

# Exploring e-Tourism : Technology and Human Factors

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## ABSTRACT

### Article Info

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Information services are very important to attract tourists to come to a certain country or location which can be provided through e-Tourism application. This application is for people who will find out more about the location they will visit. People need to know the location, the length of the trip or the price details for each item they will buy during the trip. Due to this, many countries have developed their respective e-Tourism application. This paper presented the lesson-learn of e-Tourism development from several countries to understand main components of e-Tourism design. We found four main modules of e-Tourism application including booking services, recommender services, tour plan services and information center services. The human factors of application intention usage are influenced by perceived ease of use, perceived usefulness, experience, information quality, domain specific innovativeness. Moreover, we also obtained the factors influenced tourism tour booking intention, including advice of travel agent, e-commerce feature, access time, possibility of comparison, information obtained from destinations, social media and opinions & perception target.

**Keywords:** E-Tourism, Human Factors, Technology Model

## I. INTRODUCTION

Plans to travel for business or pleasure are usually carried out by people today with the help of internet technology. People make payments, confirm things and learn the location of their travel destination through applications or web connected to the internet. By planning at the beginning of the trip, it makes people more comfortable to travel and can estimate the time and cost that will be spent [1]–[3].

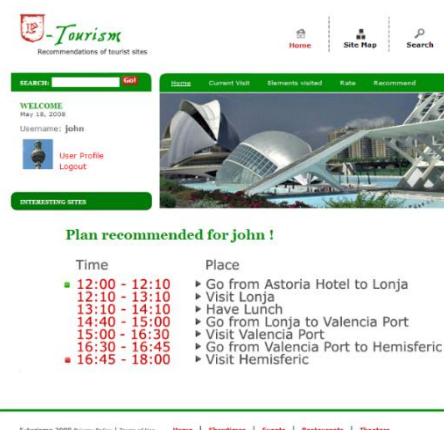


Figure 1: e-Tourism application example [1].

The increasing number of people who are very detailed in planning trips causes companies or governments to provide an information channel that can help make travel planning easier. With good planning, people will be more comfortable visiting a location for the first time [1], [4].

In the tourism sector, information services are very important to attract tourists to come to a certain country or location. People need to know the location, the length of the trip or the price details for each item they will buy during the trip. Due to this, many countries have developed their respective e-Tourism application [1], [5]–[10].

e-Tourism is a web application that provides information and generates recommendations about a tour in a particular country or region. This application is for people who will find out more about the location they will visit. e-Tourism usually provides fairly complete information, including maps, answers to questions, pictures, videos, and other complete information. In addition, e-Tourism provides recommendations for services, lodging, or other things needed according to application user personalization [1], [11], [12].

This paper attempted to present the lesson-learn of e-Tourism development from several countries to understand main components of e-Tourism design.

## II. METHODOLOGY

This study methodology is consisted of six phases that are adapted PRISMA method (a method for literature study) [13]–[15]. The name of every research phase is elaborated in Figure below.

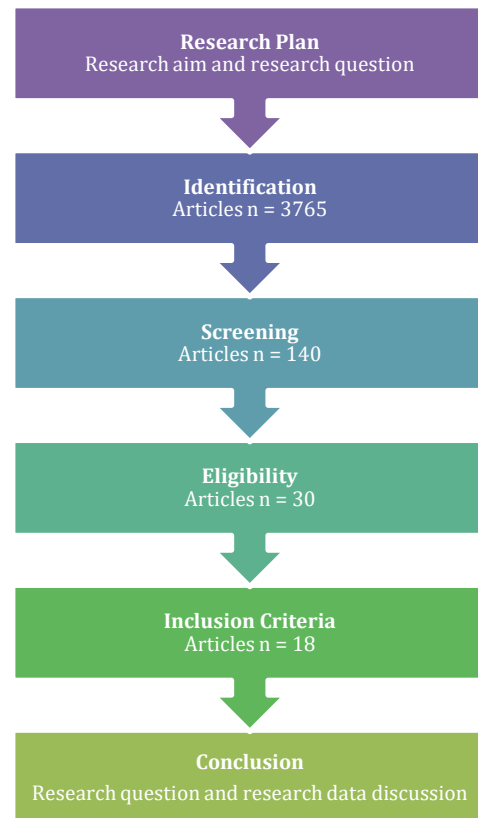


Figure 2: Research methodology [1].

