	P values
Creative Economy Factor → Tourist Satisfaction	0.218	0.219	0.102	2.138	0.033
Creative Economy Marketing → Sustainable Tourism Development	0.609	0.606	0.078	8.034	0.000
Creative Economy Marketing → Tourist Satisfaction	0.535	0.534	0.104	5.136	0.000
Tourist Satisfaction → Sustainable Tourism Development	0.293	0.296	0.078	3.746	0.000

Figure 4. Outer Loadings Results

From the results presented in Figure 4 above, there is a positive and significant relationship between the Creative Economy Factor and all observed variables. Similarly, the findings indicate a significant and positive relationship between the Creative Marketing variable and the observed variables.

3.4 Practical Implications

The practical implications underscored by the study are manifold. First, the positive influence of smart tourism on tourist satisfaction encourages creative economy entrepreneurs to invest in smart technologies, enhancing visitor experiences. Second, creative economy practitioners can enhance competitiveness by concentrating on tech-driven tourism offerings for tech-savvy tourists. Third, recognizing the link between creative economy marketing, tourist satisfaction, and sustainable tourism, collaboration among businesses, governments, and communities is promoted for sustainable practices. Fourth, governments could enact policies backing the integration of smart tech and creative strategies to invigorate the tourism sector. Fifth, prioritizing tourist preferences and needs is vital, as improved satisfaction from creative marketing and smart tech could amplify recommendations and revisit rates. Sixth, overcoming limitations via larger samples, longitudinal studies, and mixed-method approaches could guide future research. Seventh, involving local communities can align smart tourism with local values, fostering sustainable development. Finally, environmental impacts of smart tourism initiatives should be considered to avert negative ecological effects.

4. Conclusion

In conclusion, the study delved into the novel concept of smart tourism and its potential integration into start-up businesses in the context of the creative economy. The hypotheses proposed were well-supported by the results obtained through quantitative analysis. The research demonstrated that creative economy factors significantly influence tourist satisfaction, with both the Creative Economy Factor and Creative Economy Marketing accounting for a substantial portion of the variance in Tourist Satisfaction. Additionally, Creative Economy Marketing displayed a positive influence on both Tourist Satisfaction and Sustainable Tourism Development, reinforcing the role of marketing strategies in enhancing both visitor experiences and the industry's growth. Moreover, the interplay between these factors highlights the importance of collaboration and innovation in building a thriving smart business ecosystem within the tourism industry.

For future research directions, expanding the sample size, employing longitudinal studies, and adopting mixed-method approaches could provide a more comprehensive understanding of the complex relationships explored in this study. Furthermore, investigating the potential environmental impacts of smart tourism initiatives and their implications for sustainable development would contribute to a more holistic assessment. Recognizing the limitations of the study, such as the relatively small sample size and the specificity of the context, encourages researchers to replicate these analyses across diverse settings for a broader perspective on the topic.

Practically, this research offers valuable insights. It underscores the need for creative economy entrepreneurs to harness smart technologies to enhance tourism experiences and suggests that creative marketing strategies can drive both tourist satisfaction and sustainable tourism development. Governments and businesses are encouraged to collaborate in implementing smart tourism practices that align with local values, fostering not only economic growth but also cultural and environmental preservation. Balancing economic interests with sustainability concerns remains a challenge, necessitating thoughtful planning to avoid negative consequences. Ultimately, this study contributes to the burgeoning field of smart tourism by providing empirical evidence of its potential benefits and by offering practical guidance to creative economy stakeholders seeking to navigate this evolving landscape.

References

- [1] A. Camero and E. Alba, "Smart City and information technology: A review," *Cities*, vol. 93, pp. 84–94, 2019.
- [2] A. Kirimtat, O. Krejcar, A. Kertesz, and M. F. Tasgetiren, "Future trends and current state of smart city concepts: A survey," *IEEE Access*, vol. 8, pp. 86448–86467, 2020.
- [3] J. Kandt and M. Batty, "Smart cities, big data and urban policy: Towards urban analytics for the long run," *Cities*, vol. 109, no. 102992, p. 102992, 2021.
- [4] R.-A. Pop, Z. Săplăcan, D.-C. Dabija, and M.-A. Alt, "The impact of social media influencers on travel decisions: the role of trust in consumer decision journey," *Curr. Issues Tourism*, vol. 25, no. 5, pp. 823–843, 2022.
- [5] S. Renjith, A. Sreekumar, and M. Jathavedan, "An extensive study on the evolution of context-aware personalized travel recommender systems," *Inf. Process. Manag.*, vol. 57, no. 1, p. 102078, 2020.
- [6] J. Wang, C. Xie, Q. Huang, and A. M. Morrison, "Smart tourism destination experiences: The mediating impact of arousal levels," *Tour. Manag. Perspect.*, vol. 35, no. 100707, p. 100707, 2020.
- [7] F. J. Ballina, "Smart business: the element of delay in the future of smart tourism," *J. Tour. Futures*, vol. 8, no. 1, pp. 37–54, 2022.

