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ORIGINAL RESEARCH ARTICLE

An exploratory analysis of the situation and future possibilities of Huatulco from the angle of smart destinations

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ABSTRACT

From the perspective of planning and managing smart destinations, this study presents an exploratory analysis of the present situation and possible future developments of the municipality of Santa Maria Huatulco (Oaxaca, Mexico). It starts with how smart tourism destinations are conceptualized and shows how this idea evolved from the idea of smart cities. Following an explanation of the technique, the four primary attributes of smart destinations—innovation, technology, sustainability, and accessibility—are next discussed. The presentation of two success stories—Dubai, United Arab Emirates, and Tequila, Mexico—follows, highlighting the measures taken by these travel hotspots to guarantee the contentment of both locals and tourists. Subsequently, the four aforementioned criteria are used to qualitatively examine the municipality of Santa María Huatulco and its current situation. The paper concludes with some observations that go over the primary areas this municipality should focus on improving in order to become a smart tourist destination, along with the advantages of doing so.

Keywords: tourism; new technologies; tourism infrastructure; tourism management

1. Introduction: From the city to the smart destination

In recent years, the concept of smart tourism destination has gained much relevance in the field of tourism management[1,2]. This concept arises from the notion of smart city, i.e. a city where the use of technologies for information and communication joins the traditional infrastructure in order to develop a new and more effective way of understanding urban problems[3].

Currently, there is no single concept of smart city: It is understood, above all, that they are those cities that take advantage of new information and communication technologies in order to improve the quality of life of citizens; thus, they generate sustainable and efficient spaces, as well as manage traffic, public transport, pollution and security, and waste, among others[4]. Some authors, such as Alonso-González, Palacios and Peris-Ortiz, consider that the smart cities approach seeks to solve problems and challenges common to localities around the world related to growth, overcrowding, urban planning, quality of services, competitiveness, environmental factors and the values of citizenship. This would be

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achieved through the development of policies, infrastructure, services and public awareness programs capable of transforming cities, a development that has become one of the top priorities of officials.

This approach, as mentioned above, has led to the concept of the smart destination, in which tourism is part of the challenges to be addressed by the city.

According to the Sociedad Estatal para la Gestión de la Innovación y las Tecnologías Turísticas: A smart destination is an innovative tourist destination, consolidated on a state-of-the-art technological infrastructure, that guarantees the sustainable development of the tourist territory, accessible to all, that facilitates the interaction and integration of the visitor with the environment and increases the quality of his experience in the destination, while improving the quality of life of the resident.

According to the IGI Global Dictionary[5], a smart destination is defined as a destination that reflects the requirements of its stakeholders by making available to them all tourism products, services, experiences and spaces. It also provides the opportunity for the creation of innovative and entrepreneurial businesses that manage to interconnect between the different sectors in order to create an intelligent experience, that is, an experience mediated by the use of technology and enhanced by the personalization and understanding of the environment, as well as monitored in real time.

For Buhalis and Amaranggana[6], it is the result of the interconnection of all stakeholders through dynamic platforms and intensive communication flows, both in knowledge and in systems to improve decision support. With this, an improvement in the tourism experience is obtained, increasing the competitiveness of the destination and giving satisfaction to visitors with the use of sustainability[5].

After having exposed some definitions of smart tourist destination, the main features that underpin a smart tourist destination will be detailed below, but first a brief reference will be made to the methodology followed in this study.

2. Methodology

This research was carried out by means of qualitative analysis based on documentary research, for which it began with an approach to the state of the art on empirical studies on smart destinations. The purpose of this first phase was the identification of such studies carried out in various countries, mostly located in Europe (mainly in Spain, followed by Italy), in addition to studies located in Latin America: three of them in Mexico (Mazatlan, Mexico City and Puebla).

These documents were located in different databases, repositories, social research networks and reference managers, in Spanish, English, Portuguese and French, limiting the search to the period from 2012 to 2017. The searches were framed by applying descriptive such as smart tourist destinations, smart city, smart tourism destinations, smart city, destination intelligent tourism. Finally, various documents were located, including conference proceedings, scientific articles, master's and doctoral theses, which were inventoried in a spreadsheet to build a database.

