SMART TOURISM DESTINATIONS -
A case study of Seoul, South Korea

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\textbf{ABSTRACT:} The phenomenon of smart destinations is a recent concept in tourism that is still in the construction process. Smart destinations can be understood as places that have created an infrastructure where tourism offers value through personalized experiences using technology. The concept of smart destinations comes from that of smart cities, but it has its own characteristics and individualities. This study presents the characteristics of a smart destination - the city of Seoul, South Korea - as an example of a consolidated model. The research methodology used is exploratory, with a qualitative approach and a case study. The results have shown that Seoul fits the model of a smart destination because it presents key factors, such as: smart support infrastructure (smart systems, ICTs available for everyone to use), integrated governance, sustainability, innovative tourist attractions, and public policies that highlight and integrate technology for the use of both residents and tourists.

\textbf{KEYWORDS}
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According to the World Tourism Organization (UNWTO, 1994), tourism is a cultural, social and economic phenomenon that involves the displacement of people to countries and places outside of their natural habitat, with personal or professional motivations. Tourist destinations are territorial units that can be cities, states, countries, regions or areas that need tourism planning, infrastructure, tourist services and urban tourist support services (Ignarra, 2003 & Cho, 2000).

Tourist destinations can be understood as places that bring together all aspects of the tourism offer, plus basic infrastructure, as well as touristic planning; in other words “clusters of services and facilities designed to meet the needs of tourists” (Anjos & Limberger, 2013). Considering that tourist destinations, in order to sell themselves as such, must be attractive to consumers and competitive among a long list of alternative destinations; they must have the right image before the consumer. The image of a destination directly influences its success or failure, and is therefore a factor in the demand for a tourist destination and, consequently, its life cycle (Añaña, Anjos & Pereira, 2016).

With the effects of globalization, the creation and rapid dissemination of new technologies led to a shortening of time and distance among places, making the movement of people and the circulation of information and knowledge move much faster (Marujo, 2008, p. 22). Making use of technology to remain attractive, tourism destinations have changed their offers to cater for a new touristic demand: consumers who are seeking smart tourism destinations. The adjective “smart” applied to tourism destinations is a concept that originated from smart cities, and passed through different economic scenarios until it reached tourism (Koo, Shin, Gretzel, Hunter & Chung, 2016).

According to Gretzel, Sigala, Xiang and Koo (2015), the evolution of traditional tourism to smart tourism occurred naturally, following a natural progression as technological innovation in the tourism industry increased, through the use of the internet as a tool to sell tourism, which became even more significant with social media and the rapid dissemination of information. The authors consider that the concept of smart tourism represents a different stage in the evolution of ICTs applied to tourism, marked by the intersection of the physical and digital environments, which creates new levels of intelligence and changes in touristic experiences, and how they are made, consumed and shared.

Technology is a fundamental factor of a smart destination; destinations that focus on offering technology in their services aim to deliver smart solutions that are optimized and focused on the needs of the individual tourist, since technology can be used in different ways by different people. The development and dissemination of these technologies offer new communication modalities, new ways to collect, analyze and exchange data and, consequently, new opportunities to add value (Gretzel et al., 2015). Internet technologies enable consumers to connect, interact and create experiences on a larger scale; in tourism, these technologies are mostly in the form of software program and apps developed to cater for tourists needs, going beyond barriers of language and culture and offering solutions that allow tourists to become a part of the destination they are visiting (Neuhofer, Buhalis & Ladkin, 2015). Many destinations have embraced different technological solutions in order to deliver better services to their tourists, transforming communication and interaction and boosting tourism.

This study aims to analyze and present the characteristics of a smart destination, using Seoul, South Korea, as an example of a consolidated model. The paper is structured as follows: Following this introduction, Section Two presents a literature review to examine the concept of smart destination and the Case Study of Seoul. Section Three discusses the methodology used. Section Four discusses the results, and Section Five summarizes the results and discusses some practical implications for this research, together with the conclusions. The references are presented at the end.

Smart tourism destinations can be understood as places that have created an infrastructure where tourism offers value to those who experience it, creating personalized experiences using available technological tools to deliver intelligence in services provided to tourists (Boes & Buhalis, 2016).