In the first phase, we define research aim and research question of this study. We explored articles from Science Direct, Google Scholar, IEEE Xplore and ProQuest for obtained research data through identification phase until inclusion criteria phase. After we gathered final research data, we discussed the research data based on research question to get the conclusions.

### A. Research Questions

We determined the research questions of this research as guidance to complete literature review. The detail of research questions is mentioned as follow:

RQ1: What is the human factors issues related to e-Tourism?

RQ2: What is trend of technology in developing e-Tourism application?

## B. Dataset

This dataset is obtained after conducting identification phase, screening phase, eligibility phase and inclusion criteria phase. We gathered as many eighteen articles which is elaborated below.

TABLE I  
DATA COLLECTION N=18

Authors	Publication	Source
(Sebastia et al. 2009)	International Journal on Artificial Intelligence Tools	[1]
(Borrero, Sanjuán, and González 2015)	Sistemas & Telemática	[16]
(Kulakov et al. 2016)	Conference of Open Innovations Association and Seminar on Information Security and Protection of Information Technology (FRUCT-ISPIT)	[17]
(Alghamdi, Zhu, and El Saddik 2016)	IEEE International Symposium on Multimedia (ISM)	[4]
(Logesh and Subramaniaswamy 2019)	Cognitive Informatics and Soft Computing	[18]
(O Artemenko, Kunanets, and Pasichnyk 2017)	ECONTECHMOD: An International Quarterly Journal on Economics of Technology and Modelling Processes	[19]

Authors	Publication	Source
(Wali et al. 2019)	International Journal of Scientific and Technology Research	[20]
(Olga Artemenko, Pasichnyk, and Kunanec 2019)	IEEE International Conference on Computer Sciences and Information Technologies (CSIT)	[21]
(Su et al. 2019)	IEEE Transactions on Industrial Informatics	[22]
(Mitsche and Strielkowski 2016)	European Journal of Tourism, Hospitality and Recreation	[23]
(Angele et al. 2020)	Handbook of e-Tourism	[24]
(Olga Artemenko et al. 2019)	IEEE International Conference on Computer Sciences and Information Technologies (CSIT)	[25]
(Kolahkaj et al. 2020)	Electronic Commerce Research and Applications	[26]
(Chen and Tsai 2019)	Future Generation Computer Systems	[27]
(Lee, Lee, and Ham 2013)	Information and Communication Technologies in Tourism	[28]

Authors	Publication	Source
(Sanjaya 2016)	International Conference on Information Management and Technology (ICIMTech)	[29]
(Wibasuri et al. 2018)	International Journal of Engineering & Technology	[30]
(Meileni, Oktapriandi, and Apriyanty 2019)	JPhCS	[5]

### III. RESULTS AND DISCUSSION

This section presented and discussed the research data based on research questions. The result of discussion is delivered as conclusion.

#### A. Human Factors

Lee, Lee, and Ham (2013) expressed that there is role presence of smartphone applications and touristic experience to travel satisfaction feelings [28]. Sanjaya (2016) found that the availability of advice of travel agent, information obtained from destinations, opinions & perception target, e-commerce feature, access time, possibility of comparison, and social media influenced to people conducting travel through e-tourism [29].

Based on research by Wibasuri et al. (2018), the factors of perceived ease of use, domain specific innovativeness, perceived usefulness and experience significantly influence attitude to use e-Tourism application [30].

The research study of Wibasuri et al. (2018) is supported by Chen and Tsai (2019). The research by Chen and Tsai (2019) found that the factors of perceived ease of use, perceived usefulness and

information quality is significantly influenced to e-Tourism application usage intention [27].

TABLE II  
ARTICLES OF HUMAN FACTORS ISSUES IN E-TOURISM  
N=4

Year	Title	Author	Source
2013	The effects of presence induced by smartphone applications on tourism: Application to cultural heritage attractions.	Lee, K., Lee, H.R. and Ham, S.	[28]
2016	Influential factors on travel decision in e-tourism	Sanjaya, L.S.	[29]
2018	Determinants of Attitude Tourist in E-Tourism Usage	Wibasuri, A., Bangsawan, S., MS, M. and Ribhan, R	[30]
2019	Determinants of behavioural intention to use the Personalized Location-based Mobile Tourism Application: An empirical study by integrating TAM with ISSM.	Chen, C.C. and Tsai, J.L.	[27]

#### B. Technology

Sebastia et al. (2009) developed application of e-Tourism that provides a planning module schedules and a recommender tourism destination based on user preferences [1]. Moreover, Alghamdi et al (2016) proposed an algorithm namely Balanced Orienteering Problem to design trips for the mobile application of the e-tourism [4].