Based on this, information on the municipality of Santa María Huatulco (Oaxaca, Mexico) was sought in government reports, government plans, etc., and finally it was proposed to contrast the features that identify an intelligent tourist destination with those present in the different documents. This contrast, due to its exploratory nature, was carried out only from a qualitative perspective.

3. Characteristics of a smart destination

Lamfus, Martín, Alzua-Sorzabal and Torres-Manzanera[7] argue that a tourism destination is considered smart when it makes: Intensive use of the technological infrastructure provided by the Smart City in order to enhance the tourism experience of visitors, personalizing and making them aware of

tourism services and venues, as well as products available at the destination, and empowers destination management organizations, local institutions and tourism businesses to make decisions and take actions based on the data produced at the destination, gathered, managed and processed through the technology infrastructure.

One of the most important points that destinations must address in order to become smart destinations is the need to have a totally tourist-centric approach. In this way, their needs, preferences and requirements are taken into account, in order to improve their experience and obtain greater satisfaction during their trip[5]. Schmidt-Cornejo et al.[7] mention in this regard that the difference between a traditional destination and a smart one has to do with the fact that, in the latter, both services and infrastructure are highly technician and provide the feeling of immediate response to information needs, which is a basic aspect for tourism seen as a service. Another important element is the citizens, society and the destination's stakeholders, which according to these authors must conform to a real contemporary and digital democracy, also known as e-democracy.

Likewise, it is important to highlight that both social networks and internet tools, as well as Big Data, are indispensables for the dynamic development of smart tourist destinations, since they allow networking, therefore they are a useful and rich source of tourist information[8].

Authors such as Schmidt-Cornejo et al.[7] point out some of the characteristics that a smart destination could meet, focused both on society and on businesses and government: Roads for cyclists, pedestrian bollards, wastewater management, waste management and recycling, use of social networks and website, open internet in the main roads and tourist sites, in addition to QR code plates, use of applications and augmented reality.

The Operational Manual for the configuration of tourist destinations, by the Valentina et al. shows a reference model for destinations that intend to develop through this concept. This model starts with the rethinking of tourism policy and management, as well as the integration of the so-called DMO (destination management organizations).

The model proposed in this manual consists of four guidelines: sustainability, connectivity, information system and innovation. The first of these is the reduction of public spending and the achievement of greater efficiency in public services. It proposes to provide incentives for innovation, citizen awareness and real-time information, which favors transparency. These proposals are also applied to different areas of urban mobility with the aim of reducing high costs due to road congestion, atmospheric and acoustic pollution, as well as the reduction of accidents and the emission of polluting gases. Waste treatment, water supply and reuse, and the management of public infrastructure buildings, among others, are the tasks addressed in this guideline. These measures lead to greater efficiency and, in the same way, improve the image and, consequently, the positioning of the destination.

When the Manual refers to accessibility, it considers two variables: Physical accessibility and digital accessibility. The first of these is directed, therefore, towards buildings, urban planning, means of transport and offline promotional material. In contrast, digital accessibility focuses on access to the web with quality design and layout, as well as online and offline promotional material, covering material that is available on perfectly designed web pages with all the necessary information for users, such as audio guides and self-walking tours.

