JURNAL SYNTAX TRANSFORMATION

Volume 6, No. 4 April, 2025
p-ISSN 2721-3854 | e-ISSN 2721-2769

Visualizing Tourism Sustainability through Smart Tourism Technology in Lake Toba, Indonesia

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ABSTRACT
Lake Toba, is one of the tourist destinations currently being developed into a leading destination in the North of Sumatera, Indonesia. With the cultural diversity of the Batak Tribe and its rich history, Lake Toba has become a popular destination for both domestic and international tourists. One of the key concepts implemented in this destination is the application of digital technology, such as online payment, online information, and online booking and reservation systems. This study aims to analyze the impact of technology utilization on the well-being of tourists visiting Lake Toba. Focusing on smart tourism technology, this research explores the relationship between digital usage experience, memorable tourism experiences, revisit, and tourist recommendations. Data were collected through surveys of tourists who had visited Lake Toba. A quantitative analysis method was used to examine the relationships between variables. The results show that using smart tourism technology significantly enhances the tourist experience, positively affecting their intention to revisit and recommend the destination to others. Memorable tourism experiences also play a key role in improving the overall well-being of tourists. This research contributes to developing technology-based tourism strategies to enhance tourist satisfaction which will lead to revisit and recommendations, ultimately influencing tourist behavior.
Keywords: Tourism Sustainability, Smart Tourism Technology, Digital Experience, Memorable Tourism Experience, Revisit, recommendation

INTRODUCTION
Industry 4.0, also known as the era of technological disruption, brings technological advancements that drive significant changes, allowing technology to transform traditional manufacturing into intelligent and interconnected systems. These advancements include the Internet of Things (IoT), artificial intelligence (AI), big data analytics, and robotics, which collectively enhance productivity and operational efficiency (Demir et al., 2024; Piron et al., 2024; Yan & Liu, 2024; Alonso et al., 2024).

One of the impacted industries is tourism, which is a dynamic industry that has undergone development influenced by various factors such as globalization, social and economic changes, weather, government policies, and the impact of technology (Hamida, 2024; Zeng & Gerritsen, 2014).

Research on the connection between technological innovation and tourism sustainability has been extensively conducted, and through the development of technological innovations, tourism sustainability in the future is expected to be realized (Chakraborty, 2024; Jha, 2024; Ossorio, 2024; El Mattichi et al., 2024).

One of the main factors influencing the development of tourism is the digital revolution. Advances in information and communication technology have changed the way travelers plan, book, experience their journeys, and provide reviews or share the travel experiences they have had. Technology also plays a role in the transformation of promotional and marketing activities, shifting from manual to digital processes, and has become a key element in current tourism marketing strategies (Christou et al., 2023; Kuzman et al., 2024; Zhang & Szabo, 2024).

The integration of Technology, Information, and Communication (TIC) is a combination that plays an important role in the occurrence of technological digital transformation, as well as being a driver of the creation of new, unique, or memorable experiences for tourists (Dalkiran, 2022; Cheng et al., 2023; Ratna et al., 2024).

According to data from the Indonesian Central Statistics Agency and the 2021 Susenas survey, roughly 62.10% of Indonesians used the internet in 2021. This indicates that the country's use of digital technology has grown between 2021 and 2024 (Susanto et al., 2022; Berakon et al., 2023).

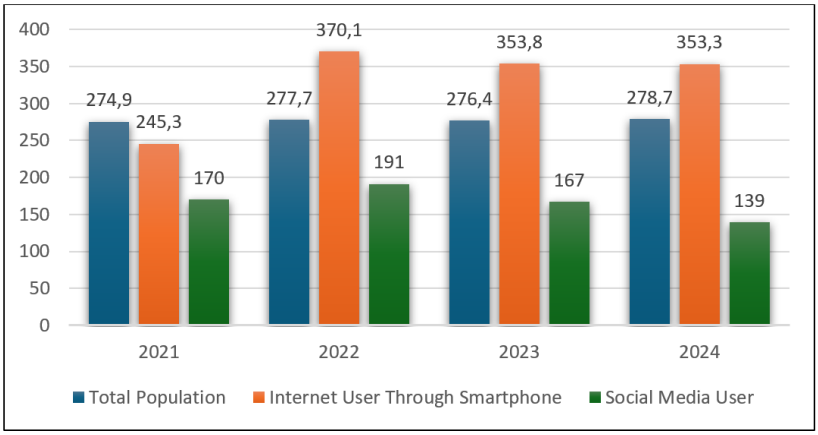

Figure 1. Growth of Internet Usage in Indonesia 2021 - 2024
Source: Indonesia Digital Report 2021-2024