The smart tourism destination is also considered an innovative touristic space, accessible to all, consolidated in a infrastructure with the latest technology that guarantees the sustainable development of the region, facilitates the visitor’s interaction and integration with the surroundings, and increases the quality of the visitor’s experience at the destination, as well as improving residents’ quality of life (Segittur, 2013).

There has been discussions about how a smart tourism destination should be defined. However, most of them highlight the application of technology in the destination infrastructure, providing connectivity,
offering innovative services to tourists and enabling new forms of demand and consumption. Another factor often highlighted is the need for a new destination management strategy focusing on sustainability and integrated governance between public and private (Neuhofer, Buhalís & Ladkin, 2015; Baggio and Del Chiappa, 2014; Segittur, 2013).

Even though the concept originated from smart cities, a smart destination differs in that its investments are geared towards integrated governance, sustainable development and, in particular, technology, adopting smart management of resources, mobility, real-time data storage systems (big data), accessibility, competitiveness and new experiences and services for the tourist (Sebrae, 2016). Smart destinations also use information and communication technology (ICTs) to provide solutions that benefit all sectors of the tourism industry (Koo, Shin, Gretzel, Hunter & Chung, 2016).

Tourists’ behavior and preferences are changing, and new devices, apps and technologies are appearing to consolidate these changes, e.g. cloud computing, management of large amounts of data and information, internet of things, great wi-fi coverage and apps for smart devices, among others. These changes are accompanied by a growing computational processing capacity (Wang and Li, 2013; Sun et al., 2016), in response to the new demand of tourists, characterized mainly by generation Z and millennials, who were born in a technological world and value interaction, connectivity, information, efficiency and experience in their travels (Ministry of Tourism, 2018).

Smart tourism or smart destinations can be defined as tourism developed based on a destination’s integrated efforts to obtain and put together relevant information from social media, data from public and private organizations, as well as knowledge from experts; always combined with the use of advanced technologies that can transform this information into quality experiences in the destination with high added value, focusing on efficiency, sustainability and enrichment of experiences. The key components that differentiate a smart destination from a non-smart one are presented below (Gretzel et al., 2015).

Image 01 – Components and layers of smart tourism

The first component, the use and collection of big data, is the main factor of a smart destination; with the advancement of connectivity and IoTs – the internet in all things – data collection, transfer and analysis have enabled real-time information from the physical and digital worlds to be provided. The real-time data supply helps create a smart business ecosystem that, when utilized in the governance of the destination, enables smart experiences to be created based on the individual tourist’s consumer behavior (Kitchin, 2013).

With the use big data, through interconnectivity, these data can be analyzed and integrated, so the local tourism governance can make specific decisions for a specific region, developing digital solutions that are useful to tourists, such as digital maps or smartphone apps that work as a virtual guide. Creating a smart experience is efficient, because the tourists themselves can participate in it; besides consuming the experience, they also help create it through the ways they behave and interact with the destination (Gretzel et al., 2015).

A smart business ecosystem is an “ecosystem that creates and supports the exchange of tourist resources and the co-creation of the tourism experience” (Gretzel et al., 2015). As a result, technology and its relationship with making the touristic experience better occurs through the tourists’ participation in creating their own experiences, due to the information they provide thorough comments and online data” (Bernabeu, Mazón, Baidal & Rebollo, 2018).

The smart business ecosystem also includes collaboration between the public and private sectors, through an integrated governance that is characterized by a coming together of parties interested in investing in tourism. This leads to the creation of a more open, focused, technology-oriented governance, with more investments in infrastructure and data for visitors (Gretzel et al., 2015).

Together, these three layers (Image 1) create a smart destination, which can be defined as “tourism supported by integrated efforts at a destination to collect information derived from physical and digital sources that, combined with advanced technologies, can transform data into on-site experiences and business value-propositions with a clear focus on efficiency, sustainability and experience enrichment” (Gretzel, Sigala, Xiang & Koo, 2015).

There are three main decisive factors for using connectivity systems and the internet as tools for personalizing tourists’ travel (Gretzel et al., 2015).