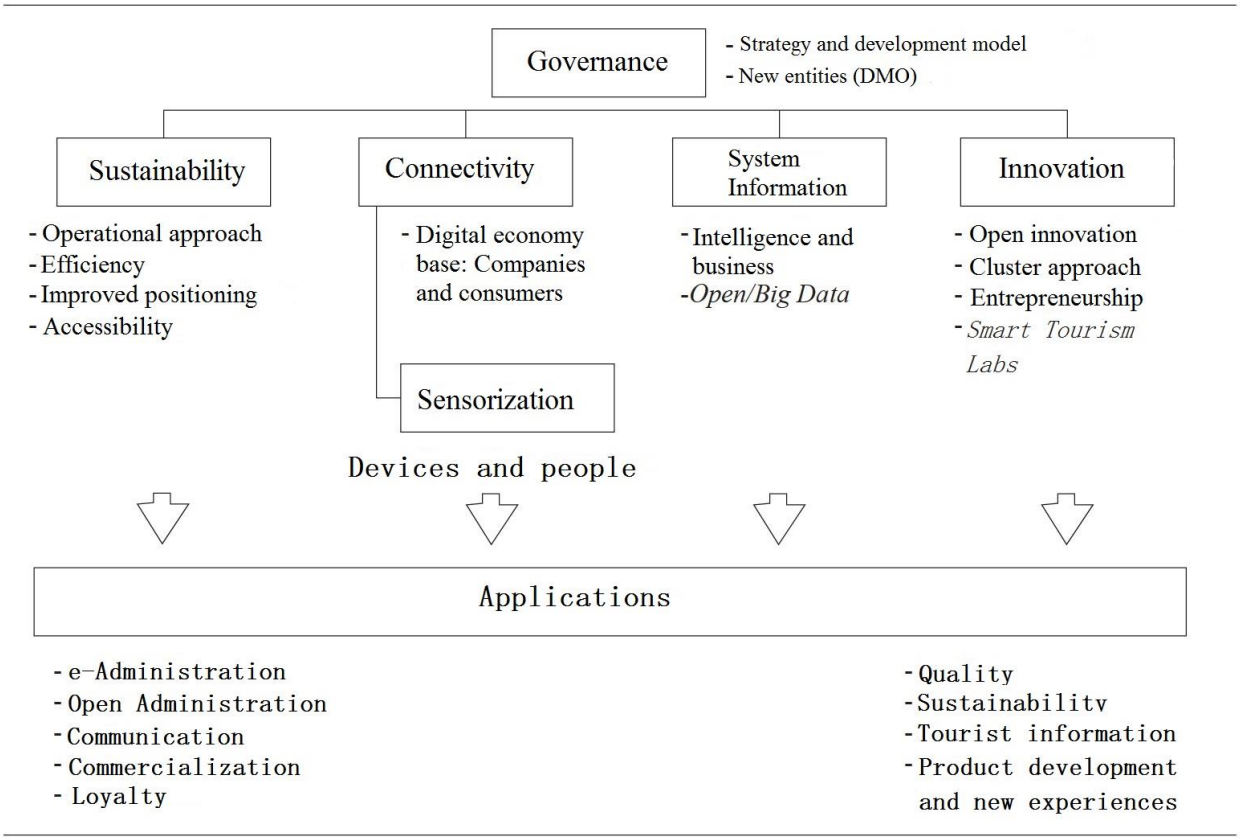

Figure 1. Reference model of the operational manual for the configuration of smart tourist destinations.

In the case of connectivity, which represents the primary basis of any smart destination, there are the two options: Wired and wireless connectivity. In the first one is internet access through the GSM network (Global System for Mobile Communications) using radioelectric bands, with major capacity to transmit data as they have higher frequency. With respect to wireless connectivity, i.e. WiFi access points, there are six possibilities: Access points in enclosed public places, provided by fixed and mobile telephone companies.

- Commercial access points, provided by specialized companies (in open public spaces).
- Access points managed by the public administration.
- Semi-commercial networks, which are access points for a community that shares the WiFi service.
- Free access points provided by citizens, free wireless communities.
- Free access points provided by local businesses.

Sensorization is an aspect that becomes more meaningful as the environment achieves full connectivity. Sensors make it possible to obtain data on various magnitudes (traffic, pollution, number of accesses to a museum, etc.). Subsequently, these data are uploaded to the cloud, where they are processed and then exploited, i.e. used for various purposes, from decision making to visualization by the public.

Information systems are concerned with those elements that in themselves enable the proper management of data (collection, storage, processing, presentation and distribution). Destination managers, entrepreneurs and tourists are involved in both the production and use of data. All this information is ac-quired by means of connectivity and tensorization, which acquire an infinite amount of data. This facil-itates visitor interaction and integration.

A similar approach to that of the Manual is pro-posed by López de Ávila[9], for whom smart destina-tions are based on four pillars: technology, innova-tion, universal accessibility and

sustainability. Standard 178501:2018, from the Spanish Associa-tion for Standardization and Certification[10], speci-fies the way in which these destinations should be managed, and sets goals based on these four pillars.