Mitsche et al. (2016) suggested application of e-Tourism must be a narrative, dynamic and

interactive [23]. Wali et al. (2019) designed a Tourism E-Guide Application and Measure to present information of tourism in Sabang City, Indonesia [20]. Borrero et al. (2015) designed e-tourism application for the Mosquera House Museum based on gamification techniques [16].

Kulakov et al. (2016) recommended the module of e-Tourism application based on smart service criteria [17]. Moreover, smart service criteria will be service excellent of business or commerce of tourism. To support this, Angele et al. (2020) presented a study of methods and technologies to support a commerce in e-Tourism [24].

Artemenko et al. (2017) presented a recommender systems for e-Tourism applications [19]. Artemenko et al. (2019) presented a study of e-tourism mobile location-based recommender systems in real time [25]. Su et al. (2019) proposed a novel user-centred recommendation strategy based on big data for recommender systems in e-Tourism [22]. Logesh and Subramaniaswamy (2019) presented the design of personalized recommendation for e-Tourism applications [18].

Artemenko et al. (2019) proposed e-tourism recommender systems using location-based with context evaluation [21]. Kolahkaj et al. (2020) developed a tourism package recommendation using hybrid context-aware approach with asymmetric similarity measurement and sequential pattern mining [26].

TABLE III

ARTICLES OF HUMAN FACTORS ISSUES IN E-TOURISM  
N=14

Year	Title	Authors	Source
2020	Semantic Web Empowered E-Tourism	(Angele et al. 2020)	[24]

Year	Title	Authors	Source
2009	e-Tourism: a tourist recommendation and planning application	(Sebastia et al. 2009)	[1]
2015	Gamification techniques in tourism, application test, Casa Mosquera Museum	(Borrero, Sanjuán, and González 2015)	[16]
2016	Towards an understanding of smart service: The case study for cultural heritage e-Tourism	(Kulakov et al. 2016)	[17]
2019	E-tourism: mobile dynamic trip planner	(Alghamdi, Zhu, and El Saddik 2016)	[4]
2019	Exploring hybrid recommender systems for personalized travel applications	(Logesh and Subramaniaswamy 2019)	[18]
2019	E-tourism application in South Sumatera Province	(Meileni, Oktapriandi, and Aprianty 2019)	[5]
2017	E-tourism recommender systems: a survey and development perspectives	(O Artemenko, Kunanets, and Pasichnyk 2017)	[19]

Year	Title	Authors	Source
2019	Development of an Android-Based Tourism Guide	(Wali et al. 2019)	[20]
2019	E-tourism mobile location-based hybrid recommender system with context evaluation	(Olga Artemenko, Pasichnyk, and Kunanec 2019)	[21]
2019	An edge intelligence empowered recommender system enabling cultural heritage applications	(Su et al. 2019)	[22]
2016	Tourism e-services and Jewish heritage: a case study of Prague	(Mitsche and Strielkowski 2016)	[23]
2019	Using context analysis for providing real time recommendations in e-tourism mobile location-based recommender systems	(Olga Artemenko et al. 2019)	[25]
2020	A hybrid context-aware approach for e-tourism package recommendation based on asymmetric similarity measurement and sequential pattern mining	(Kolahkaj et al. 2020)	[26]

### C. Discussion

We have obtained the eighteen research data for this study. The data is gathered from research articles published in 2009 until 2020. Based on the data, the trend of e-Tourism research in year of 2019 as depicted in Figure below.

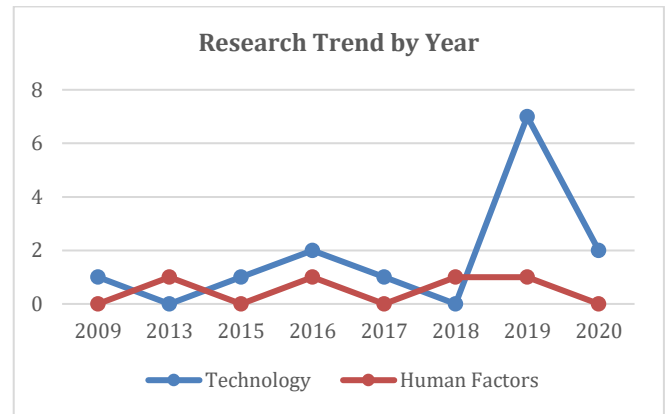


Figure 3: Research trend of e-Tourism

Moreover, we also attempted to categorize research data into its topic to determine of e-Tourism application modules. The result of data classification is presented in Table below.

