Stakeholders Perception of Smart Tourism Technology for Tourism Destination

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Abstract
Smart tourism has become the importance component in tourism development. Technology attributes that suitable for tourism destination need to be highlighted. This study explores the knowledge and attitude of tourists towards smart tourism attributes. This preliminary study used an online focus group discussion is made with five panels of tourism stakeholders that representing the local tourist perspectives to discuss the attributes of smart for tourism destinations. The findings highlight the technologies for smart tourism that focus on mobile app, website, QR Code application, physical infrastructure and other requirement also been highlighted. This study can be used as a preliminary understanding on the potential of smart tourism destination. The framework also can give benefits the destination's marketing and tourism stakeholders in planning and developing the smart tourism destination.
Keywords: Smart Tourism, Technology, Stakeholders, Focus Group Discussion.

Introduction
Smart tourism reflects the integration between technology usage and the destination's sustainability (Zamfir & Corbos, 2015). The technology usage is importance as the industry has shifted towards a more technology-friendly industry, especially before the Coronavirus (Covid-19) pandemic, undoubtedly at a slow rate. The tourism destination required to adopt the technology to ensure it can get the competitive advantage and able to compete with the other destinations.
In Malaysia, the concept of smart Tourism has become importance after the National Tourism Policy (NTP) 2020-2030 was launched on 23 December 2020 to ensure the continuity of the country's tourism industry and make Malaysia a preferred tourist destination globally. In this policy, the Transformation Strategies is to embrace 'Smart Tourism'. The introduction of Malaysia Smart Tourism 4.0 initiative launched by Tourism

Malaysia on 5 April 2018 aims to take the industry to the next level by taking advantage of opportunities in the digital age. This highlights the importance of smart tourism in this country. Therefore, the attributes of smart tourism need to identify to ensure the country can go inline towards the adoption of technologies.

The smart tourism concept is very big Otowicz et al (2022) introduced fourteen dimensions mapped in the literature for smart tourism and their levels and the integrative review showed that collaboration, technology, and sustainability is the most research that been highlighted. Smart Tourism is a concept that combines information and communication technologies (ICTs) with tourism to enhance the visitor experience, improve the efficiency of tourism operations, and support sustainable tourism development (Gretzel et al., 2015). The big area of smart tourism is now required further actions . The stakeholder perception towards the technology in smart tourism need to be explored to ensure the tourism destination can take the necessary actions in implementing the technologies.

Based on the matters discussed, this study used the focus group discussion to explore the potential of integrating smart tourism technologies for tourism destinations. The study aims to explore the stakeholder perception on technology for smart tourism destinations. This study findings offer stakeholders' perspectives on their knowledge and experience in smart tourism. The panels are those who are knowledgeable about the tourism industry and experienced in travelling to smart destinations. This study also highlights what smart applications are deemed required for tourism destinations.

Literature Review

The literature in smart tourism is growing. Several systematic review on smart tourism (Otowicz et al., 2022; Ye et al., 2020) highlight the trends related to this study. Ye et al (2020) highlights the themes of technology and tourist behavior, perception, and experience constituted nearly two-fifths of all publications, followed by technology adoption, which reflected that the research emphasis on how smart tourism affects individuals remains a top priority. Meanwhile study by Otowicz et al (2022), the reviews of 14 operational dimensions of smart tourism, namely: collaboration, technology, sustainability, experience, accessibility, knowledge management, innovation management, human capital, marketing, customized services, transparency, safety, governance and mobility. This indicates the various areas of study related to smart Tourism.

The technology in smart tourism varied. Washburn (2010) highlight technology that encompasses hardware, software and network. Derzko (2006) highlights three areas of technology namely a) Back – end that related to Sensors, RFID, NFC, Smart meters, beacons, cloud computing; b) front end that related to smart phones, mobile apps, contexts – aware systems, recommender systems and c) IoT that referring to the communication paradigm. Meanwhile, Guo et al (2014) identify smart Tourism on four core information and communication technologies: IoT, mobile communication, cloud computing, and artificial intelligent technology.