Innovation is understood as all those coordi-nated management approaches capable of generating significant improvements in the activities carried out during the stay at the tourist destination; they are im-provements that come from the implementation of innovative management tools. Innovation serves the purpose of increasing the efficiency of tourism pro-motion processes, as well as the establishment of co-ordinated management at the destination.

As for technology, a broad reference is made to all its versions, i.e., information technologies, energy improvements and communications. Technological surveillance is also included, aimed at recovering all useful market and customer information by means of data collection and analysis in real time. It also con-siders the development of efficient products, pro-cesses and services at the destination. To these as-pects is added the promotion of the destination on technological platforms using new means of dissem-ination and promotion.

Universal accessibility, as in the Smart Destina-tions Manual of the Valentina et al. is understood as a way of adding value to any initiative generated by all stakeholders, with the aim of extending this to the entire value chain. It includes access to information and different tourism content in several languages, in order to increase understanding of the services; it also considers the improvement of public transporta-tion using tensorization and ICTs. The objective of this pillar is that all users, including tourists with dis-abilities, have unrestricted access to tourism re-sources.

Sustainability is understood as the reasonable and efficient management of all available resources, which has a decisive impact on the quality of life of inhabitants and tourists, and thus on improving the competitiveness of the destination and the companies that operate in it. It also focuses on promoting tourism that rationally exploits resources.

The structure of the 178501:2018 Standard also shows that the management of a smart tourism destination, that is, one based on the four pillars mentioned above, also requires leadership and commitment from both private and public stakeholders, who must carry out adequate destination management planning (which must be conducted following a master plan for the destination).

Later, we will explore what happens in the case of Huatulco, in contrast to the elements mentioned by López de Ávila. Before doing so, two cases of smart destinations will be presented, which will allow us to appreciate the possibilities of this approach.

3.1. Two cases of success

The first of these cases is the city of Dubai, selected for the fact that it is one of the most recognized smart destinations in the world and therefore represents today a future perspective for those destinations that are starting on the road to smartness. In addition, what is perhaps the most outstanding case in Mexico, Tequila (Jalisco), will be presented. Although Tequila has not yet managed to become a smart destination, it is considered that it has made considerable progress in this regard, and interesting lessons can be drawn for Huatulco, given that both are medium-sized cities (usually in the range of between 10 and 50,000 inhabitants).

These examples, of course, are based on the available literature about both tourist destinations, considering authors such as Khan, Woo, Nam for the case of Dubai, and Aguiar, De Arteaga and Tequila[11-14].

Dubai

This city in the United Arab Emirates is the first case to be proposed, following the article by Khan et

al.[13], which identifies Dubai's best practices with respect to the smart destination concept (and smart city, from which it is derived).

The Smart Dubai concept was launched in 2014 as the continuation of a series of strategies along the same lines that began to be implemented in 1999 and that accompanied Dubai's growth as a tourist destination of international importance. Its goal is clear: To make Dubai the "happiest city in the world"[13], for locals, visitors and tourists alike.

To this end, it proposes four pillars: Efficiency and resource optimization; continuity, understood as the absence of interruptions in daily activity; safety, which implies anticipation of risks; and impact when it comes to enriching the lives of its inhabitants and creating satisfying business experiences. These four pillars in turn encompass six dimensions, which comprise hundreds of initiatives, and are supported by thousands of government services. The dimensions are economy, governance, environment, living, mobility and people.

Dubai has also developed a Happiness Meter Index that monitors and evaluates the level of satisfaction through both online and offline interfaces and is processed by smart devices located at government headquarters. The results of the index are always used to know the level of citizen satisfaction, and are used in governmental decision-making. Another index is the Smart Dubai Index, linked to the six dimensions mentioned above, which contains key indicators to quantify the degree of progress in the development of the Smart Dubai concept. This concept requires a powerful information infrastructure, which has been reinforced by the Dubai Data Law, which considers open for public use, by default, all data that is not classified as personal, sensitive or confidential.

Khan et al.[13] empirically analyze the image of Dubai as manifested in its relationship with some of the main aspects of the smart city concept. For this they use scales based on different keywords, and conclude that "tourists and residents perceive Dubai as one of the most competitive cities in the region."

