



Towards Smart Tourism Development in City Branding Era in Indonesia

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Abstract. The advancement of technology recently urges city branding practitioners to implement smart tourism. In short, smart tourism refers to the usage of the latest information technology to support the tourism sector's development. Enhancing the capability of utilizing the "Internet of Things" is deemed pivotal in tourism development. It makes things easier for tourists, but it can also widen potential markets for the tourism sector. This study aims to explore the extent of smart tourism development in Indonesia. It is done through content analysis of available literature, mainly focused upon a single city case study. By summarizing these kinds of literature using a comparative technique, this study finds that most Indonesian cities still use mobile applications. Other than this, there are many indicators in smart tourism yet to be achieved, such as smart vehicle scheduling, crowd handling, Intelligent-Guide System, travel safety protection. This study uses three dimensions in evaluating smart tourism: technology, people, and institutional dimensions. This study found some challenges, such as human resources' capabilities in using technology and funding limitations. Suggestions to overcome these challenges and improve smart tourism implementation are proposed, such as collaboration between the private sector and the government to enhance technology's service quality and target specific potential customers using social media.

Keywords: Smart Tourism · City Branding · Indonesia

1 Introduction

In the era of globalization, transportation and information technology are advancing rapidly. Cities nowadays strive to be comfortable and livable by improving their residents' quality of life and facing external challenges, such as competition. The situation intensifies competition among urban areas to attract capital, investment, and people. Experts agree that this competition ultimately drives urban policymakers to use branding strategies to excel over other cities [1, 2] nationally and internationally. Urban planners

and city managers worldwide put massive efforts into making their urban areas more favorable [3]. Cities must adopt a strategic approach to support existing economic life while also attracting new resources from global value flows [4]. Anttiroiko [2] shows that cities need to use specific branding strategies to attract more inward investments and tourists.

City branding is a strategic tool and a crucial weapon for achieving these particular aims and maintaining cities' sustainability [5–7]. As a part of place branding, city branding is a new approach toward urban development. On the other hand, it also aims to improve the city image's marketing in various ways [7]. In Indonesia, city branding has been evolving in the past few years, especially in promoting tourism. Each city competes in making the slogan and logo, expecting to boost tourist visits and investors. The tourism sector dominates city branding development in Indonesia because the local tourism department launches it to attract tourists and investors. Indonesia Tourism Ministry in 2015 has identified 36 city brands from 18 provinces that have been continuously implemented. However, every city in Indonesia has tried to have its brands to promote the cities and their tourism potential. Nyoman (2002) also observes that tourism promotion has been done since a few decades ago, such as the deployment of posters, brochures, booklets, and advertising through electronic media such as television and radio. Today, there has been a shift in promotion from paper to digital. Publishers have started to convert their printed guide books to digital format, whether web-based or native, and port them to mobile devices like phones and tablets.

Numerous studies have been conducted to investigate the relationship between city branding and tourism development in various contexts [8]. In particular, tourism has been the spotlight because the tourism program and activities reflect cities' position in the global network and their environment [9]. However, the research explores how particular branding programs support the tourism sector somewhat limited [10–12]. Most literature focuses on theoretical and conceptual city branding [9, 13]. Therefore, the study on city branding effectiveness in a tourism context is pivotal and may provide supportive insight into creating cities in becoming potential tourism programs as one pillar of city branding success [12].

The internet's rising popularity has increased customers' interest in convenience, choices, and online shopping. Young people browse online content; they have become active Internet users and senior community members (e.g., 50 and older). Flight information and lodging are the most searched topics for consumers aged 50 to 60, and the majority of them are not interested in package holidays [14].

From the above explanation, this study aims to explore the extent the smart tourism development in Indonesia. Further, this study also analyzes smart tourism's implementation using three-dimensional analysis frameworks and the conceptual layer of smart tourism. This study will also contribute to overcoming challenges in implementing smart tourism in developing counties such as Indonesia.