Digital usage in Indonesia increased between 2021 and 2022. After that, it tended to stabilize, with an average stability of 125% to 126% for internet users using mobile applications in 2022, 2023, and 2024. *126.8%* of the population had smart mobile phone users linked to the internet in 2023 after a 128% increase in 2023 and a 2% reduction in 2024. Since 2022, 73.7% of people have used the internet; this percentage rose to 75.6% of the population in 2023 and then fell to 71.5% in 2024. In the meantime, 167 million, or 60.4%, of active users on social media in 2023 made up the average number of users, and in 2024, the average number of active social media users was 139 million, or 49.9%.

The increasing number of internet users in Indonesia certainly has various reasons, such as searching for information, looking for new ideas and inspiration, connecting with relatives or friends, filling free time, seeking the latest news, and enjoying videos, movies, or TV shows online. The following explanation can be seen in the image below (Lubis & Febriyanti, 2018).

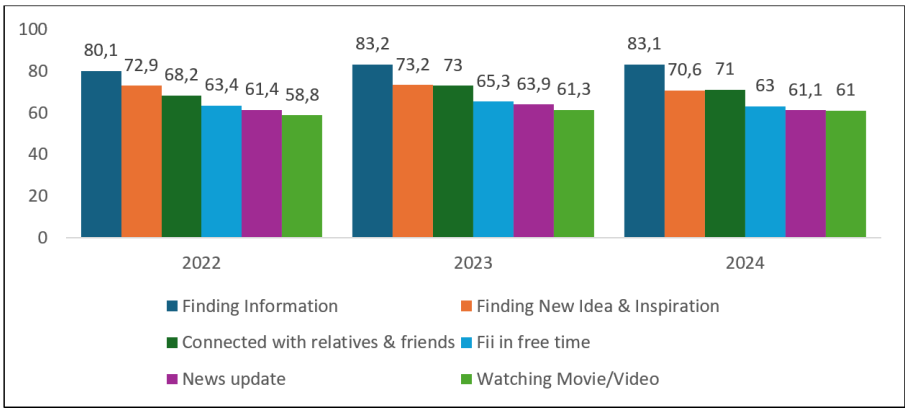

Figure 2. The reason behind Internet usage in Indonesia
Source: Indonesia Digital Report 2021-2024

As can be observed, from 2022 to 2024, Indonesians will use the internet primarily for the following six reasons: 83% of people look for information online. Next, 73% of respondents cite finding fresh inspiration and ideas; 73% say connecting with friends and family; 65.3% say using the internet to pass the time; 63.9% say keeping up with news and current affairs; and 61.3% say watching videos, television shows, and movies.

Since 2015, as stated in the National Tourism Development Master Plan (*RIPPARNAS* – 2011), Indonesia has designated Lake Toba, North of Sumatra, as one of its top five out of ten super-priority destinations, recognizing the growth of technology applications in the tourism industry with an eye toward sustainability. In light of these circumstances, the local government is working to develop the necessary infrastructure to enable visitors to reap the benefits of using digital technology for smart tourism.

Table 1. Indonesia New Top Destination

No	Destination	Province
1	Borobudur	Central Java
2	Labuan Bajo	East Nusa Tenggara
3	Bromo Tengger Semeru	East Java
4	Kepulauan Seribu	Jakarta
5	Danau Toba	North Sumatera
6	Wakatobi	North Sulawesi
7	Tanjung Lesung	Banten
8	Morotai	North Maluku
9	Mandalika	Lombok
10	Tanjung Kelayang	Bangka Belitung

