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Malaysia smart tourism framework: Is smart mobility relevant?

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Abstract

Tourism contributes significantly to Malaysia's economic stability and has positioned it as one of the most visited tourist destinations in the ASEAN region. The rapid progress in the development of digitalization, communication technologies (ICT) with advancement of applications and devices demand a new tourism horizon - Smart Tourism. To date, tourist mobility in Malaysia tourism destinations is still limited in terms of intelligent transportation system, and the real-time data are less integrated, efficient, reliable and sustainable. A comprehensive smart tourism framework has yet to be introduced to deliver this vision. This study aimed to explore smart mobility as one of the characteristics in constructing a Malaysia Smart Tourism Framework (MSTF). 20 prominent tourism experts among academician, government directors and tourism business operators were chosen for a structured interview. The majority of respondents believed that smart mobility with a seamless and efficient connectivity and transportation need to be embedded in the new MSTF. An intelligent mobility system needs to be computed by all tourism suppliers and authorities in ensuring the tourists' demands are fulfilled with a smart sustainable optimization of local resources.

Introduction

Few researches have highlighted the symbiotic relationship and factor of dependencies between tourism and transportation (Ge & Page, 2009). Burkart and Medlik (1974) described many early literatures on tourism to develop the changes of transportation technology and mass tourism due to tourist arrivals. Transportation has been an integral part of the tourism industry that links tourists with various tourists' attractions (Ge & Page, 2009; Amir et al., 2017). Similarly, tourism relies on the transportation for logistics and tourism infrastructures such as maintenance of the existing roads and tracks, as well as construction of airports for flight operation enhancement. Tourists travel to tourism destinations that provide efficient services. (Bachok et al., 2018). Hence, separating both tourism and transportation is vague. The development of modes and infrastructure using advanced technologies has speed up the development of tourism, which enables the tourists to reach many

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destinations around the world. Air transportation is one of most important transportation modes that has made a significant impact on people concerning time and distance. Other than that, automobile transportation comes to mind as it makes it easy to see a variety of local culture. It presents great flexibility in contrast to other modes of transportation, as well as being frequently used by tourists because of the affordable price, despite other factors affecting it, namely, time and distance. Besides, the application of technology and technological innovation gave innovation to high-speed trains, which compete with air, sea and automobile transportation modes.

To date, Malaysia still faces limited use of intelligent mobility system. The issue of Grab car mobile application in tourism spots has slowed down the transportation business (Hussain et al., 2018), and poor digitalization of real-time data ((Izzati & Hidayah, 2017; Pek et al., 2019). Secondly, the inadequate transportation service quality in tourism destinations worsens the overall tourists experience with different socio-economic backgrounds (Latiff & Imm, 2015; Ramyar et al., 2020; Amir et al., 2017), such as poor disabled and vulnerable groups in transportation service (Sanmargaraja & Wee, 2015), and inadequate walking paths (Ramyar et al., 2020). The excess of private vehicles in most main tourism destinations is evidence of less effectiveness in collaborating digital technologies with tourism infrastructure and environmental concern (Sharif et al., 2020). Moreover, overall strategies, visions and a comprehensive framework of smart tourism for Malaysia is unclear (Amir et al., 2020). Thus, this study aimed to explore the smart mobility characteristics in order to construct a Malaysia Smart Tourism Framework (MSTF).

Literature Review

Today, tourists and excursionist greatly appreciate the functions of informatics and high-technological abilities in travel planning and procedures, that includes booking and purchasing, virtual experiencing and engaging with the destinations, and engaging with tourism products and services (Amir et al., 2014). Tourism service providers need to embrace smart tourism to improve tourist experiences. It is critical to understand "new" tourists and their needs to provide them with the best experience during their travels. Buhalis and Law (2008) summarized several key tourist demands based on a comprehensive review of e-tourism, including personal travelling preferences and schedules; time-value and less willingness of waiting and with delay; searching on the internet for travel-related information; booking online tickets and purchases, as well as making room reservations; making price comparison on different websites; communicating in virtual communities; offering complaint handling systems; asking for multimedia service; and provision of mobile facilities and applications. Additionally, Sevrani and Elmazi (2008) identified several new trends in tourists' behaviors, including accessing more information through the Internet. These "new" tourists in the smart era have shown distinctive needs and behavior patterns compared to their pre-Internet counterparts before/during travelling.