The technology for smart tourism destination is also varied. Buhalis & Amaranggana (2015) that indicates that smart tourism destination of "Bringing smartness into tourism destinations meaning that destinations need to interconnect multiple stakeholders through a dynamic platform mediate by ICT in order to support prompt information exchange regarding tourism activities through machine-to-machine learning algorithm which could enhance their decision-making process." Meanwhile (Gomes et al., 2017) highlighted that the opportunities for a place to become a smart tourist destination are; (a)

information and communication technologies does not require much investment (b) possibility of network of municipalities as a platform for collaboration (c) high usage of internet by tourism companies (d) easy access of internet to tourist (e) rising use of smartphones during trips/vacation (f) rising use of social networks during travels. This indicates the needs or preference by visitors / tourist while traveling.

Finally, on the application related to the smart destination, there were several applications that have been used at smart destination. In the study by (Kashima & Morita, 2017) foreign tourists access Japan Travel portal site by PC, tablet and smart phone, by scanning QR Code, Smart Tourism related Apps can be downloaded. Meanwhile, in the study by (Gomes et al., 2017), the use of technologies and new process management and marketing is used on; (a) Placement of sensors in tourist areas; (b) Marketing actions on social networks; (c) GPS Systems; (d) Relational marketing system; (e) Business intelligence System at destination; (f) Online reservation centres; (g) Mobile applications (app); (h) Virtual assistant in the website; (i) Augmented reality; (j) Online surveys with destination companies; (k) Online surveys with tourists; (l) QR codes; (m) Totens Touchscreen; (n) Wi-Fi with free access in public spaces; (o) Wi-Fi with free access in tourist information centers;(p) Video guides; and (q) Audio guides.

This indicates various application in smart tourism destination. However, further exploration is required to identify the technology that demand by the visitors at the destinations. Therefore, this study focused on exploring the stakeholder's perception on smart Tourism destination in Malaysia.

Methodology

The research design of this study is an exploratory research setting. The focus group discussion is used to obtain data from a purposely selected group of individuals (O.Nyumba et al., 2018) There are four steps employed for focus group discussion: research design, data collection, analysis, and reporting of results (Morgan, 2014)

As part of the interview guide, each participant must fill the consent form to ensure their voluntary participation. They were informed of their right to withdraw or discontinue the participation at any time. Due to the Covid-19 pandemic, a focus group interview was conducted using online interviews via Google Meet. This study used the mini focus group, where the researchers only convene a small group of between two and five participants (Kamberelis & Dimitriadis, 2005).They are made up of individuals with a high level of expertise within the tourism realm (Hague, 2002).

The participants are selected among tourism academics, tour guides and tour operators who have experience in the tourism industry. Reliability of data was established by comparing responses from each participants focus groups. Trustworthiness of inferences was ensured by multiple coding, audit trail and member checking with focus group participants who reviewed the themes for validity. The content analysis is used for data analysis to discuss the attitude and knowledge about smart tourism and sustainable tourism behaviours at a tourism destination.

Findings and Discussions

The Informants of this study are experienced tourists and also stakeholders in the tourism industry. Table 1 highlights the profile of Informants. There are five Informants in this study who represent the stakeholders of the tourism industry. There are two academicians in the tourism industry and three industry players \ participate in the study.

Table 1
Profiles of Informants

Code	Informants	Location
RP1	Event management and tourism educators	Kedah
RP2	Tour Operators	Langkawi
RP3	Tour Operators	Selangor
RP 4	Tourism educators	Selangor
RP5	Tour Guide	Pahang