Source: Ministry of Tourism and Creative Economy, 2017

Several previous studies have explored the connection between technological innovation and tourism sustainability. For example, Chakraborty (2024) highlighted the potential of digital transformation to support tourism sustainability, indicating that the integration of digital technologies can drive sustainable practices in tourism management. Similarly, Jha (2024) also noted the growing importance of technological innovations in enhancing the sustainability of the tourism industry, particularly in terms of improving resource utilization and visitor engagement. However, both studies mainly focused on general technological advancements without delving

deeply into specific technologies, such as the impact of the *Internet of Things* (*IoT*) or *Artificial Intelligence* (*AI*) on shaping tourist experiences. This research addresses these gaps by focusing specifically on how digital technologies, including *IoT*, *AI*, and data analytics, impact smart tourism in Indonesia, particularly at key destinations like Lake Toba, and their role in enhancing visitor satisfaction and promoting sustainability.

By identifying significance and evaluating the extent to which these indicators accurately reflect the impact of smart tourism technology in fostering revisit intention and recommendation, this research significantly advances the fields of sustainable tourism and digital technology transformation. Based on actual data, this research helped to design memorable digital experiences and employed them to generate tourist satisfaction. The objective of this research is to explore the role of digital technologies in fostering sustainable tourism in Indonesia, with a particular focus on smart tourism and its impact on visitor satisfaction and revisitation intentions. The research benefits include providing recommendations for policy-makers and tourism operators on how to leverage technology for enhancing tourism sustainability.

RESEARCH METHODS

The objective of this study is to characterize the degree to which *smart tourism* technology influences the revisit intention and recommendation to sustain tourism in Lake Toba. According to some definitions, a study that falls under this category must aim to describe an existing phenomenon (Ghozali, 2008; 2016). According to other definitions, however, a descriptive research study collects, examines, organizes, and tabulates data to explain a current condition in terms of cause and effect. Based on the aforementioned definitions, this research falls under the category of descriptive research because it attempts to expand an existing phenomenon by collecting information and examining the relationship between its cause and effect.

This research was conducted in one of Indonesia's *Super Priority Destination* areas, Lake Toba, North of *Sumatera*, using a scientific approach or method. For the proof and analysis of the hypothesis built through the synthesis of previous research, data from several samples are needed, which will be tested using statistics. Therefore, the quantitative method is used in this research, and the data will be collected through the distribution of questionnaires. The object of research in this study is tourists who have visited Lake Toba, North of *Sumatera*. Data analysis will be conducted using *Structural Equation Modeling* (SEM) with *Smart PLS 3.0*.

Research Sample & Sample Size

The sample in this research consists of domestic tourists who are at least 17 years old and who have repeatedly visited Lake Toba, North of *Sumatera*, or at least once with their last visit occurring after January 1, 2024. This study included five variables: *smart tourism technology*, *digital experience*, *memorable tourism experience*, *revisit*, *recommendation*, and *smart tourism technology*. The *smart tourism technology* variable is represented by four indicators, the *digital experience* by one indicator, the *memorable tourism experience* variable by two, one indicator for the *revisit* variable, and one indicator for the *recommendation* variable, totaling nine indicators with the following twenty-eight measurement items. This adds up to 140 samples when multiplied by five.

According to Hair et al. (2021), the sample size satisfies the established reference standards when it is at least five times the maximum number of latent construct indicators. With 155 participants, this study meets the research requirements.

Sampling Technique

The purposive sampling technique is used in this study. Purposive sampling is a technique to obtain the desired information from a sample that has been determined by specific criteria (Ghozali, I., 2016).

Research Instruments

The research instruments used to obtain primary data were questionnaires, interviews, and focus group discussions. Based on the results of literature reviews, the researcher developed a questionnaire consisting of structured questions using a *Likert scale* of 1–5.

Validity and Reliability Test

Validity and reliability tests are initially applied to the received data. For measurement models, structural models, and hybrid models, the validity and reliability tests in the context of quantitative research adhere to the PLS-SEM guidelines for validity and reliability.

Data Analysis Technique

The general research variables in this study are latent variables, which are measured indirectly by means of indicators rather than directly. Therefore, *structural equation modeling* (SEM), which uses measurement models, structural models, and hybrid models, will be employed to conduct the relationship analysis. The *Smart-PLS 3* software will be utilized by researchers to perform data analysis.