In the specific field of tourism, Dubai has made intensive use of mobile technologies to ensure that all tourism operations are carried out efficiently and without interruption. This is the case with NFC (nearfield communication) tags or the Nagham tour guide system, which relies on cloud computing. The Smart Airport concept occupies a prominent place among these initiatives for the use of new technologies, as it covers practically all airport operations. Throughout their stay in the city, tourists can also be in contact with numerous intelligent systems.

Tequila

This city in the state of Jalisco (Mexico), origin of the famous drink that bears its name, has been, according to Sequitur, the second destination outside Spain that was interested in cooperating with said society to develop an action program capable of turning it into a smart destination. Tequila has been incorporated into the government's Pueblos Mágicos program since 2003, and is also considered the first geotourism destination in Mexico, in a collaboration with National Geographic[11]; likewise, the entire tequila region was declared a world heritage site by UNESCO in 2006.

A large part of these successes is due to the fact that, as recognized by Sequitur, Tequila represents an exemplary case of public-private collaboration, in which the managing body of the tourist destination is co-chaired by public and private sector managers; being precisely the private sector the main driver of the conversion of Tequila into an Intelligent Tourism Destination.

In order to initiate such conversion, Sequitur conducted a diagnosis in Tequila to be developed in the destination (innovation, accessibility, technology and sustainability). The results of this diagnosis were presented in November 2016, along with a program that calendarized the actions to be carried out.

Since then, Tequila has developed numerous initiatives along these lines. According to Sequitur's

own data (taken from the website www.destinosinteligentes.es), a public-private management structure called the Tequila Integral Development Council has been created, which allows the project to be coordinated and also provides continuity, regardless of political ups and downs. In addition, several innovations have been incorporated in terms of information technology: A promotional website, the development of a cell phone application, WiFi access in the Historic Center, and a security and mobility monitoring system. In addition to these measures, Tequila has established numerous sustainability policies, especially about the efficient management of water and electricity consumption.

These efforts have already paid off; in this regard, Sequitur distinguished Tequila in 2017 with the Smart Destination in Progress certification, considering that it has already advanced 46 % of what is necessary to achieve such an end. However, Tequila wants to continue advancing on this path: Its longer-term horizon is to become a smart magic by 2020, and a smart city by 2040[14].

The two cases just mentioned, considered successful by numerous authors, are believed to provide several lessons for what we will study next, i.e. the case of Santa María Huatulco. As has been seen so far, these are very different cases (and it would be of great interest to establish a systematic comparison), but there are several points in common, including, most notably, the government's willingness to carry out these initiatives in a timely manner. Indeed, in both examples there is a clear commitment on the part of the government to support existing initiatives with its services.

After observing these two success stories, we will move on to Santa María Huatulco, the municipality located on the coast of the Mexican state of Oaxaca, which contains the tourist destination Bahías de Huatulco. The purpose is to establish an analysis (exploratory and qualitative) of the practices carried out in this locality.

3.2. Huatulco as an intelligent destination?

Santa María Huatulco is a municipality located on the coast of the Mexican state of Oaxaca and has a population of 45,680 inhabitants. Huatulco is known for hosting the tourism development called Centro Integralmente Planeado (CIP) Bahías de Huatulco. The CIPs are part of a strategy developed by the Mexican government, through the National Fund for the Promotion of Tourism (FONATUR), in the 1970s to use tourism as a means of earning foreign exchange, as well as to generate employment and create regional development poles[15]. Work to build the CIP Bahías de Huatulco began in 1985, following a presidential decree that expropriated the land and relocated the original inhabitants; this expropriation has been the subject of numerous criticisms and has not ceased to represent a social problem since then[16].

The CIP Bahías de Huatulco has 36 beaches in excellent conditions, housed in nine bays; it has an international airport, an 18-hole golf course, three tourist marinas and a cruise ship dock. Its lodging offer reached 4,066 rooms in 2013, distributed in 121 establishments; 88.8% of the rooms correspond to a category equal or superior to three stars. Huatulco is immersed in a vegetation zone with a predominance of low deciduous forest[17], part of which constitutes since 1998 a protected natural area - the Huatulco National Park - covering 30.16 % of the total area of the municipality[18]. The Park has important native fauna and flora, which represents a competitive advantage over other beach destinations and allows for the diversification of its tourism offer. Huatulco's green image is highlighted by the fact that it is the first destination in Latin America to be awarded Earth Check certification.