Smart Tourism Destination
The first part of this finding highlights the attributes of smart tourism destinations. Informants are required to share their knowledge and experience of smart tourism destination. Figure 1 highlights the final theme of smart tourism destination. The main themes are mobile app, website, QR code, and smart tourism destination requirement.
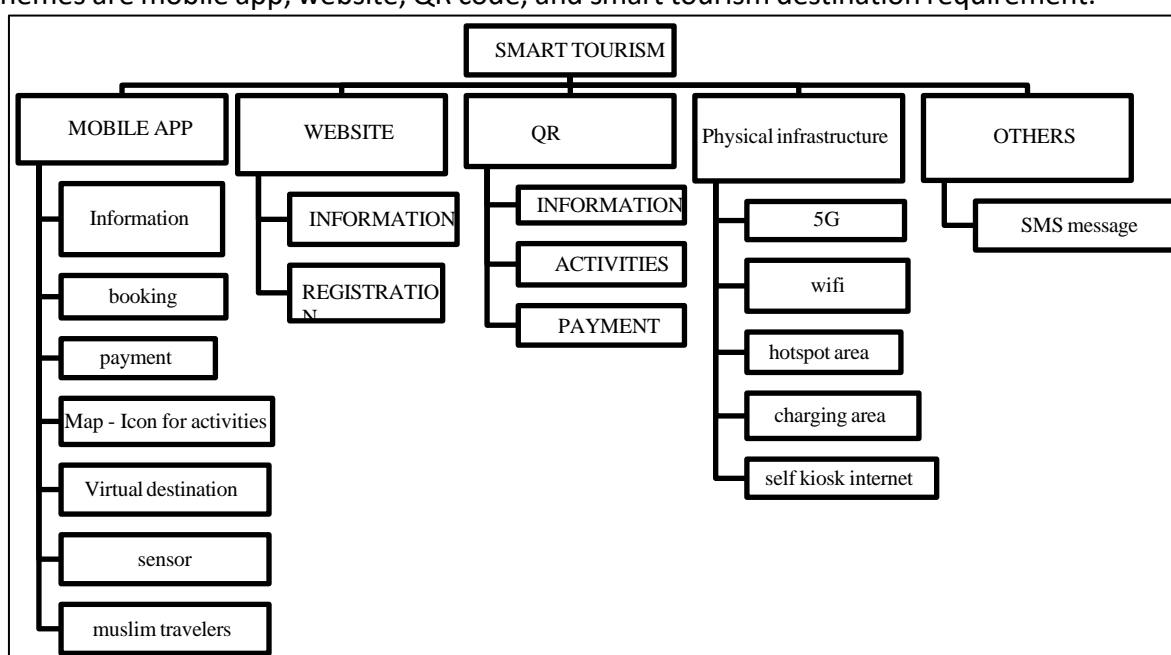

Figure 1: Final theme for smart tourism destination

The first component of smart destination is the mobile application and technologies. Mobile technologies, especially smartphones and their application, significantly influence smart tourism development (Dorcic et al., 2019) The mobile app is synced with sensors installed in tourism destinations, which are used to monitor traffic, energy, air quality, or crowds' density (Gajdošík, 2018). Besides, the role of mobile applications and the app to sync with smart destinations characteristics are also highlighted. The mobile app highlighted in this study focuses on the need in Malaysia
tourism to establish a mobile application for smart tourism destinations (Dorcic et al., 2019). Hence, the proper planning for the mobile application used for smart tourism destinations in Malaysia is vital. Notably, their need for mobile applications is diverse.

> "While travelling, I need something convenient to make a booking, make payment and collect tourism-related information". Meanwhile, Informant 3 stated that "the destination application should include the live map with icons

> for activities such as recycle bin for waste management, mosque, food and other icons related to local food, social activities with local people." (Informant 1)

> "Another mobile application useful, especially during this pandemic period, is the 360 app". Another purpose of the mobile app to track tourist movement and activities during this pandemic. These apps characteristic is important to give a clear view to the tourist of the destination." (Informant 4)

> "For religious mobile apps which targeting Muslims as its user, it would be really helpful for travellers to search for halal food, qiblah, prayer time, and mosque location" (Informant 5)

The second component is the website. According to (Pompurová et al., 2018) the website should include up-to-date, relevant, and trusted information about the destination, calendar of organised events, high-quality and representative photos and videos, as well as webcam images that document the real-life sceneries in the destination at a specific time including the weather. Additionally, the website for smart tourism destination is required to enhance the image of the destinations Mak (2017), track visitors' travel motivation, and apply visit and revisit intention to the destinations (Song et al., 2013). Hence, the destination website should be informative and attractive. Establishing an official smart tourism website is one of the most important tasks of governments for smart tourism cities (Zhang et al., 2018).

> "A SMART destination should have a website that provides detailed information about the destination. The features and interfaces of the website should be created as mobile friendly to enable the tourist to use and view while travelling." (Informant 4)

The third component is the QR code. The aim of using QR codes is to provide the user, tourist or visitor with access to information about the tourist destination and provide an interface between online and offline (da Costa Liberato et al., 2018). This study highlighted that the QR code can give information, book, and make payments. The QR codes often contain data for a locator, identifier or tracker that points to a website or application (Ballina, 2022). Hence, this showed that QR code is required for smart tourism destinations and it should be used together with the destination website and mobile application. This is useful for giving interactive information (virtual tour guide) to the tourist.