RESULTS AND DISCUSSION

Data Collection and Analytics

The respondent's characteristics and statistical analysis were derived from 140 visitors who satisfied the study requirements. The demographic characteristics of the sample are shown in Table 2. The sample was mainly males (67.2% or 94) from the age group of 20-30 (69 or 49.3%). Most respondents were university-educated (80.7%) and lived in the Jakarta region (39,3%) and Tangerang region (60.7%). Most respondents have visited at least one time to Lake Toba, North of Sumatera since August 2023.

Table 2. Respondent Characteristic

Characteristic	Total	Percentage
Gender		
a. Male	94	67,2
b. Female	46	32,8
Total	140	100
Respondent Domicile		
a. Jakarta Region	55	39,3
b. Tangerang Region	85	60,7
c. others	-	-
Total	140	100
Age		
a. < 20	5	3,5
b. 20 – 30	33	23,5
c. 30 – 40	69	49,3
d. 40 – 50	22	15,7
e. 50 – 60	11	8
f. > 60	-	-
Total	140	100
Education Background		

Characteristic	Total	Percentage
a. High school educated	27	19,3
b. Undergraduate educated	78	55,7
c. Graduate school educated	35	25
Total	140	100

Source: processed data

Measurement Model

The average is used to measure the variable value's average level and concentration trend based on a formal research sample. The average score for Smart tourism technology, Digital experience, Memorable tourism experience, Revisit, and Recommendation were 5.302, 5.280, 5.328, and 5.282, respectively. Cronbach's α reliability coefficient method was used for reliability analysis. When α coefficient is between 0.6 and 0.8 the reliability is acceptable. The reliability is preferable when the α coefficient is greater than 0.8. All Cronbach's α coefficients were greater than 0.7, showing good reliability for all items as shown in Table 3.

Table 3. Validity and Reliability Analysis.

Variables	Indicator	Mean	Standard Deviation	Standard Loading	T-Value	Composite Reliability	AVE	Cronbach's α	Variables
Smart Tourism Technology	Accessibility	ACC1	5.32	1.246	0.729	61.065	0.892	0.663	0.786
		ACC2	5.27	1.254	0.899	57.807			
		ACC3	5.50	1.297	0.729	59.623			
	Information	INF1	5.57	1.341	0.829	56.914	0.871	0.816	0.826
		INF2	5.50	1.360	0.926	54.650			
		INF3	5.45	1.396	0.808	46.509			
	Interactivity	INT1	5.19	1.237	0.772	59.676	0.828	0.620	0.854
		INT2	5.15	1.189	0.872	61.593			
		INT3	5.30	1.176	0.680	63.995			
	Personalization	PRE1	5.15	1.375	0.758	53.253	0.842	0.639	0.841
		PRE2	5.10	1.227	0.749	59.100			
		PRE3	5.16	1.333	0.831	55.017			
Digital Experience	Impression	DE1	5.22	1.236	0.629	60.065	0.878	0.693	0.806
		DE2	5.17	1.234	0.910	59.507			
		DE3	5.20	1.274	0.689	58.003			
		DE4	5.53	1.321	0.794	53.014			
Memorable Tourism Experience	Value	MTE1	5.50	1.360	0.926	54.650	0.856	0.652	0.819
		MTE2	5.45	1.396	0.808	46.509			
	Happiness	MTE3	5.19	1.237	0.772	59.676	0.860	0.690	0.833
		MTE4	5.15	1.189	0.872	61.593			
Revisit	Satisfaction	REV1	5.30	1.176	0.680	63.995	0.816	0.644	0.862
		REV2	5.15	1.375	0.758	53.253			
		REV3	5.10	1.227	0.749	59.100			

Variables	Indicator	Mean	Standard Deviation	Standard Loading	T-Value	Composite Reliability	AVE	Cronbach's α	Variables
Recommendation	Trust	REC1	5.16	1.333	0.831	55.017	0.868	0.670	0.879
		REC2	5.20	1.274	0.689	58.003			
		REC3	5.16	1.333	0.831	55.017			
		REC4	5.45	1.396	0.808	46.509			

Source: processed data

To reflect the validity and authenticity of the questionnaire data, validity analysis was done for both discriminant validity (DV) and convergent validity (CV). Composite reliability (CR) and average variance extracted (AVE) were incorporated in the CV test. Table 3 indicates that the factor load exceeded the 0.5 standard. Every variable has a decent CR since the CR exceeded the 0.6 standard. The AVE was more than the 0.5 benchmark. Table 4 displays the DV. The findings indicate a noteworthy association ($p < 0.01$) between the constructs. Moreover, based on Heir et al. (2011) the correlation coefficient's absolute value was smaller than the square root of the matching AVE and less than 0.5 (Zhang et al. 2022; Fornell and Larcker, 1981; Chin, 1998; Heir et al., 2011).