- [8] Z. Ma, "Business ecosystem modeling- the hybrid of system modeling and ecological modeling: an application of the smart grid," *Energy Inform.*, vol. 2, no. 1, 2019.
- [9] D. A. Rossit, M. A. Sánchez, F. Tohmé, and M. Frutos, "Business ecosystem approach to industry 4.0," in *Handbook of Smart Materials, Technologies, and Devices*, Cham: Springer International Publishing, 2021, pp. 1–22.
- [10] P. Lee, W. C. Hunter, and N. Chung, "Smart tourism city: Developments and transformations," *Sustainability*, vol. 12, no. 10, p. 3958, 2020.
- [11] Y. Zhang, M. Sotiriadis, and S. Shen, "Investigating the impact of smart tourism technologies on tourists' experiences," *Sustainability*, vol. 14, no. 5, p. 3048, 2022.
- [12] Wahyuningsih, N. N. Azizah, and T. Mariyanti, "Education and technology management policies and practices in madrasah," *International Transactions on Education Technology (ITEE)*, vol. 1, no. 1, pp. 29–34, 2022.
- [13] Y. El Archi, B. Benbba, Z. Nizamatinova, Y. Issakov, G. I. Vargáné, and L. D. Dávid, "Systematic literature review analysing smart tourism destinations in context of sustainable development: Current applications and future directions," *Sustainability*, vol. 15, no. 6, p. 5086, 2023.
- [14] S. Shafiee, A. Rajabzadeh Ghatari, A. Hasanzadeh, and S. Jahanyan, "Smart tourism destinations: a systematic review," *Tour. Rev.*, vol. 76, no. 3, pp. 505–528, 2021.
- [15] H. Ye, S. Sun, and R. Law, "An investigation of developing smart tourism from the perspective of stakeholders," *Asia Pac. J. Tour. Res.*, vol. 26, no. 10, pp. 1156–1170, 2021.
- [16] A. Giri Prawiyogi, S. Purnama, and L. Meria, "Smart cities using machine learning and intelligent applications (ITALIC)," *International Transactions on Artificial Intelligence (ITALIC)*, vol. 1, no. 1, pp. 102–116, 2022.
- [17] V. Kazandzhieva and H. Santana, "E-tourism: Definition, development and conceptual framework," *Tourism: Int. Interdisciplinary J.*, vol. 67, no. 4, pp. 332–350, 2019.
- [18] P. Rashi, M. C. Lohani, N. Lutfiani, T. Hermansyah, and I. N. Hikam, "New personalized social approach based on flexible integration of web services," *International Transactions on Artificial Intelligence (ITALIC)*, vol. 1, no. 1, pp. 1–17, 2022.
- [19] C.-C. Liang, W.-Y. Liang, and T.-L. Tseng, "Evaluation of intelligent agents in consumer-to-business e-Commerce," *Comput. Stand. Interfaces*, vol. 65, pp. 122–131, 2019.
- [20] A. Hurtado-Palomino, B. De la Gala-Velásquez, and J. Ccorisapra-Quintana, "The interactive effect of innovation capability and potential absorptive capacity on innovation performance," *J. Innov. Knowl.*, vol. 7, no. 4, p. 100259, 2022.
- [21] P. del Vecchio, C. Malandugno, G. Passiante, and G. Sakka, "Circular economy business model for smart tourism: the case of Ecobnb," *EuroMed J. Bus.*, vol. 17, no. 1, pp. 88–104, 2022.
- [22] K. Nam, C. S. Dutt, P. Chathoth, and M. S. Khan, "Blockchain technology for smart city and smart tourism: latest trends and challenges," *Asia Pac. J. Tour. Res.*, vol. 26, no. 4, pp. 454–468, 2021.
- [23] A. Presenza, A. Messeni Petruzzelli, and A. Natalicchio, "Business model innovation for sustainability. Highlights from the tourism and hospitality industry," *Sustainability*, vol. 11, no. 1, p. 212, 2019.
- [24] K. Timeus, J. Vinaixa, and F. Pardo-Bosch, "Creating business models for smart cities: a practical framework," *Publ. Manag. Rev.*, vol. 22, no. 5, pp. 726–745, 2020.
- [25] J. Bulchand-Gidumal, "Post-COVID-19 recovery of island tourism using a smart tourism destination framework," *J. Destin. Mark. Manag.*, vol. 23, no. 100689, p. 100689, 2022.
- [26] E. P. Harahap, E. Sediyo, Z. A. Hasibuan, U. Rahardja, and I. N. Hikam, "Artificial intelligence in tourism environments: A systematic literature review," in *2022 IEEE Creative Communication and Innovative Technology (ICCIIT)*, 2022, pp. 1–7.
- [27] U. Rahardja, Q. Aini, and S. Maulana, "Blockchain innovation: Current and future viewpoints for the travel industry," *itsdi*, vol. 3, no. 1, pp. 8–17, 2021.
- [28] A. Kontogianni and E. Alepis, "Smart tourism: State of the art and literature review for the last six years," *Array (N. Y.)*, vol. 6, no. 100020, p. 100020, 2020.
- [29] A. Matos, B. Pinto, F. Barros, S. Martins, J. Martins, and M. Au-Yong-Oliveira, "Smart

-
- cities and smart tourism: What future do they bring?," in *Advances in Intelligent Systems and Computing*, Cham: Springer International Publishing, 2019, pp. 358–370.
- [30] N. A. Zamyatina, O. G. Solntseva, and E. S. Madiyarova, "Smart Tourism: International Expertise in Strategic Solutions," in *"Smart Technologies" for Society, State and Economy*, Cham: Springer International Publishing, 2021, pp. 744–752.