TABLE IV  
DATA CLASSIFICATION RESULT

Category	Source
Tour plan, recommender system	[1]
Tour plan, Information centre	[16]
Information centre	[17]
Tour plan, Information centre	[4]
Recommender system	[18]
Information centre	[5]
Recommender system	[19]
Information centre	[20]
Recommender system	[21]
Recommender system	[22]
Information centre	[23]
Online booking	[24]
Recommender system	[25]
Recommender system	[26]

Based on literature review regarding technology used in application of e-Tourism, we found four main modules of application, which is depicted in Figure below.



Figure 4: Conceptual technology model of e-Tourism application

Moreover, the human factors of e-Tourism also must be identified. Sanjaya (2016) found that the availability of advice of travel agent, information obtained from destinations, opinions & perception target, e-commerce feature, access time, possibility of comparison, and social media influenced to people conducting travel through e-tourism [29]. Moreover, Wibasuri et al. (2018), the factors of perceived ease of use, domain specific innovativeness, perceived usefulness and experience significantly influence attitude to use e-Tourism application [30].

The research study of Wibasuri et al. (2018) is supported by Chen and Tsai (2019). The research by Chen and Tsai (2019) found that the factors of perceived ease of use, perceived usefulness and information quality is significantly influenced to e-Tourism application usage intention [27]. Based on this research, we can conclude human factors for e-tourism application usage and tourism booking intention, which is depicted in Figure below.

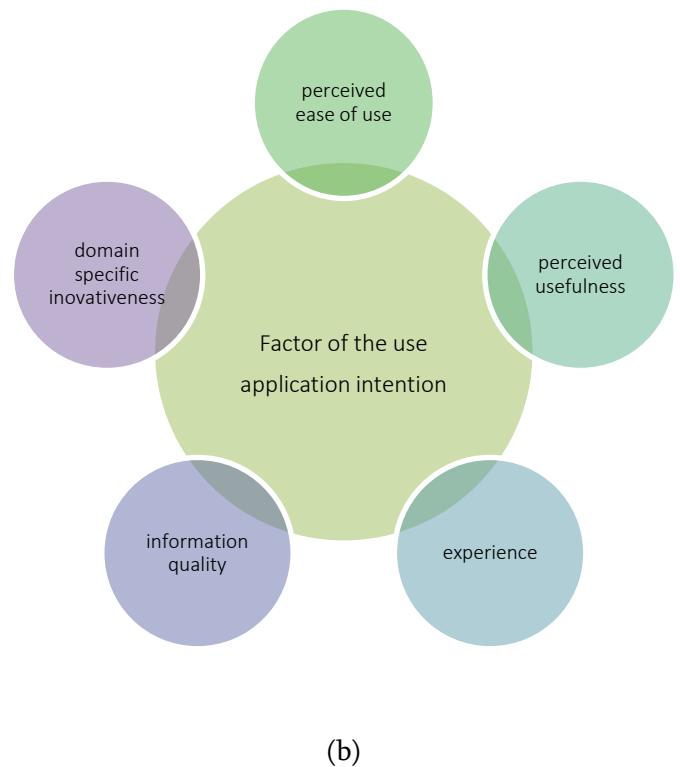
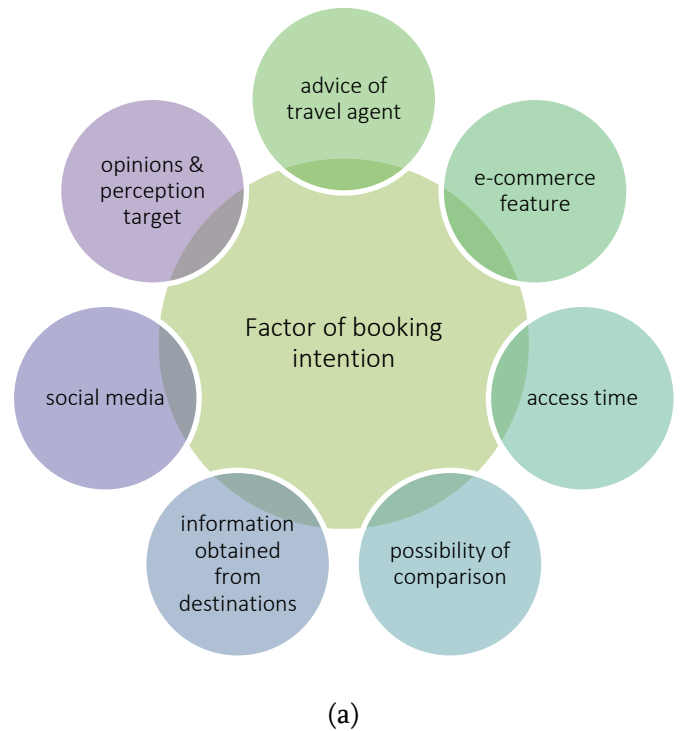