Table 4. Discriminant Validity

	1	2	3	4	5
1. STT	0.574				
2. DE	0.381	0.612			
3. MTE	0.082	0.258	0.540		
4. REV	0.338	0.182	0.259	0.568	
5. REC	0.169	0.164	0.245	0.120	0.680
Square root of AVE	0.759	0.775	0.768	0.728	0.820

(1-Smart Tourism Technology, 2-Digital Experience, 3-Memorable Tourism Experience, 4-Revisit, 5-Recommendation)

Source: processed data

Test Structural Model and Hypothesis

Detection Of Possible Collinearity Problems

The researcher must analyze the structural model by making sure that there is no multicollinearity between any study variables, following the evaluation of the measurement model and prior to proceeding with the path analysis of the relationship, which is also the outcome of hypothesis testing. The structural model's evaluation will reveal the research model's level of predictive power and relevance. By examining the VIF score, potential collinearity issues between research variables were found in relation to the structural model between the research components. A possible issue with collinearity between research variables is indicated by a VIF value of 5 (Hair et al., 2021).

Table 5. Collinearity Statistics (VIF)

	VIT
Acc1	2.591
Acc2	2.674

	VIT
Acc3	2.672
Inf1	2.879
Inf2	1.980
In3	1.902
Int1	2.198
Int2	1.995
Int3	2.512
Pre1	2.375
De1	1.865
De2	1.923
De3	1.733
De4	1.801
MTe1	1.779
MTe2	1.879
Mte3	2.814
Mte4	2.907
Rev1	2.150
Rev2	2.761
Rev3	1.709
Rec1	2.114
Rec2	2.613
Rec3	1.897
Rec4	2.988

Source: processed data

Table 5 define the results of the investigation, where displayed of every variables are examined in this study satisfies the condition of being devoid of any possible collinearity issues. Each variable's VIF value does not exceed 3, meaning that there is no indicator-to-indicator collinearity, allowing for continuing usage of the structural model connecting the study variables.

Prediction Power

R Square

The predictive power of this study model will be evaluated by additional assessment. The amount that any exogenous variable contributing to an endogenous variable may explain is known as the R2 value. R2 values of 0.75, 0.50, and 0.25 are regarded as significant, moderate, and weak, respectively. (Hair et al., 2021).

Table 6. R Square

	R Square	R Square Adjusted
Smart Tourism Technology	0.190	0.182
Digital Experience	0.250	0.210
Memorable Tourism Experience	0.056	0.048
Revisit	0.210	0.205
Recommendation	0.354	0.044

Source: processed data

The R2 of the memorable tourism experience has been shown from Table 6 is 0.056. This means that the significance of a memorable tourism experience can be explained by smart tourism technology and digital experience. The diversity of revisit intention can be explained by 21.0% by memorable tourism experience and recommendation can be explained by 35.4% by memorable tourism experience.

f Square

Effect size, or f2, is the next indicator. This number indicates how much the R2 will change if the pertinent variable is removed. The more powerful these variables are in influencing the endogenous variables, the higher the value of f2. Table 7 illustrates the variables with the largest f2 values: Digital experience -> Memorable Tourism Experience, followed by Memorable Tourism Experience -> Revisit. Accordingly, the desire to return and promote anything is significantly influenced by one's level of memorable tourism experience. (Hair et al., 2021).