Table 01: Using connectivity systems

| Factors                  | Actions                                                                 |
|--------------------------|-------------------------------------------------------------------------|
| Anticipating Needs       | Monitoring the tourist’s choices, activities and points of interest so that technology can be used to develop smart solutions and make personalized recommendations. |
In Table 1, personalizing experiences is also a strong characteristic of a smart destination. To improve the level of personalization, consumers and their preferences must be continually evaluated, as specialized service is needed to improve the tourists’ smart experience (Gupta & Vajic, 2000). Therefore, smart tourism management must collect, evaluate and respond to relevant information about the consumption, needs and preferences of these consumers, through information and communication technologies.

Table 02: Tourism management and ICTs

| Governance | Strategies, investments in infrastructure and innovation programs. |
| --- | --- |
| Technological innovation | Using ICTs to develop systems and solutions that will benefit both tourists and the local community, in a sustainable and inclusive way. Making use of technology to solve problems. |
| Information systems | Open data and big data. Systems where ICTs solutions are stored and computed. |

Source: elaborated by the author (2018).

The integration of smart technologies (Table 2) to create personalized experiences in smart destinations is essential if these tourism destinations are to remain competitive. Tourist governance allied with new technologies is of interest to the tourism and hospitality industry because competition and high customer expectations drive the need for differentiation (Peterson, 2011).

Through technological innovation, the use of ICTs to create personalized experiences for the tourist becomes possible when a destination is able to use these technologies to its advantage, because a “smart destination is a tourism territory that has a defined project and knows where it is going, maximizing the integration of smart technologies in all aspects that offer value to the destination” (Gretzel et al., 2015). ICTs are expected to understand, profit from experience, acquire knowledge, retain knowledge, and respond quickly to a new situation (Rudas & Fodor, 2008). For a smart destination, these technologies are key components of information systems that offer consumers and tourist service providers more relevant information, better support for decision making, greater mobility, and a more pleasant tourist experience (Gretzel, 2011; Sigala & Chalkiti, 2014). Innovations driven by the internet of things and information systems have important implications for tourism development because they travel through space and time and are capable of meeting travelers’ needs quickly (Gretzel et al., 2015). Therefore, “the concept of smart is focused on offering technological results, i.e. using technology in people’s favor. Being smart means identifying users’ needs in order to offer services that cater for them” (Bernabeu, Mazón, Baidal & Rebollo, 2018). Smart destinations use technologies to create personalized experiences tailored to the characteristics of the tourists visiting these places. For this process to occur, innovative mechanisms and tools are needed that will enable the right user to be found at the right time (Gonzales et al., 2004).

Finally, smart destinations are a natural progression from traditional tourism to a more innovative and technologically oriented activity, based on ICTs, which in turn, rely on sensors, data (big data and open data), news form of connectivity and information exchange (Gretzel et al., 2015).

**Methodological Aspects**

The research is characterized as descriptive explanatory study with a qualitative approach. The case study method was adopted, based on secondary data from government reports, documents, articles and books, as well as Internet sources.

The case study was used as a qualitative research method to obtain a broad and detailed knowledge about the object of study. To pursue these objectives, the well-known destination of Seoul was taken as the object of the case study. Seoul is the capital and largest metropolis of South Korea. It has been described as the world’s “most wired city”, ranked first in technology readiness by PwC’s Cities of Opportunity Report (2014). Seoul has a very technologically advanced infrastructure and is among the world leaders in Internet connectivity.

The empirical case study method allowed us to investigate “contemporary phenomenon, in-depth and within its real-world context” (Yin, 2014, p. 16). This type of research methodology enables a better understanding of individual phenomena, and organizational and political processes of society. Thus, the case study is a research tool used to cover everything in specific approaches to data collection and analysis (Yin, 2014).
Results: Case study—Seoul Smart Destination

Leading city in terms of visitors to the country, Seoul attracted 17,502.756 million international visitors in 2019 – (Korea Tourism Organization, 2019). Located in eastern Asia, the capital attracts tourists due to its millennial culture and innovative technology in many sectors, which has led to a phenomenon that experts call the Korean Wave – in Korean 한류 (Hallyu) - which is analogous with the growing global popularity of South Korean culture since the 1990s. The rapid process of industrialization and economic growth have contributed to international export, particularly the export of information technology products such as digital TVs and smartphones, which has contributed to the success of the hallyu (Kim & Ryoo, 2007). The Korean wave also includes south Korean pop culture (music, television, cinema, etc.), which has helped popularize Korea’s image and attract many international visitors (Choi, 2012).