In addition to the demands, other factors such as environmental impacts and technology development are also necessary to apply smart approaches to the present tourist attractions. In the tourism industry, many governments and related agencies as well as non-governmental organizations (NGOs) in the world are committed to promote smart tourism through strategies, policies and regulations. Tourism destinations are also encouraged to integrate the use of technology to become smart destinations. Moreover, in the perspective of sustainable development, tourism destinations can adopt smart techniques to become eco-efficient and environmentally innovative in their operations.

Today's smart tourism has given rise to research efforts that are getting more detailed as time goes by. Firstly, data size is constantly increasing (Kontogianni & Alepis, 2020). As available information has reached a point of being overwhelming, smart tourism is needed to perform data filtering and personalization successfully. As more and more data are collected, more space is needed in order to store it, as well as preserve, process and present it using more sophisticated techniques. Smart tourism also needs to give emphasis on the preservation of user's privacy (Kontogianni & Alepis, 2020). The basic components of smart tourism system are user modelling and personalization which hand over data of individuals covering many aspects such as profile information, photographic identification and locations. For example, Airbnb is one of the well-known accommodation reservation platforms that collects past views of its users. This huge information set gathered via a plethora of sources such as users' smartphones and social media channels needs to be handled with extreme care to preserve user anonymity and privacy of personal information (Guo, 2018). Lastly, the number of applications and proposed services in smart tourism require the collaboration and synchronization with different devices

for various tasks such as sensing, data exchange and network connections (Kontogianni & Alepis, 2020; Yang et al., 2019). The challenge is that all these heterogeneous devices and data sources need to efficiently work together (Niaros et al., 2017). Not only that, the rapid changes of technological environments with user attitudes should be considered in ensuring a successful system and the viability of smart tourism.

Phillips (2000) defined smart tourism as simply taking a holistic, longer term and sustainable approach to planning, developing, operating and marketing tourism products and businesses. He believes smart tourism is shaped by two types of techniques which are (1) smart demand and use of management; and (2) smart marketing to target proper customer segments. It is uncommon to put smart tourism as the core strategy of a tourism development. However, scholars and business experts have tended to explore smart tourism in terms of its overall contribution to the industry from the aspects of sustainable development, in-depth participation and nature of relationship between tourists and tourism destinations for economic growth and social development in the context of the tourism e-role (Li et al., 2017). There are several examples of smart tourism research, including the research carried out in Hangzhou, Helsinki, and Dubai.

Smart Tourism Concept in Malaysia

Malaysia is a relatively new entrant in the tourism industry among its ASEAN neighbors. The formation of economic development growth triangles such as Indonesia-Malaysia-Thailand (IMT-GT) has created inter-regional cooperation in the tourism industry to stimulate economic growth. In relation to neighboring countries, Malaysia captured a significant share of emerging markets such as China, India and the Middle East. Hence, Kuala Lumpur International Airport (KLIA) and Senai Airport in Johor Bahru are expected to be specialized hubs and gateways for the tourism market segment. In addition, budget airlines will definitely boost travel trips within the region among low budget tourists such as students and backpackers, bringing economic benefit and fostering regional integration and cultural exchanges.