Table 7. F Square

	β
Smart Tourism Technology-> Digital Experience	0,053
Digital Experience -> Memorable Tourism Experience	0.545
Memorable Tourism Experience -> Revisit	0.345
Memorable Tourism Experience -> Recommendation	0.121

Source: processed data

Q2 value

Next up is Q2's assessment. According to Heir et al., (2021) Predictive relevance of the suggested research model is shown by a Q2 value greater than zero. The thresholds for modest, medium, and substantial predictive importance to the model are represented by the Q2 values with magnitudes of 0.25, and 0.50

Table 8. Q2 value

	Q^2
Smart Tourism Technology	0.150
Digital Experience	0.032
Memorable Tourism Experience	0.055
Revisit	0.280
Recommendation	0.045

Source: processed data

Table 8 - Q2 values are all more than zero, indicating a moderate to significant predictive relevance for this study model. In this instance, the variable predicted by operational risk management is the memorable tourism experience variable, which has the lowest predictive significance.

Model fit

The final indicator is model fit. PLS-SMART3 computes the Standardized root-mean-square residual (SRMR), Chi-Square, and Normed Fit Index (NFI) as indicators of model fit, as indicated in Table 17, despite PLS-SEM's lack of emphasis on model fit analysis. The goal of overall model fit is to assess the general goodness of fit (GOF) between the model and the data.

Table 17 displays the fit indices that indicate a satisfactory fit between the measurement model and the data: Standardized RMR = 0.056 (Standardized RMR < 0.08 is a good fit); Normed Fit Index (NFI) = 0.852 (NFI ≥ 0.8 is fulfilling the model fit); $\chi 2$ = 228.566 (the less the $\chi 2$ value the better). As a result, the research model evaluation satisfies every requirement needed to ascertain the validity, reliability, and relevance of each construct as well as the predictive capacity of the suggested model.

Table 9. Model Fit Summary

	Saturated Model
SRMR	0.065
Chi-Square	228.566
NFI	0.852

Source: processed data

Hypothesis Testing

All research hypotheses are supported by empirical data, according to the results of hypothesis testing shown in Table 10. The Smart Tourism Technology positively impact on Digital Experience, Digital Experience has a very positive impact on the Memorable Tourism Experience. The Memorable Tourism Experience positively impact on Revisit and Recommendation. Revisit and Recommendation is positively influenced by the Memorable Tourism Experience.

Table 10. Hypothesis Testing

No	Hypothesis	Estimates	T Statistics	P values	Description	Conclusion
1	STT -> DE	0.280	4.687	0.000	Significant	Supported
2	DE -> MTE	0.269	8.785	0.000	Significant	Supported
3	MTE -> REV	0.227	4.404	0.000	Significant	Supported
4	MTE -> REC	0.224	4.135	0.000	Significant	Supported

Source: processed data

According to Table 10, the test findings indicate that there is a mere 0.227 and 0.224 coefficients for loading operational risk management directly to revisit intention and recommend, respectively, as compared to loading it directly to intention to load.

The results of the study show that Smart Tourism Technology positively impact in creating Memorable Tourism Experience through Digital Experience. Using technology to increase the new and unique experience is something that increase tourist satisfaction. This is what gets positive appreciation by tourists who visit the Lake Toba because the certainty of the digital and technology has support during tourists' visits. This condition is also caused by the local government responsibilities in order to support the Lake Toba as selected super priority destination.

A memorable travel experience has a significant positive impact on the intention to visit again. Tourists who visit feel satisfied when doing various kinds of activities Lake Toba. Tourists feel that activities in Lake Toba with various kinds of tourist attractions have provided a memorable experience while tourists are in the village, in line with previous research (Kim et al., 2015; Ye et al., 2021). The existence of tourist attractions, the services provided, the diversity of tourist attractions, the rural atmosphere, the hospitality of the village community, local wisdom and the charm of the tourist village can provide a memorable tourist experience that will encourage tourists to visit again. This is in line with previous research (Torabi et al., 2023; Zhang et al., 2018)

CONCLUSION

Smart Tourism Technology and *Digital Experience* have a significant positive impact on the *memorable tourism experience* of tourists who visit tourist villages. A *memorable tourism experience* has a significant positive impact on the *revisit* and *recommendation* of Lake Toba. The data search in this study was only carried out on tourists who visited Lake Toba, which indeed has interesting natural, cultural, and culinary tourism potential through the use of *smart tourism technology*. This study has not explored information from tourists who visit other destinations that may have uniqueness and distinctiveness different from Lake Toba. Based on the results of the study, it was found that tourists who have repeatedly visited Lake Toba are more attracted by the natural condition of the village, cool atmosphere, hospitality of the village community, culinary offerings, tourist activities, and village culture. For further research, *smart tourism technology* indicators can be associated with culture using other theories, such as the *Theory of Planned Behavior* and *Technology Acceptance Models*.