To provide a future perspective of the case of Santa María Huatulco, the Municipal Development Plan 2017- 2018[18] and the Agenda de Competitivities Huatulco will be taken as a basis, documents that will be put in relation to the elements mentioned by the Manual de la Generalist Valentina et al. and with the pillars of López de Ávila's[9] scheme, which will be the structuring followed for the division of this section.

Innovation

This first element refers, as noted, to "any change based on knowledge that generates value"[19]. In the municipal and state development plans, both presented in 2017, the topic of innovation is touched upon, as this is a line of action towards the future. These strategies are not detailed according to the lines of action precisely because they are raised for the future and it would be missing, therefore, to analyze at the end of the period how they were applied and their effectiveness index.

A non-systematic search on the web for programs aimed at entrepreneurs found that the National Entrepreneur Fund has not been held in Huatulco since 2013.

In this aspect, some have the initiative to start a new business, however, they do not know what and do not have the possibility or facility to get information about it; it would be interesting then if some government programs as their main function to provide advice on new ways to invest. All this should be done with the long-term vision of creating innovation ecosystems through entrepreneurship.

Nevertheless, there are innovative initiatives, some of them arising from the community itself, as is the case with the Huatulco Market, in operation since 2014. This market is held on the last Saturday of each month to promote the commercialization of various organic products grown or produced in the municipality of Santa María Huatulco.

Within the framework of the Huatulco Competitiveness Agenda, José Maria Filgueiras-Nodar proposed a project called Integrated Management and Marketing System for Huatulco (sigech) with the intention "to provide Huatulco with a brain and a nervous system that will allow the destination to act in a unified and organic manner". This system, although developed from the approach of destination management systems, has many common elements with the paradigm of smart destinations. This is the case, for example, with the aspect of leadership mentioned by the UNE 178501 Standard, which is resolved with the creation of a management entity capable of providing the destination with a strategic vision, and outside of the triennial or sexennial political changes. This management entity, made up of government agencies, businesses and civil society, would be responsible for systematically and professionally directing the management and marketing of Huatulco, for which a marketing plan would be developed periodically to cover the entire destination.

Another element related to the knowledge present and capable of generating value is the creation of an observatory of tourism experiences, aimed at obtaining "in-depth knowledge of all quantitative and qualitative aspects involved in the development of a satisfactory tourism experience for visitors to Huatulco", for which it would centralize all available information about the destination and its environment as well as its main markets. Another element is the Tourism Training Center, which had as its main objectives, firstly, the training of human resources adapted to the needs detected in Huatulco by the system, and specifically by the Observatory itself; and secondly, the dissemination of tourism culture among the local population.

Technology

With respect to this second pillar, according to the Municipal Development Plan, new technologies have been inserted in the Public Administration. This has been carried out in the municipality's own management system, which is characterized as a digital municipality, based on computer technologies, especially the Internet. The purpose of this insertion of new technologies is to achieve better efficiency in public management, as well as data transparency, in addition to facilitating the services offered to citizens and thus obtain a greater degree of interaction between them and their government.

However, as a tourist destination, the SECTUR study mentions that "Huatulco is not exploiting all the possibilities offered today by information technologies, of which many leading destinations make efficient use: proximity marketing, augmented reality, self-walking guides, etc." What presented above,

included in its operational core several subsystems aimed at resolving this situation. Thus, for example, the customer relations subsystem, which would function as a loyalty and CRM module, linked to a multisponsored incentive program at the destination planned to be equipped with various technological tools: a customer knowledge base, linked to customer communication channels; applications for transaction control; traceability and analytical CRM tools.