1.1 Research Background

Today, tourism is considered the most advanced city branding method [15, 16]. It is because the competition among countries in the tourism sector has been intensified. In more than half a century, tourism has been one of the fastest-growing industries [17]. It is

one of the essential keys for improving welfare in regional development (United Nations World Tourism Organization (UNWTO) [18]. Based on data from the Indonesia Tourism Ministry in 2014, tourism contributes 10% of the Indonesian national GDP. The most significant economic sector among the Association of Southeast Asian Nations (ASEAN) countries is tourism, which contributes to the second-largest foreign exchange after palm oil [19].

One of the critical elements of globalization is the rapid advancement of information technology [20]. This element has brought a significant change in the way regions compete. The Internet of Things (IoT) usage is deemed pivotal since it enables travelers to access reliable and accurate information on tourism. Besides, it directly impacts tourist satisfaction in ensuring travel quality [21–23]. For example, a GIS-based application may help tourists access directions to various locations. At the same time, it also provides a platform to promote a much more personalized bundle of tourism products [24]. A study by [23] uses APP or Location-Based Service (LBS) software to gather information from websites, tourist information centers, and virtual tour systems to provide comprehensive information for tourists.

This increasingly sophisticated technology has transformed the conventional tourism business into smart or e-tourism [20, 25]. All of the above Information is also related to the theory of communication in tourism which was conveyed by [26] that effective communication will significantly affect the information received by potential visitors and visitor satisfaction. This is also driven by the development of increasingly sophisticated information technology known as “smart tourism”. In addition, the era of increasingly fierce competition is accompanied by the phenomenon of city branding, where every city in the world tries to promote its city through branding in order to be able to attract visitors, investment, and even talents [6]. Therefore, smart tourism is vital in the era of increasingly fierce city branding competition.

Smart tourism has several definitions [23]. It encompasses all forms of information and communication technology use to obtain knowledge about tourism activities and improve tourism quality by responding to global information and technology advances [16, 17, 21]. Smart tourism has several approaches to human resources, social capital, modern telecommunication [17, 23], environment, and community development [29]. To enable smart tourism, three types of information and communication technologies are required, including cloud computing and end-user internet service systems [21, 23, 27]. In using all of these forms of technology, cities are considered smart if they meet several indicators: (1) able to increase the level of comforts for tourists; (2) able to provide customized information in accordance with various tourists’ demands; (3) support common sharing; (4) use various resources to support the development of tourism and culture effectively; and (5) supported by the communities [28].

The new advanced technological networks allow us to obtain the latest information about the best connections for the world’s most desirable destinations [29]. One essential factor-stimulated is the revolution in information technology and communication, such as a computer reservation system (CRS). For example, tourism is a viral subject on the web, which has offered more than 5,000 travel sites since 1997 in the yahoo directory. Therefore marketing and branding strategy is very popular to differentiate themselves from other destinations [18, 30].

Mehraliyev [30] argues that there are several layers of smart tourism. By simply putting smart technologies to the “physical layer,” we could use the “technology layer” to either produce or collect data in the “data layer”. The data layer’s built-up leads to the “business layer”, where tourist entrepreneurs harness data to serve their customers. In return, customers give reviews in the “experience layer” to further develop the smart tourism environment’s business ecosystem.

By applying smart tourism, the industry will gain competitive value in tourism [31, 32]. For example, several online applications emerging in Indonesia, such as Gojek, Pegipegi, and Traveloka, have made it easier for tourists to meet their travel needs. These kinds of services, online tickets, hotels, and restaurant booking applications are also mushrooming worldwide. Given the impact of the COVID-19 pandemic, this is also the government’s opportunity to maintain the tourism sector’s performance through online promotion and overcoming the COVID-19 pandemic, on the other hand [33, 34].

As argued by reference [34], the development of smart tourism indicators is essential to increase user satisfaction and provide a unique experience through services with advanced technology. The variable of tourism actors in the smart tourism context emphasizes more integration between tourism actors and ICTs, such as computer software used in facilitating coordination activities [35].

According to Wang, Robert, Zhen, and Zhang (2016), smart tourist attraction key evaluation factors include “smart information system,” “intelligent tourism management,” “smart sightseeing,” “eCommerce system,” “smart safety,” “intelligent traffic,” “smart forecasting,” and “virtual tourist attractions” (STA). Several indicators have been highlighted, including: tourist attraction homepage, smart vehicle scheduling, personal itinerary design, free Wi-Fi, smart cards, intelligent-guide system, crowd handling, mobile payment, tourist-flow monitoring, online information access, travel safety protection, e-tourism recommendation system, and real-time traffic broadcast.