> *"The interactive information can be used when tourists scan the QR code using QR codes. It will bring them to the live interactive information given using the place's mascot."* (Informant 2)

> *"QR code should be convenient and can be accessed by the tourist."*

(Informant 4)
The smart destination needs several requirements. The most important is the physical infrastructure focusing on internet connections. In this study, Informants highlight the need to have a 5G connection, Wi-Fi connection and stable hotspot areas. In Korea, the government

in Seoul has approved investment for providing free Wi-Fi that will enable the tourist to communicate better and be exposed to information they need (Pavlović & Čelić, 2018).

> *"All the application is not useful if the smartphone has no batteries. Therefore, the charging areas are also required for SMART destinations."* (Informant 4)

> *There is a necessity of a self-internet kiosk if there is a limitation of connecting internet using a personal phone."* (Informant 3)

This simultaneously highlights the physical infrastructure requirement as needed for smart tourism destinations in Malaysia. The DMO and government need to ensure that the physical infrastructure for smart tourism can be provided at the tourism destination.

> "It is useful if once tourist arrives at the destination, an SMS is sent to the phone giving the detail of information and application that tourist can install or used at the destination". It will help the tourist to prepare to get the necessary information about the places." (Informant 2)

In smart tourism, three main components of mobile application, website, and QR code have been discussed as smart tourism requirements. It also includes the need of having physical infrastructures such as Wi-Fi, 5G and personal hotspots. Finally, the DMO, government and local authorities need to plan concurrently to ensure the connection is built successfully, especially in integrating smart tourism and technology . The smart people, smart experience and smart destination are the best connections between smart and sustainability in tourism destinations.

Conclusion and Implications

The study aims to explore the stakeholder perception on technology for smart tourism destinations. This study highlighted the preliminary analysis that showed the technology of mobile application, website, QR code and physical infrastructure. The mobile application should focus on several functions such as booking, information, payment, interactive map, virtual tour, tracking, and Muslim travellers. The website needs information, registration, and other consideration of up-to-date, trusted, and relevant information. Meanwhile, QR code should be interlinked with mobile applications andwebsites, as it is useful in determining the validity of information, activities and payment. Additionally, the smart destination requires physical infrastructure such as Internet connection, charging areas and self-internet kiosk.

This study has identify several technology and requirements for the smart tourism destination from stakeholder perspectives. The result is the preliminary analysis towards identifying various technology that can be adopted at smart tourism destination. The tourists need to add their knowledge, habit, and personalisation toward smart tourism and technology. The government need to play their role in build the physical infrastructure and provided the incentives for businesses to adopt and build more technology related to smart Tourism. The businesses should focus more on adopting the technology for smart tourism destination. This will increase the interest of Millenia travellers to visit the destinations and provide benefits to them and the destinations.

Future studies should focus on QR code, mobile application and website usage towards smart tourism destinations. The roles of tourist toward smart people and smart experience and smart destinations also need further analysis. Finally, government roles in planning toward smart destinations are also required, especially on policy towards smart and sustainable tourism destinations.

This study contributes to the knowledge of the need for smart tourism destinations. This study also identifies the physical infrastructure needed for smart destinations. This study highlights tourist roles in the usage of smart tourism. Meanwhile, this study also helps the destination management organisation evaluate the destination and create proper planning for the destination. Finally, this study is also beneficial for the government to identify areas that need improvement, especially in providing the physical infrastructure at the tourism destination in Malaysia.

Acknowledgments

References

Ballina, F. J. (2022). Smart business: the element of delay in the future of smart tourism. *Journal of Tourism Futures*. https://doi.org/10.1108/JTF-02-2020-0018

Buhalis, D., & Amaranggana, A. (2015). Smart Tourism Destinations Enhancing Tourism Experience Through Personalisation of Services. *Information and Communication Technologies in Tourism 2015*, *February*, 377–389. https://doi.org/10.1007/978-3-319-14343-9_28

Da Costa Liberato, P. M., Alen-Gonzalez, E., & de Azevedo Liberato, D. F. V. (2018). Digital Technology in a Smart Tourist Destination: The Case of Porto. *Journal of Urban Technology*. https://doi.org/10.1080/10630732.2017.1413228