To promote the country culturally and economically, the government created two public policies called complex diplomacy and value diplomacy; these policies aim to improve cultural and public relations and create an international brand and image for the country. The Ministry of Foreign Affairs and the Presidential Council of National Branding have made use of Hallyu, capitalizing on its popularity to boost interest in Korea’s image around the world (Jang & Paik, 2012).

Through its continuous modernization, Seoul is become consolidated as a smart city, investing in specific projects that use information systems to benefit its population. In 2011, a smart government system was launched for Seoul, supported by three main tools. The first is the open data system, which makes available to citizens all data produced by the city government. The second is online engagement, which enables active interaction with citizens through e-platforms, allowing people to vote daily on municipal issues through a smartphone app called “M-Voting” (Seoul Solution, 2017). The third tool uses big data to improve municipal services, encouraging the participation of the local population, and creating solutions to meet their needs (Shin, 2016).

Leader in innovation and technology, Seoul has a foundation (the Seoul Digital Foundation) that works alongside the city government to carry out research and consultations on information and communication technology, and how these can be applied to create smart solutions for the city (Seoul Digital Foundation, 2020). Some of these solutions are promoting a digital economy, solving urban issues through innovative technologies, encouraging information technology (IT) startups, and developing and providing education in digital literacy to Seoul’s citizens, etc. The foundation is part of the smart strategies for the city. It collaborates with IT project like Digital Seoul 2020, launched by the local government to bring even more technology to the capital in 2020 (Seoul Digital Foundation, 2020).

Seoul is listed as one of the smartest cities in the world. Below are some of the main pillars by which its technological innovations are improving the lives of its citizens and visitors, and some of the actions carried out (Table 3).

Table 03: Smart Pillars

| PLAN | ACTION |
|------|--------|
| OPEN DATA | Seoul uses an open data system in all sectors of society; this enables digital payment for all services; fastest wi-fi in the world, Internet widely available in all public places, and a better ICT infrastructure. |
| ONLINE ENGAGEMENT | Seoul communicates with ten million citizens by real time data sharing through the “Seoul public data” project. By law, all public data in Seoul must be made accessible to the public, so that citizens can voice their opinions on the government, through a system of Digital Governance. |
| BIG DATA | TOPIS is the integrated center that manages all the city’s traffic. Its services include real time road communication management, bus operations management, traffic forecasting based on big data collection, high speed communication, and monitoring the entire city 24 hours all year round. It adopts the latest technological solutions, such as big data, IoT and cloud computing, to solve urban problems. |

Source: Adapted from Seoul Metropolitan Government (2020).

The prominent presence of information and communication technology in the city can be attributed to the governance system. Government support for ICT development began in the 1990s, with the advent of the internet. In the late 1900s, the Korea Agency for Digital Opportunity & Promotion was created to expand access to the internet and offer digital literacy training for more than ten million citizens. The government also invested in new technologies, dedicating a significant portion of its national gross domestic product (GDP) to research and development projects (P&D) (Mills, 2018). Seoul also has special departments that work alongside the regular governance departments to deal specifically with information technology and the internet. An example is the Seoul IoT Center, which is a research center set up to find smart solutions for the city using the internet of things. At the end of each year, the City Hall presents new solutions for urban problems in various
fields, such as public security, the environment, life, health, well-being, education and tourism, introducing IoT technology into smart services (Seoul Metropolitan Government, 2019).

When it comes to connectivity, Seoul has one of the best broadband internet competitions in terms of internet signal reach, use of smartphones, online services and other categories. In Korea, the number of people connected to the internet is as high as 95%. Research conducted by the magazine Strategy Analytics explains that Seoul is a gigantic Internet access point that offers cheap connections practically anywhere in the city (Seoul Metropolitan Government, 2014).