Several experts have also suggested that future smart tourism should be concerned with real-time, co-creation, data-driven, consumer-centric, and co-creation experience [36, 37]. Another study shows that big data enable new ways to create new value and add a variety of tourist experience in tourism destination, such as in museum [23, 38]. A finding by [34] also shows that IT’s social media role has increased tourists’ intention to visit particular destinations.

2 Methodology

The data analysis technique used in this study is content analysis. It collects existing literature data, especially smart tourism development in ten cities in Indonesia, systematically. Also, this study uses comparative analysis techniques. According to [36, 37], a comparative study is a descriptive investigation that seeks answers to the cause and effect in principle by analyzing the factors that cause or appear a particular phenomenon. This study is a general description of smart tourism development, especially in city branding, which is developing rapidly in Indonesia. In the literature collection and review, this study was also strengthened by a series of interviews with several stakeholders in the Jakarta Local Tourism department. Jakarta is chosen given it is considered to have had the most advanced technology and human resources.

Data analysis includes transcribing, coding, categorizing data, identifying patterns, synthesizing, and analyzing. Each interview was recorded and immediately transcribed and analyzed using coding procedures. Following a coding scheme, data were evaluated conceptually, with emerging concepts being organized into interrelated themes. Thematic analysis [39] is a popular qualitative analytic method for detecting, interpreting, and reporting patterns (themes) in a data set. It also interprets different parts of the study's topic. The data is examined using the theme analysis approach in NVivo 12 software. The author went over the transcripts in the first stage, looking for topics that were pertinent to the study. The next step was to develop a coding scheme before entering a comparative analysis by comparing the factors based on tourism stakeholder perception. As a result, Saunders [40] described 'data transformation,' in which information was condensed, grouped, sorted, and connected. Inductive analysis is the type of analysis used in this study. Inductive analysis is a type of data-driven analysis that entails coding the data without attempting to fit it into a pre-existing coding frame or the researcher's analytic assumptions [39]. The third is credibility, which may be achieved through, for example, triangulation. Triangulation may involve mixing methods of analysis or data collection. In this study, triangulation was done through various data collection methods: in-depth interview, literature review, and focus group discussion (FGD).

3 Result and Findings

City branding development in Indonesia has been very much related to tourism development. In Indonesia, the local government has started to leverage city branding by promoting their cities' potential through slogans and logos to attract tourists. A few examples of this are slogans such as Solo, The Spirit of Jawa, Sparkling Surabaya, Beautiful Malang, and Enjoy Jakarta. The implementation of decentralization, marked by the stipulation by Law 22/1999 on the Local Government, gives local government more authority in managing their city [29, 38]. As a result, more than 90 cities in Indonesia could actively increase their local income by organizing events to attract tourists. Tourism programs could improve the city's competitiveness through iconic projects, special events, food culture, art, fashion, and the creative industries [40].

It shows that cities have been actively using branding strategies to compete with distant cities, even sometimes with cities not located on the same continent [41]. Due to the intensified competition between places in marketing, its potential is spurred by advancing information and communication technology [34, 38]. Therefore, the city creates a desirable image of the city to communicate to particular audiences, such as investors and tourists, through slogans, icons, and events [37, 38].

The development of smart tourism is encouraged by social media, such as Facebook, Instagram, Twitter, and youtube [21]. Some cities in Indonesia have begun to implement smart tourism in accordance with their branding strategies. For example, Palembang, the city that held the Asian Games in 2018, manages the application to help tourists access the city's Smart Tourism Information and Management (SARITEM). Dynamic communication between interests is needed through a technology platform to share information about tourism events or information in real-time. A multi-touch-point optimized platform is accessible from different end-user devices. It will help build and promote in-depth tourism expertise and enhance tourism resources management in micro and macro

sectors. Palembang City SARITEM's process model includes tourist operators, craftsmen, public authorities, and tourism businesses (hotels/innners, travel agencies, transport firms, restaurants, tour guides) [19].