REFERENCES

Adeola, O., & Evans, O. (2019). Digital tourism: mobile phones, internet and tourism in Africa. Tourism Recreation Research, 44(2), 190–202.

Alonso, A. D., Vu, O. T. K., Nguyen, T. Q., McClelland, R., Nguyen, N. M., Huynh, H. T. N., & Tran, T. D. (2024). Industry 4.0 involvement and knowledge management across industries: A qualitative investigation from an emerging economy. Journal of Business Research, 174, 114538.

Berakon, I., Wibowo, M. G., Nurdany, A., & Aji, H. M. (2023). An expansion of the technology acceptance model applied to the halal tourism sector. Journal of Islamic Marketing, 14(1), 289-316.

Breuer, R., Fanderl, H., Hedwig, M., & Meuer, M. (2020). Service industries can fuel growth by making digital customer experiences a priority.

Chakraborty, P. P. (2024). The Role of Technology in Enhancing Sustainable Tourism Practices: Innovations and Impacts. In Special Interest Trends for Sustainable Tourism(pp. 195-230). IGI Global.

Cheng, X., Xue, T., Yang, B., & Ma, B. (2023). A digital transformation approach in hospitality and tourism research. International Journal of Contemporary Hospitality Management, 35(8), 2944-2967.

Christou, P., Hadjielias, E., Simillidou, A., & Kvasova, O. (2023). The use of intelligent automation as a form of digital transformation in tourism: Towards a hybrid experiential offering. Journal of Business Research, 155, 113415.

Dalkiran, G. B. (2022). The effects of industry 4.0 components on the tourism sector. Logistics 4.0 and Future of Supply Chains, 235-250.

Demir, N., Demircioğlu, P., & Böğrekci, İ. Advancing industry 4.0 with ros: a case study on autonomous mobile robot technological advancements. International Journal of 3D Printing Technologies and Digital Industry, 8 (1), 130-142.

El Mattichi, F., Elabbadi, A., Hmioui, A., & Barhmi, A. (2024). Exploring Sustainability in Tourism Marketing Through Digital and Social Networks: A Literature Review. Promoting Responsible Tourism With Digital Platforms, 213-230.

Ghozali, I. (2008). Model persamaan struktural: konsep dan aplikasi dengan program Amos 16.0. Badan Penerbit Universitas Diponegoro.

Ghozali, Imam. 2016. Desain Penelitian Kuantitatif dan Kualitatif untuk Akuntansi, Bisnis dan Ilmu Sosial. Yoga Pratama, Yogyakarta.

Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). Partial least squares structural equation modeling (PLS-SEM) using R: A workbook (p. 197). Springer Nature.

Hamida, H. B. (2024). Cross-domain dynamics: How geopolitical and climate policy uncertainties shape tourism patterns in the United States. Tourism Economics, 13548166241233618.

Jha, M. (2024). The role of digital transformation in business and its impact on sustainable development goals (sdgs) in the tourism sector. SDGs Studies Review, 5, e010-e010.

Kuzman, B., Petkovic, B., & Milovancevic, M. (2024, July). Information and communication technology in tourism. In Tourism International Scientific Conference Vrnjačka Banja-TISC (Vol. 8, No. 1, pp. 75-86).

Lubis, N., & Febrianty, H. F. (2018, May). Internet Influencing Economic Growth: What and How Much? A Case Study of Indonesia Using Time Series Data (2001-2016). In 3rd International Conference of Integrated Intellectual Community (ICONIC).

Mega, Z., & Jubery Marwan. (2022). The role of digital tourism destination in achieving digital tourism destination performance through digital's role as intervening variables. Ijhcm (International Journal of Human Capital Management), 6(1), 24–37.