Since 2017, Seoul has free wi-fi connection in all public places within the city, including the subway. Such a high connection rate is possible today because since 1987, Korea has been spending millions of dollars on connectivity. As a result, the internet reach rate in South Korea was 92.9% in 2018, compared to 6.8% in 1998. This means users can enjoy free wi-fi on public transportation, public buildings and the city’s streets (Seoul Metropolitan Government, 2018).

In a tourism destination, the word “smart” is used to describe a physical structure tied to a technological structure, where the boundaries between physical and digital are blurred; in tourism, the excellent connectivity of the city is used to share real-time data, with relevant information such as how many hotel rooms are available in the city, room rates, categories, benefits, discounted tickets, etc. In Asia, especially South Korea, the government is investing heavily in building technological infrastructure to support smart tourism (Gretzel et al., 2015).

To ensure that tourism would create jobs and opportunities and improve citizens’ lives, Seoul created legal and political structures that would leverage tourism as an engine for growth and development, based on national laws and regulations. The most important laws regulating tourism at the national level are the Framework Act on Tourism and the Tourism Promotion Act of 1986 (Korea Law Translation Center, 2017).

With an integrated governance system that benefits both public and private investments, the city’s tourism governance is carried out at two levels: federal (Korean Tourism Organization - KTO) and municipal (Seoul Tourism Organization - STO); these organizations liaise with communities and other local organizations on issues related to tourism development in the city, including raising investments from private capital funds, developing tourism complexes to boost local economies, and assessing the environmental impacts of projects under development (Visit Seoul, 2018).

While projects are in progress, the organization holds local meetings, where each local community has representatives. Residents are invited to attend the meetings through newspapers and community service centers, and their opinions are gathered through discussions on environmental impact assessments. Thus, local tourism governance ensures that the tourism is beneficial to residents, creating more sustainability (Visit Seoul, 2018).

Smart tourism in Seoul starts with e-tourism. The city’s official tourism website offers information on events and points of interest countrywide in real-time based on the tourist’s location, in five languages. The Korean Tourism Organization runs a total of eleven websites, catering for more than 1.5 million foreign users in ten different languages, earning it the 2007 Korea Advertising Society’s “Ad of the Year” award for its online and offline integration campaign (Seo et al., 2007).

The apps Korea Everywhere and Visit Korea were downloaded by 2.37 million users. Due to this widespread use, it received awards by the country’s official culture departments. In the same year, the apps were chosen as examples of smart technology developed by the government, and received the Korea Mobile App Award (Korea Tourism Organization, 2014) three times.

Korea.net (2017), a portal promoting Korea online, reports that about 125 different companies and organizations have prospered in recent years thanks to open data from tourism provided by these organizations. A good example is SNBSOFT, a company that uses available geospatial data from the KTO to provide multilingual maps (Gretzel et al. 2018).

The Korea Tour Card (Image 2), launched in 2017, aims to improve the visitor’s overall experience in the destination. Offered exclusively to international tourists, it provides a convenient way to pay public transportation fares and entrance fees at many tourist attractions. It can also be used to pay in shops, restaurants and entertainment venues, and it offers free access to popular attractions such as the National Museum of Korea and amusement parks (Visit Korea, 2019).

Image 2: Tourist using the Korea tour card to pay for public transportation

Source: Visit Korea (2019).

Another facility for international tourists is the Amazing Pay T money; the card is available to visitors wishing to...
use the bus routes of Incheon International Airport. It offers a 10% discount on bus routes connecting Seoul to other metropolitan cities, and it can also be used as a method of payment at affiliated convenience stores. Purchasing the card enables travelers to receive discounts at restaurants, cultural presentations, and major attractions in Seoul, including Lotte World, the country’s biggest theme park (Visit Korea, 2019).

Another smart initiative is the Seoul Metropolitan Government’s Tourism Start-ups Cooperation Project, aiming to foster tourism and IT-related innovation. The initiative has already led to the development of various IT-based content and services, reflecting the latest trends, such as robots with artificial intelligence and big data, so that foreign tourists can experience Seoul more conveniently (Gretzel et al., 2018).