The second case is Bantul Regency in Yogyakarta. Developing the smart city concept includes a mobile-based system, a GIS-based system and a desktop application system, a Web System, a Geographic System, and a mobile application. This system has helped Bantul Regency carry out integrated tourism management, impacting regional tourism [19].

Third, the neighboring cities, Malang and Batu, set another example. The Shining Batu Mobile application allows its users to access everything about Batu Tourism City through a smartphone. This application could be downloaded for free in the AppStore iOS, Android, and Blackberry. It provides various tourist destinations complete with lines and transportation types that can be driven [38]. In addition, the Regional Government has initiated a number of activities, including the launch of 65 hotspot locations, the Malang Go Open Source movement, the Malang Cyberpark in Malang City Square, and the use of E-Government to improve public services [42].

The fourth city is Lombok, which organizes destination marketing programs by utilizing smart tourism by constructing informativeness, accessibility, interactivity, and personalization for Muslim tourists. Several efforts to support halal tourism development are as follows: Building information elements by delivering information provided through technology and utilizing Big Data, with functions that benefit Muslim tourists while traveling to destinations [43, 44].

The fifth case is the city of Semarang. Together with The Old Semarang City Regional Management Agency, the city promotes the smart tourism concept through technology that facilitates visitors' mobility, accessing information in tourism activities. This effort made Semarang city awarding the Indonesia Smart Nation Award (ISNA) in 2015 with the highest index, followed by Bandung, Surabaya, and Makassar [44].

The sixth case is West Java Province. The West Java Tourism and Culture Office has three main online platforms for tourism communication: blogs, social media, and smartphone apps. Smiling West Java is a manifestation of smart tourism destinations offering global competitiveness. Collaboration amongst stakeholders is key to achieving smart tourism. This applies to Surakarta, the seventh city. Indosat and PT Starone Telecommunications Partners (SMT) worked together to promote e-Government, E-tax, E-transport, E-tourism. The Solo Destination Mobile application was launched in 2014, and 10,000 uploaders have been reached. It says people need a secure, open, and useful forum for tourism information. However, another challenge is the availability of ICT in supporting tourism activities such as Wayang Orang Sriwedari and Kasunanan Palace [45].

The eighth case famous for its natural and cultural attractions, Yogyakarta Province aggressively popularizes village tourism to attract tourists. The number of tourist villages recorded in the Yogyakarta Provincial Tourism Office increased from 80 villages in 2014 to 122 villages in 2016. Although the number of tourism villages has increased, various problems are encountered in developing tourist villages in the Yogyakarta Province, such as the quantity and quality of marketing of tourism villages that have not utilized the existing online media. Most tourist villages still rely on traditional media (word of

mouth) for marketing purposes. It is caused by little awareness and understanding of ICT.

The ninth case provides insight into how a tourism village in Sleman may be promoted through smart tourism by utilizing information technology in marketing and managing their destination. The Brayut Tourism village in Sleman Regency has managed to use ICTs to support its business, such as transacting and communicating with other business sectors such as travel agents, hotels, and restaurants. They also use Facebook, Instagram, and Twitter to promote their place. Free internet facilities have been provided by the manager Dewi Ayu for tourists who come to visit. The manager provides two internet networks, Wi-Fi with a voucher and IndiHome. IndiHome is obtained free of charge by the manager through PT's Digital SME Kampung program. Telkom. Dewi Ayu's manager emphasized developing innovations to increase the length of stay of tourists at Dewi Ayu. The development of Dewi Ayu in information technology is planned to be realized through collaboration with PT. Telkom and Traveloka [41].

The local government is currently aware of the urgency of ICT in developing their region. For example, Kampar Regency as the tenth case, using Google API, applying Geographic Information Systems to facilitate the search for ecotourism locations. The application design uses Information Systems Flow (ASI), Context Diagrams, DFD (Data Flow Diagrams), and ERD (Entity Relationship Diagrams). This application can guide potential tourists to the destination attractions with the help of Google Maps. The benefit of this research is to make it easier for the general public and the tourism office to find out the ecotourism location in the Kampar Regency [18].