Mofokeng, T. E. (2021). The impact of online shopping attributes on customer satisfaction and loyalty: Moderating effects of e-commerce experience. Cogent Business & Management, 8(1), 1968206.

No, E., & Kim, J. K. (2015). Comparing the attributes of online tourism information sources. Computers in Human Behavior, 50, 564–575.

Ossorio, M. (2024). Digital Technologies for Sustainable Tourism: The Case of Ecobnb. In Promoting Responsible Tourism With Digital Platforms (pp. 60-71). IGI Global.

Payne, A., & Frow, P. (2004). The role of multichannel integration in customer relationship management. Industrial Marketing Management, 33(6), 527–538.

Piron, M., Wu, J., Fedele, A., & Manzardo, A. (2024). Industry 4.0 and life cycle assessment: Evaluation of the technology applications as an asset for the life cycle inventory. Science of The Total Environment, 916, 170263.

Pine, B. J., & Gilmore, J. H. (2011). The Experience Economy. Harvard Business Review Press.

Rasoolimanesh, S. M., Seyfi, S., Hall, C. M., & Hatamifar, P. (2021). Understanding memorable tourism experiences and behavioural intentions of heritage tourists. Journal of Destination Marketing and Management, 21.

Ratna, S., Saide, S., Putri, A. M., Indrajit, R. E., & Muwardi, D. (2024). Digital transformation in tourism and hospitality industry: a literature review of blockchain, financial technology, and knowledge management. EuroMed Journal of Business, 19(1), 84-112.

Ratten, V., Braga, V., Álvarez-García, J., & de la Cruz del Rio-Rama, M. (2019). Tourism Innovation: Technology, Sustainability and Creativity. Taylor & Francis.

Susanto, E., Hendrayati, H., Rahtomo, R. W., & Prawira, M. F. A. (2022). Adoption of digital payments for travelers at tourism destinations. African Journal of Hospitality, Tourism and Leisure, 11(2), 741-753.

Torabi, Z. A., Shalbafian, A. A., Allam, Z., Ghaderi, Z., Murgante, B., & Khavarian-Garmsir, A. R. (2022). Enhancing memorable experiences, tourist satisfaction, and revisit intention through smart tourism technologies. Sustainability, 14 (5), 2721.

Torabi, Z. A., Pourtaheri, M., Hall, C. M., Sharifi, A., & Javidi, F. (2023). Smart Tourism Technologies, Revisit Intention, and Word-of-Mouth in Emerging and Smart Rural Destinations. Sustainability (Switzerland), 15(14).

Tung, V. W. S., & Ritchie, J. R. B. (2011). Exploring the essence of memorable tourism experiences. Annals of Tourism Research, 38(4), 1367–1386.

Venkatesh, V., & Davis, F. D. (2000). Theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. Management Science, 46(2), 186–204.

Wang, D., Park, S., & Fesenmaier, D. R. (2012). The Role of Smartphones in Mediating the Touristic Experience. Journal of Travel Research, 51(4), 371–387.

Yan, J., & Liu, Q. (2024). The Utility of "Industry 4.0" for Economic Development and Industrial Structure Change in Germany. Applied Mathematics and Nonlinear Sciences, 9(1).

Yi, S., Lee, Y. W., Connerton, T., & Park, C. Y. (2021). Should I stay or should I go? Visit frequency as fitness centre retention strategy. Managing Sport and Leisure, 26(4), 268–286.

Zeng, B., & Gerritsen, R. (2014). What do we know about social media in tourism? A review. Tourism Management Perspectives, 10, 27-36

Zhang, Y., Sotiriadis, M., & Shen, S. (2022). Investigating the impact of smart tourism technologies on tourists' experiences. Sustainability, 14(5), 3048.

Zhang,Y., Szabó,Z. (2024). Digital Transformation in the Tourism Industry: A Comparative Literature Review.Advances in Economics, Management and Political Sciences,72,178-191

Zolotovskiy, V. A., & Moiseeva, V. U. (2021). Smart Technologies in Tourism: To Understanding of the Sphere and Actual Tasks of Effective Use. In E. G. Popkova & B. S. Sergi (Eds.), "Smart Technologies" for Society, State and Economy (pp. 753–760). Springer International Publishing.