Located in the tourist neighbourhood of Mapo-gu, Digital Media City is Seoul’s hub for the media, entertainment and IT industries. It consists of a group of ultramodern buildings, home to big television companies, well-known IT brands, and other digital media facilities. The 570 m² area was completed in 2006, after a revitalization process carried out by the city hall in what was once the site of a large garbage dump. Nowadays, it is considered a tourist complex in the city, with numerous exhibitions dedicated to new ICT technologies, virtual reality and augmented reality that are open to visitors (Visit Seoul, 2017).

With so much technology and connectivity, Seoul has also incorporated the high-tech concept into many of its tourist attractions (Table 4):

Table 04: High-Tech Tourist attractions

| Tourist Attraction | Description |
|--------------------|-------------|
| Samsung d’light    | Samsung Electronics’ technology museum allows visitors to discover more about the technologies of the next few decades. In the “Sense” area, visitors can touch mirror monitors; the “House of the Future” exhibition uses augmented reality to illustrate how the Internet of Things will make everyday life more convenient and connected in the near future. |
| Digital Pavilion   | Housed within the digital media city technology complex, the Digital Pavilion is the largest IT pavilion in Korea. Here, tourists can experience what the “I City” will be like - a futuristic city with streets, schools, culture and lifestyle, driven by technology. |
| VR Plus Cafe       | Korea’s first virtual reality cafe. It offers various virtual reality games for visitors. |

Source: Adapted from trip advisor & Visit Seoul (2020).

Seoul shows that understanding the interdependence of multiple layers of smart tourist destinations is key to successfully designing and programming smart tourism initiatives (Gretzel et al., 2018).

**PRACTICAL IMPLICATIONS AND CONCLUSIONS**

Smart destinations need to be located in a smart city, and use the infrastructure of the city to improve the touristic services (Gretzel, 2018). A city’s smart infrastructure directly impacts its tourism activities, since these technologies can no longer be separated from tourism (Um & Chung, 2019). Academic literature on the subject of smart tourism and its ramifications is increasing, but it is yet extensive enough, which limits discussion and prevents comparisons between cases.
Based on the strategies mentioned above, it is clear that Seoul is a city with high technological development and a physical and digital structure that characterizes it as a smart destination. Therefore, Seoul can serve as an important example for other destinations in terms of how to launch and govern smart tourism initiatives. Analyzing the smart destination model used in this research, defined by the author Gretzel (2015; 2018), who states a smart destination must offer an exemplary structure of big data and ICTs to create a smart experience, as well as generate a network of smart businesses to become a smart destination, we can perceive such actions implemented in the government system and society in Seoul.

The city’s governance invests in technological solutions, such as broadband internet coverage, wi-fi in public places, a large number of smartphone users in the capital, as well as investments in technologies that use big data to collect and monitor data that can be transformed into smart urban solutions. There are also tourist attractions dedicated to high-tech and smart solutions for tourists, apps, touristic cards for exclusive use, e-tourism, easy access to information, and good connectivity for everyone, etc., all of which contribute to creating a satisfying, sensory and smart experience.

Compared to South Korea’s capital, initiatives in other destinations appear to lack the cohesion and integration with more significant efforts to develop smart cities. “Seoul shows that understanding the interdependence between the multiple layers of a smart destination is critical for successfully designing and programming smart tourism initiatives” (Gretzel et al., 2018).

Analyzing the main factors of a smart destination: urban planning, smart infrastructure support, governance, sustainability, technology and public policies for a smart destination, we can see that the city of Seoul, used as a case study for this research, fits these criteria and can therefore be considered a smart destination.

This research aims to provide a contribution to theoretical discussions that could extend the discussion about smart destinations. As practical implications, we recognize that Seoul’s strategies are important and significant for the destination. Smart tourism seems set to be a defining trend in tourism and one that will prove a rich field for exploration (Ghaderi; Hatamifar; Henderson, 2018). Future research is suggested focusing on other smart destinations, comparing strategies of governance and DMO.

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