Figure 5: Human factors of e-Tourism application: (a) factor of booking intention (b) Factor of the use application intention

#### IV. CONCLUSION

This paper presented the lesson-learn of e-Tourism development from several countries to understand main components of e-Tourism design. The conclusion of this research is divided into three statements as follows:

1. We found four main modules of e-Tourism application including booking services, recommender services, tour plan services and information centre services.
2. The human factors of application intention usage are influenced by perceived ease of use, perceived usefulness, experience, information quality, domain specific innovativeness.
3. We also obtained the factors influenced tourism tour booking intention, including advice of travel agent, e-commerce feature, access time, possibility of comparison, information obtained from destinations, social media and opinions & perception target.

#### V. REFERENCES

- [1] L. Sebastia, I. Garcia, E. Onaindia, and C. Guzman, "e-Tourism: a tourist recommendation and planning application," *Int. J. Artif. Intell. Tools*, vol. 18, no. 05, pp. 717–738, 2009.
- [2] J. Sihite and A. Nugroho, "Exploring the Indonesian Tourism Destination via Indonesia. Travel@ indtravel," in *2nd International Conference on Tourism, Gastronomy, and Tourist Destination (ICTGTD 2018)*, 2018.
- [3] N. Ani, H. Noprisson, and N. M. Ali, "Measuring usability and purchase intention for online travel booking: A case study," *Int. Rev. Appl. Sci. Eng.*, vol. 10, no. 2, pp. 165–171, 2019.
- [4] H. Alghamdi, S. Zhu, and A. El Saddik, "E-tourism: mobile dynamic trip planner," in *2016 IEEE International Symposium on Multimedia (ISM)*, 2016, pp. 185–188.
- [5] H. Meileni, S. Oktapriandi, and D. Apriyanty, "E-tourism application in South Sumatera Province," *JPhCS*, vol. 1167, no. 1, p. 12068, 2019.
- [6] E. A. A. Mohamed and S. Hussein, "A Proposed Mobile Application for the Tourism Sector in Egypt," in *The Eighth International Conference on ICT in Our Lives*, 2018, p. 147.
- [7] N. W. Masri, J.-J. You, A. Ruangkanjanases, S.-C. Chen, and C.-I. Pan, "Assessing the effects of information system quality and relationship quality on continuance intention in e-tourism," *Int. J. Environ. Res. Public Health*, vol. 17, no. 1, p. 174, 2020.
- [8] C. Halkiopoulos, H. Antonopoulou, D. Papadopoulou, I. Giannoukou, and E. Gkintoni, "Online reservation systems in e-Business: Analyzing decision making in e-Tourism," 2020.
- [9] J. Tchamy, J. Ateba, B. C. M. Koubikat, and I. T. Tchamy, "E-tourism in developing and underdeveloped countries: Case of Cameroon," *Front. Manag. Bus.*, vol. 1, no. 1, pp. 7–15, 2020.
- [10] V. Sivakumar, P. R. Saranya, S. Leelapriyadharsini, and A. Iyappan, "Impact of social media on e-tourism: a critical analysis of determinants of decision making.," *J. Tour. Hosp. Culin. Arts*, vol. 12, no. 1, pp. 92–98, 2020.
- [11] V. Kazandzhieva and H. Santana, "E-tourism: Definition, development and conceptual framework," *Turiz. međunarodni Znan. časopis*, vol. 67, no. 4, pp. 332–350, 2019.
- [12] T. D. Vila, E. A. González, N. Araújo Vila, and J. A. Fraiz Brea, "Indicators of Website Features in the User Experience of E-Tourism Search and Metasearch Engines," *J. Theor. Appl. Electron. Commer. Res.*, vol. 16, no. 1, pp. 18–36.
- [13] A. Liberati *et al.*, "The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration," *J. Clin. Epidemiol.*, vol. 62, no. 10, pp. e1-34, 2009.
- [14] D. Moher, A. Liberati, J. Tetzlaff, and D. G. Altman, "Systematic Reviews and Meta-Analyses: The PRISMA Statement," *Annu. Intern. Med.*, vol. 151, no. 4, pp. 264–269, 2009.
- [15] R. Mohamed, M. Ghazali, and M. A. Samsudin, "A Systematic Review on Mathematical Language Learning Using PRISMA in Scopus Database," *Eurasia J. Math. Sci. Technol. Educ.*, vol. 16, no. 8, p. em1868, 2020.
- [16] F. Borrero, P. Sanjuán, and G. R. González, "Gamification techniques in tourism, application test, Casa Mosquera Museum," *Sist. Telemática*,