Accessibility

This third aspect must be understood in its two versions: physical and digital accessibility, in addition to tensorization. In the first case, speaking of roads and highways, the municipality is crossed by federal highway 200, which connects with Salina Cruz, San Pedro Pochutla and Puerto Escondido, in addition to state highway 174, which connects to Pluma Hidalgo. Additionally, Sectur mentioned that there was air connectivity valued as "low". In the same line, making a comparison of arrivals for the month of January 2017 with the same month of 2018, it is found that there was a reduction of passengers of 4.76 %. In the case of marine accessibility, the destination has, as mentioned, a cruise pier and three marinas, in addition to a port for fishing and tourist activity. In the case of the cruise pier, there was an increase of 150.34 % in the number of double arrivals and overnight stays between 2016 and 2017.

On the other hand, land accessibility in the municipality is highly variable, since some of the communities that do not belong to the integrally planned center, that is, the tourist development, and some colonies in the development itself are not properly connected, given that they do not have roads or are in poor condition; there are even areas that do not have paved streets.

There is still much to be done to make Huatulco an accessible destination for all, especially to integrate people with disabilities: access to sidewalks for wheelchairs, such as ramps and adaptation to the space of these, signage in Braille, etc. This should be done in all places that are part of tourism development: Museums, monuments, interpretation centers, beaches, accommodation and restaurants, services and complementary offerings, tourist activities, means of transportation and tourist information services, without neglecting urban accessibility in general, such as buildings, squares and parks. In addition, information must be provided that is useful for tourism activities, such as 100% accessible promotional material, information offices and centers, accessible tourist guides, etc.

Digital accessibility, on the other hand, seeks to achieve the adaptation of the website that it is accessible to all, so that useful information about the destination is provided- and also the accessibility of online promotional material, its adaptation and improvement according to the needs of the tourist, which implies the development of new products and services in terms of information. In addition, this aspect takes into account wireless and wired accessibility, the first of them discussed above, which, applied to the case of Santa María Huatulco, is only available in one of its cases: Free access points provided by local businesses, specifically, in some catering establishments and bars, as well as in most lodging establishments; shopping centers usually do not have this service.

Another aspect to point out is that there is not enough promotional material on the web about the destination, in addition to the lack of an official website (a situation that has not yet been resolved, despite having already been pointed out) and of communication spaces with constant updates, such as pages on social networks. It is only included in the Webcams of Mexico Program, where the low quality of the digital and video content is notorious. In addition, it should be noted that this is not a government program, but a private company in conjunction with the Harp Helú Foundation, which is in charge of its maintenance and administration.

It seems that some of the ideas have been taken up again since it was proposed, as is the case of mobile applications or the use of codes, but they have

not gone beyond isolated approaches, without even launching the so-called web subsystem, which would integrate an official page of the destination with a platform on social networks and various mobile applications, among which the use of augmented reality would stand out.

Sustainability

The fourth and final aspect, which is often considered one of Huatulco's strong points, is directly linked to the rational management of resources and their efficiency in all environmental sectors. As is well known, sustainability encompasses three dimensions, which are intimately associated with smart cities: economic, directly related to competitiveness; social, focused on the quality of life of citizens; and finally, environmental, which, as already mentioned, refers to the efficient management of natural resources.

In terms of natural resource management, the municipality is home to site 1,321, with an area of 44,400 ha of watersheds and corals in the coastal zone of Huatulco; since its creation in 1998, there is also the Huatulco National Park, with 11,980 ha. The municipality also has two clean beach certifications, and three Blue Flag certifications for Chahué beach (since 2013) and Tangolunda Dreams and Barceló beaches (obtained in July 2018). In 2006, the municipality was recognized as a biosphere reserve by the United Nations Educational, Scientific and Cultural Organization (UNESCO) due to its variety of natural resources. Finally, the municipality has the Earth Check Platinum certification (in 2016, formerly Green Globe) for working in different areas that reinforce sustainable development.