In terms of application of smart tourism, Malaysia is aggressively promoting its tourism industry, particularly after the pandemic and other environmental crises. Several initiatives were introduced by the government to improve the contribution of the industry towards economic growth, namely, TrulyAsia.TV and Malaysia Tourism TV (MyTTV). TrulyAsia. TV is a powerful medium on the Internet showing entertaining videos and live events in Malaysia (Abd Rahim & Ramli, 2013) with hopes of reaching out to potential tourists who want to have a preview of what Malaysia offers. Similarly, WebTV and MyTTV are internet TV portals covering various interesting information about tourism in the country (Abd Rahim & Ramli, 2013). At the same time, it highlights a variety of beautiful attractions in Malaysia featuring major tourist spots that are rich with resources, natural settings and local cultural happenings. It also helps Malaysia to grow in terms of tourism arrival and income, as well as empower the hospitality industry to be equipped with better tools and services in growing their business locally.

Smart Mobility

As the global population drives the increase of urbanization, the industry is seeking to change methods of travel and the transportation system as a whole. Users have long demanded the creation of a seamless transport market which requires an appropriate route or mode combination for movement. Smart transportation aims to introduce advanced transportation through computing power, autonomous vehicles, big data and new information (Feng et al., 2015). It also makes travel experiences smooth and allows the entire system to work better, improving quality of life for all. Green transportation pertains to low-pollution vehicles such as dual-energy vehicles (Li et al., 2019), natural gas vehicles (Sun & Ertz, 2022), electric vehicles (Bilgen & Sarikaya, 2018) and solar energy vehicles (Selvakkumaran & Ahlgren, 2020), but also involves various transportation modes, including walking, bicycle, regular public transportation and rail transportation (Li, 2016). Li (2016) believed that this new concept should become a goal in practice, specifically referring to convenient, safe, efficient, low-pollution, humanized and diverse urban transportation, which is coordinated with ecological environment and urban development. Humanity needs to move towards a greener solution for transportation due to several reasons, such as greenhouse gas emissions, excessive extraction of natural resources and rising oil prices (Panday & Bansal, 2014). It will not only create a liveable environment, but encourage low-carbon and environmental harm reduction in transportation modes. Promoting green travelling and public transportation will shift the norms from being vehicle-oriented to being human-oriented, especially in highly sensitive and fragile tourism destinations.

Methodology

Sampling and Analysis Method

This study implemented qualitative method approach using structured interview as the only data collection used, and used non-probability sampling, specifically purposive sampling. This sampling was selected in order to choose the interviewees among expert panels for structured interview. The interview session involved 20 experts as respondents. Out of 20 respondents, four were academics that specialized in tourism studies; eight were government officers that were experienced and had high position in tourism related agencies; and eight were tourism business operators including hotel, restaurant and retail owners. The interviews were conducted virtually via zoom application due to the implementation of Malaysia Movement Control Order (MCO). This session aimed to acknowledge and collect input from the experts regarding the characteristics and sub-characteristics of MSTF developed. The evaluations and improvements suggested by the experts were collected.

The content analysis was chosen because it is useful in capturing the complexities of meanings within a qualitative data set (Guest et al., 2014). This phase acted as an evaluation phase of forming smart mobility and its sub-characteristics. It involved interview sessions that were conducted individually and began with introducing the research aim and objectives, issues and problems, as well as significance of the study. Then, the output from the respondents for each sub-characteristic was gathered and summarized for further elaboration.

Results

Seamless and Efficient Connectivity

Nineteen respondents (95%) agreed and one respondent (5%) disagreed seamless and efficient connectivity to be part of sub-characteristics under smart mobility. Table 1 and Table 2 below show eleven respondents (55%) agreed that mobility provides physical connectivity that facilitates accessibility toward the destinations efficiently. Meanwhile, eight respondents (45%) agreed that connectivity gives new experiences for the users. However, one respondent (5%) agreed that connectivity may be broad and varies.

Green Transportation

Table 3 and Table 4 below show all respondents (100%) agreed green transportation to be part of sub-characteristics under smart mobility. Moreover, the tables show fourteen respondents (70%) agreed that green transportation is a way of changing energy resources that minimizes the negative impacts on pollution. Meanwhile, six respondents (30%) agreed that green transportation is promotion of sustainability and new experiences toward transportation modes.