4 Discussion

Display equations should be flush left and numbered consecutively, with equation numbers in parentheses and flush right. First, use the equation editor to create the equation. Then, select the equation, and set the "Equation" Style. Press the tab key and type the equation number in parentheses.

In general, Indonesia's tourism business is sound, steady, and motivating. Every location offers a unique experience, and mobile technology has made it even easier to share those memories. Measuring smart tourism's performance is urgent and meaningful for sustainable development [46]. Khomsi [47] states three dimensions in measuring smart city success: technology, people, and institutions. These three dimensions are elaborated further by using the cases mentioned above in Indonesia.

4.1 Technology Dimension

The emergence of interactive media channels enables various promotional material to be delivered through the internet, making it possible to share stories instantly, simultaneously, and efficiently [17, 23]. The use of technology in smart tourism encompasses all stages of travel. It could begin with pre-trip services (e.g., hotel reservations), continue with on-the-way services (e.g., usage of airlines or public transportation), destination services (e.g., use of destination resources), and end with after-trip services (e.g., confirming

Table 1. Smart Tourism Indicators

NO. SMART TOURISM INDICATOR

1.	Tourist Attraction Homepage
2.	Smart Vehicle-Scheduling
3.	Personal-Itinerary Design
4.	Free Wi-Fi
5.	Mobile Payment
6.	Intelligent-Guide System
7.	Crowd Handling
8.	Smart Cards
9.	Tourist-Flow Monitoring
10.	Online Information Access
11.	Travel Safety Protection
12.	Real-Time Traffic Broadcast
13.	E-Tourism Recommendation System

Source : Author Analysis, 2020

or changing a return flight) [15]. To be able to intervene effectively, the government roles should consider all of these processes.

Several cities have tried to implement smart city indicators (Table 2) such as tourist attraction homepage, free Wi-Fi, and mobile application [40, 48, 49]. While other indicators [25], such as smart vehicle scheduling, crowd handling, travel safety protection, have not been used frequently. Mobile payment could also be promoted to support smart tourism. Many applications provide mobile payment services such as OVO, GoPay, Dana, ShopeePay, and LINK (an application developed by a network of state-owned enterprise banks). City governments and these applicators may perform collaboration. To do this, the tourism database should be improved and digitized to enhance information systems regarding customer behavior [44]. Future studies suggested by [45] should also explore challenges [46] and strategies in managing big data in the tourism industry [32].

Using Smart Tourism Indicators based on Table 1, we measure how cities have met these indicators discussed in the previous section (Table 2). It is observed that the only three regions that have more than three indicators are the City of Malang, the City of Sleman, and the Province of West Jawa.

4.2 People Dimension

This study shows that the community's ability regarding IT is still limited, both managers, government, and visitors. For example, most people are only familiar with mobile applications and websites in the cities discussed above. Therefore, smart tourism development should strengthen individual capabilities in IT utilization through socialization and training.

Besides, tourism development should consider the target market trend in the future. [22] notes that the tourism industry's new generation, the Asian Millennial Traveler

Table 2. Summary of Tourism Indikator Implementation

PLACES	1	2	3	4	5	6	7	8	9	10	11	12	13
Palembang													
Bantul													
Malang													
Lombok													
Semarang													
West Java													
Surakarta													
Yogyakarta													
Sleman													

Source: Author Analysis, 2020

(AMTs), are predicted to manage its growth. It is predicted that a quarter of the Asian region's population has now surpassed the number of young tourists. This generation will be a significant tourism market in the future. They used to book online travel using popular travel applications, such as Traveloka. Instagram, followed by Facebook, Path, Twitter, and Snapchat, is the most frequently used social media. This data shows the critical role of social media in shaping a tourist destination's picture at present, especially regarding travelers, who immediately share both positive and negative opinions [4]. This phenomenon encourages tourism stakeholders to respond more quickly [15], especially concerning the media campaign used. It is seen that people are ready for IT development in the future since most people today are familiar enough with utilizing applications, GIS, and websites. It shows that. Therefore, the smart tourism strategy should consider their characteristics such as lifestyle, motivation, and habits.