- vol. 13, no. 33, pp. 63–76, 2015.
- [17] K. A. Kulakov, O. B. Petřina, D. G. Korzun, and A. G. Varfolomeyev, “Towards an understanding of smart service: The case study for cultural heritage e-Tourism,” in *2016 18th Conference of Open Innovations Association and Seminar on Information Security and Protection of Information Technology (FRUCT-ISPIT)*, 2016, pp. 145–152.
- [18] R. Logesh and V. Subramaniaswamy, “Exploring hybrid recommender systems for personalized travel applications,” in *Cognitive informatics and soft computing*, Springer, 2019, pp. 535–544.
- [19] O. Artemenko, O. Kunanets, and V. Pasichnyk, “E-tourism recommender systems: a survey and development perspectives,” *ECONTECHMOD An Int. Q. J. Econ. Technol. Model. Process.*, vol. 6, 2017.
- [20] M. Wali, R. Akbar, T. Iqbal, and F. P. Al-Bahri, “Development Of An Android-Based Tourism Guide (A Case Study: Sabang City, Indonesia),” *Int. J. Sci. Technol. Res.*, vol. 8, no. 11, pp. 887–893, 2019.
- [21] O. Artemenko, V. Pasichnyk, and N. Kunanec, “E-tourism mobile location-based hybrid recommender system with context evaluation,” in *2019 IEEE 14th International Conference on Computer Sciences and Information Technologies (CSIT)*, 2019, vol. 2, pp. 114–118.
- [22] X. Su, G. Sperli, V. Moscato, A. Picariello, C. Esposito, and C. Choi, “An edge intelligence empowered recommender system enabling cultural heritage applications,” *IEEE Trans. Ind. Informatics*, vol. 15, no. 7, pp. 4266–4275, 2019.
- [23] N. Mitsche and W. Strielkowski, “Tourism e-services and Jewish heritage: a case study of Prague,” *Eur. J. Tour. Hosp. Recreat.*, vol. 7, no. 3, pp. 203–211, 2016.
- [24] K. Angele *et al.*, “Semantic Web Empowered E-Tourism,” *Handb. e-Tourism*, pp. 1–46, 2020.
- [25] O. Artemenko, V. Pasichnyk, N. Kunanec, and D. Tabachyshyn, “Using context analysis for providing real time recommendations in e-tourism mobile location-based recommender systems,” in *2019 IEEE 14th International Conference on Computer Sciences and Information Technologies (CSIT)*, 2019, vol. 3, pp. 166–169.
- [26] M. Kolahkaj, A. Harounabadi, A. Nikravanshalmani, and R. Chinipardaz, “A hybrid context-aware approach for e-tourism package recommendation based on asymmetric similarity measurement and sequential pattern mining,” *Electron. Commer. Res. Appl.*, vol. 42, p. 100978, 2020.
- [27] C.-C. Chen and J.-L. Tsai, “Determinants of behavioral intention to use the Personalized Location-based Mobile Tourism Application: An empirical study by integrating TAM with ISSM,” *Futur. Gener. Comput. Syst.*, vol. 96, pp. 628–638, 2019.
- [28] K. Lee, H. R. Lee, and S. Ham, “The effects of presence induced by smartphone applications on tourism: Application to cultural heritage attractions,” in *Information and communication technologies in tourism 2014*, Springer, 2013, pp. 59–72.
- [29] L. S. Sanjaya, “Influential factors on travel decision in e-tourism,” in *2016 International Conference on Information Management and Technology (ICIMTech)*, 2016, pp. 272–276.
- [30] A. Wibasuri, S. Bangsawan, M. MS, and R. Ribhan, “Determinants of Attitude Tourist in E-Tourism Usage,” *Int. J. Eng. Technol.*, vol. 7, no. 4, pp. 6044–6050, 2018.

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