Table 1 Evaluation of Smart Mobility – Seamless & Efficient Connectivity

Question	Theme (Positive)			Theme (Negative)		
	Code	Theme	Unit	Code	Theme	Unit
Q1-1	+A	Yes	19	-B	No	1
			19(95%)			1(5%)
					TOTAL:	20(100%)

Source: Primary Data: Structured Interview (2020)

Table 2 Evaluation Detail for Smart Mobility – Seamless & Efficient Connectivity

Question	Theme (Positive)			Theme (Negative)		
	Code	Theme	Unit	Code	Theme	Unit
Q2-1	+T1	Physical connectivity facilitates accessibility toward the destinations efficiently.	11	-T1	Connectivity is broad and varies.	1
	+T2	Connectivity gives new experiences for the users.	8			
			19(95%)			1(5%)
					TOTAL:	20(100%)

Source: Primary Data: Structured Interview (2020)

Table 3 Evaluation of Smart Mobility – Green Transportation

Question	Theme (Positive)			Theme (Negative)		
	Code	Theme	Unit	Code	Theme	Unit
Q1-1	+A	Yes	20	-B	No	0
			20(100%)			0(0%)
					TOTAL:	20(100%)

Source: Primary Data: Structured Interview (2020)

Table 4 Evaluation Detail for Smart Mobility – Green Transportation

Question	Theme (Positive)			Theme (Negative)		
	Code	Theme	Unit	Code	Theme	Unit
Q2–1	+T1	Change of energy resources minimizes the negative impacts on pollution.	14			
	+T2	Promotion of sustainability and new experiences in transportation modes.	6			
			20(100%)			0 (0%)
					TOTAL:	20(100%)

Source: Primary Data: Structured Interview (2020)

Discussion & Conclusion

Smart mobility comprises seamless and efficient connectivity, as well as green transportation. Connectivity in transportation planning, is commonly related to accessibility towards goods, services and destinations related to human's ability to use services and opportunities. It is one of effective indicators that may help tourism key players to manage development of potential destinations and guide decision on destination selections. It minimizes transportation costs and attracts more tourists as well as enhancing transportation planning and management in ecotourism destinations. With that, connectivity gives new experiences, makes travel go smoothly and systems work well. Green transportation on the other hand is one of low-pollution approaches in changing energy resources in order to minimizes the negative impacts towards the environment, including dual-energy vehicle, electric vehicle and solar vehicle in various types of transportation modes. Green transportation promotes sustainability and new experiences towards transportation modes in tourism destination. It moves the tourists toward a greener solution due to several factors, including pollution and destruction of natural resources. Thus, it becomes a return to low-carbon efforts and human-oriented transportation effectively. In the current situation, the transportation system has led to a wide range of problems such as global warming, environmental degradation and emission of greenhouse gases (Panday & Bansal, 2014). By integrating green initiatives, transportation minimizes the negative impacts of pollution as to change energy resources. Hence, it revolves around the efficiency and effectiveness on use of resources, modification of transportation structure and making healthier travel selections.

Tourism is a complex and dynamic industry with vast potential but requires proper coordination as the government has shown remarkable interest towards the tourism industry in economic development. Smart mobility in tourism destination in Malaysia requires the policy makers to review, monitor and evaluate performance and strategies in achieving long-term sustainability. Since the world was hit with the pandemic crisis, tourism has been forced to shift and focus on domestic attachment with enhancement of technologies, rather than following previous outbound approaches. On that account, Smart mobility in Malaysia Smart Tourism Framework was designed to assist Malaysia in utilizing its tourism products, to survive alongside other industries efficiently. Smart mobility is the starting point in creating an enjoyable and meaningful tourism experience, with optimizing the digital approaches, big data management and support system.

Conflict of Interest

The authors declare that there is no conflict of interest.

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