4.3 Institutional Dimension

Information is one of the main elements of tourism in this digital age, transforming the industry into a dynamic system where dynamic structure, online reference and opinion, transport, and accommodation technology production are implemented [47]. It is desperately important to have an institution that supports a smart tourism program. It could also be done through collaboration with the private sector and other relevant stakeholders. Consumers, visitors, tourists, residents may provide genuine aspirations for improving policy in developing tourism.

The Sleman City case [41] demonstrates government cooperation in improving IT innovation quality between PT Telkom and Traveloka. However, many problems should be met in institutional dimensions, such as the restricted budget and government personnel power. Based on our interview with the Jakarta Tourism Department, it is known that the authority has made attempts to reach out to private sectors in improving social media in promoting Enjoy Jakarta, the branding of the city. Nevertheless, the result of such an effort is not reflected in the application, given it is not an interactive platform. Visitors could only visit the platform, but they could not ask anything further. Information provided in the application is also limited. Some interview results describing the problem are as follow:

- “We realized that smart tourism is vital such as utilizing the various platform for tourists. We always try to improve the content and feature, even though still not meet the tourist requirement and expectation.” “The biggest challenges in IT implementation are the limited budget allocation and lack of government staff capabilities.”
- “We do have Enjoy Jakarta application. However, it is still not optimal and improves interactive platforms, real-time information, and planner itineraries.

Referring to smart tourism’s conceptual layers [30], improving all the three dimensions above may speed up the progress from the first layer to the final layer. Evaluating the performance of several regions in Indonesia in all of these three dimensions, it is understood why the physical layer’s progress to the technology layer has been stalled. The smart tourism indicators measurement (Table 2) shows that technology advancement has not been optimally mainstreaming in the smart tourism campaign. On the other hand, human resources and institutional dimension has been relatively slow in adapting to change.

To sum up, several strategies should be considered to achieve sustainable and smart tourism. These strategies include the extensive provision of having Free Wi-Fi in destination spots; the usage of smart cards for public transportation payment for tourists; the presence of tourist attraction homepage complete with all information that tourists need; the availability of a personal-itinerary design that helps tourist to manage their activities; as well as the existence of an intelligent-guide system that could provide tourist-flow monitoring to shows the congestion to be avoided by tourists; and crowd handling information that provides information the maximum capacity limit in a building [49]. All of these strategies need to be delivered based on appropriate ICT technology. Many cities in Indonesia are currently making various changes towards smart cities and smart tourism to accelerate service quality. A gradual implementation with smart governance, budgeting, and strategy is not impossible in achieving smart tourism [24].

The implementation of city branding could benefit from smart tourism [31]. Future studies suggested by [35] should also explore the economic and political aspects of smart tourism and residents’ attitudes towards smart tourism. Real-time information through different smart tourism platforms is crucial in enriching how cities would brand themselves [34].

5 Conclusion

A comprehensive strategy is needed to develop a smart tourism concept. The decentralization era has provided local governments with an opportunity to innovate service quality, such as smart tourism. Besides, the mushrooming of the city branding era in Indonesia should be encouraged with the smart tourism implementation where people are more convenient in accessing the tourism product and services. Smart tourism can promote the image of a city, which is an integral part of city branding. However, it needs a commitment between the government and the tourism industry towards cross-sector collaboration.

This study found that, from the technological dimension, most cities in Indonesia are still underperformed. Out of thirteen smart tourism indicators, cities rarely meet

more than three of four indicators. In particular, the availability of computer software, robot sensors, smart cards, and barcode scanners also needs to be prioritized in tourist support facilities. These facilities could increase user satisfaction and provide a unique experience through advanced technology services.

From the people dimension, it is found that the limited capabilities in using IT are the biggest challenge facing human resources in Indonesia nowadays. Therefore, continuous training should be increased in enhancing people's capabilities. The last dimension discussed, the institutional dimension, shows that budget limitation is the biggest problem. To overcome this, each tourism industry needs to collaborate with other stakeholders. It is clearly seen that technology is not the only key factor. Other factors, such as people and institutions, are essential in encouraging smart tourism success. While progress has been made in smart tourism development, several challenges are faced: human resources, budget limitations, and people's awareness.).

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