Derzko, W. (2006). Smart technologies in the new smart economy. *1st Technology Futures Forum (TFF) VTT Valimo (Metallimieh Enkuja 2), Otaniemi, Espoo, Finland Dec.*

Dorcic, J., Komsic, J., & Markovic, S. (2019). Mobile technologies and applications towards smart tourism – state of the art. In *Tourism Review*. https://doi.org/10.1108/TR-07-2017-0121

Gajdosik, T. (2018). Smart Tourism: Concepts and Insights from Central Europe. *Czech Journal of Tourism*. https://doi.org/10.1515/cjot-2018-0002

Gomes, E. L., Gandara, J. M., & Ivars-Baidal, J. A. (2017). Is it important to be a smart tourism destination ? Public managers ' understanding of destinations in the state of Paraná. *Revista Brasileira de Pesquisa Em Turismo.*, *11*(3), 503–536.

Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart tourism: foundations and developments. *Electronic Markets*, *25*(3), 179–188. https://doi.org/10.1007/s12525-015-0196-8

Guo, Y., Liu, H., & Chai, Y. (2014). The embedding convergence of smart cities and tourism internet of things in China: An advance perspective. *Advances in Hospitality and Tourism …*, *2*(1), 54–69. https://dergipark.org.tr/en/pub/ahtr/issue/32308/359048

Hague, P. (2002). *The Business Models Handbook: Templates, Theory and Case Studies*. Kogan Page Ltd.

Kamberelis, G., & Dimitriadis, G. (2005). Focus Groups: Strategic articulations of pedagogy, politics and inquiry. In *The SAGE Handbook of Qualitative Research*.

Kashima, K., & Morita, Y. (2017). in Conceptualizing Smart Tourism of Japan: A Case Study of Smart Tourism Design on China and Thailand 76 CONCEPTUALIZING SMART TOURISM OF JAPAN: A CASE STUDY OF SMART TOURISM DESIGN ON CHINA AND THAILAND 1. *International Journal of Management and Applied Science*, *3*, 2394–7926. http://iraj.

Mak, A. H. N. (2017). Online destination image: Comparing national tourism organisation's and tourists' perspectives. *Tourism Management*. https://doi.org/10.1016/j.tourman.2016.12.012

Morgan, D. (2014). The Focus Group Guidebook. In *The Focus Group Guidebook*. https://doi.org/10.4135/9781483328164

Nyumba, O. T., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*. https://doi.org/10.1111/2041-210X.12860

Otowicz, M. H., Macedo, M., & Biz, A. A. (2022). Dimensions of Smart Tourism and Its Levels: An Integrative Literature Review. *Journal of Smart Tourism*, *2*(1), 5–19. https://www.researchgate.net/profile/Sahil-Sharma-76/publication/362372970_Smart_Tourism-A_Solution_for_Tourism_Challenges_in_Himachal/links/62e6266c4246456b55fb37e3/Smart-Tourism-A-Solution-for-Tourism-Challenges-in-Himachal.pdf

Pavlovic, N., & Celic, I. (2018). COMPONENTS OF SMART TOURISM. *Tourism International Scientific Conference Vrnjacka Banja - TISC*.

Pompurova, K., Marcekova, R., Sebova, L., Sokolova, J., & Zofaj, M. (2018). Volunteer tourism as a sustainable form of tourism-The case of organized events. *Sustainability (Switzerland)*. https://doi.org/10.3390/su10051468

Song, J., Wen, I., & Tsai, H. (2013). Factors affecting destination image, travel motivation, and visiting intention: an exploratory study on impacts of DMO website design. *Proceedings of 1st World Conference on Hospitality, Tourism and Event Research and International Convention and Expo Summit 2013, Bangkok, Thailand, 25th-28th May 2013 (Pp. 589-604).*

Ye, B. H., Ye, H., & Law, R. (2020). Systematic review of smart tourism research. *Sustainability (Switzerland)*, *12*(8). https://doi.org/10.3390/SU12083401

Zamfir, A., & Corbos, R. A. (2015). Towards sustainable tourism development in urban areas: Case study on Bucharest as tourist destination. *Sustainability (Switzerland)*. https://doi.org/10.3390/su70912709

Zhang, T., Cheung, C., & Law, R. (2018). Functionality Evaluation for Destination Marketing Websites in Smart Tourism Cities. *Journal of China Tourism Research*. https://doi.org/10.1080/19388160.2018.1488641