Although hard work has been done on the sustainable part, it is important to clarify that these efforts have been carried out in tourism development, but not in the entire municipality. Besides that, there is still pressure on natural resources, as occurs, for example, with the expansion of urban areas due to the need for housing, public services and access; the same happens with the use of water for the functionality of treatment plants, which leads to the contamination of rivers and beaches to sustain the tourist center, and which has effects on ecosystems and agriculture. There is also a clear disorder in the modification of the land and maritime territory; there is plundering of species, use of agrochemicals and inadequate disposal of the containers that contain them, which directly affects the rivers and streams and, consequently, the flora and fauna that inhabit them. Another problem is the inefficient management of urban waste throughout the municipality, along with the expansion of the landfill into the protected natural area and its lack of capacity, which is reflected in the fact that it is nearing the end of its life span. Finally, civil society is still far from being fully integrated in activities and projects related to urban development and local ecological management. In general, the population has shown little interest in conservation issues, certifications and recognitions.

If the indicators exposed in the theoretical consideration of sustainability are heeded, it should be recognized that the policy towards a sustainable destination is in development, an opinion that coincides with what is pointed out by some destination scholars. For its part, business management in terms of certifications is concentrated in four- and five-star hotels, in addition to companies of national stature. Local businesses do not have environmental quality certifications or social responsibility programs (except for the "M" certification). There is also no data on tourists satisfied with the tourism experience in Huatulco, and few are aware of the efforts made by the municipal council in terms of sustainability.

For companies seeking environmental quality or sustainability certifications, there is the S badge certification, which is responsible for recognizing good sustainable practices of tourism projects and companies. This certification is in charge of the Ministry of Tourism, and in the destination there are only four companies (Hotel Barceló, Hotel Bahía, Hotel Las Brisas and the Airport) that have this certification, out of a total of 3,286 existing companies, according to the National Statistical Directory of Economic Units, consulted in February 2018, in addition

to the CIP itself.

The "H" badge is a certification granted and the Secretaria de Salud to fixed food and beverage establishments for compliance with certain hygiene and quality standards in food handling (the standards are outlined in Mexican Standard nmx-F605). In 2015 there were five companies with this distinction, covering 67 restaurants), but by 2017 there was a 40% reduction in certified companies.

As for the "M", maximum recognition granted and that endorses the adoption of best practices and a distinction of model tourism company, only nine companies have this certification. Finally, there are no "Punto Limpio" or "Tesoros de México" certifications.

Nor was enough data found on the indicators that, according to the Etic, are essential for monitoring sustainability and lay the groundwork for effective destination management. In addition, tourism companies generally do not source their supplies from local suppliers. In the Huatulco Competitiveness Agenda, it was found that the average stay is 2.67 days, with an expenditure of $2,923. From January to October 2016, a total of 495,046 tourist arrivals were obtained, a relevant number that makes one think about the benefits that such an arrival of tourists could have for suppliers in the localities around the tourist destination if sourcing practices were changed.

A review was also carried out in online booking centers and in the TripAdvisor social network on the accessibility of lodging services. It was found that only 27 out of 146 registered have "accessibility". Most of them only mention that they are "adapted for people with reduced capacity", others add "elevator", only one specifies having "wheelchair adapted rooms", "showers and bathroom accessible for wheelchairs", being this the only "accessible" adaptation in the lodging establishments. Other aspects relevant to accessibility, such as Braille sign boards or tactile signage, have been left out.

In terms of waste management and wastewater treatment, the citizens of Huatulco generate 0.530 kg of garbage daily and consume 124 L (liters) of drinking water compared to tourists, who use 800 L per person per day. There is no data on the difference in waste generation, but the Tourism in the Green Economy report 2012[20] mentions that each international tourist visiting Europe generates at least one kilo of solid waste per day and up to two kilos per tourist per day in the United States. One aspect that should be emphasized is that 100 % of the water used in Huatulco is recycled. Despite this, water scarcity is a problem that, according to scholars, Huatulco will be facing more and more acutely in the future[21].

4. Conclusions

As a final reflection, if the municipality of Santa Maria Huatulco is taken as the unit of analysis, it does not score high in the standard indicators of smart destinations; therefore, as a project for the future, it would have to work on it with greater effort if it were to advance towards the development of a smart destination. One aspect that should be highlighted is that so far only the part corresponding to tourism development, the Municipal Agency of Santa Cruz Huatulco, has been worked on, as shown in the data of the Agenda for Competitiveness of Huatulco.

The available indicators show that Huatulco is low in accessibility, technology and innovation, which are the pillars of a smart tourism destination and even in sustainability, which has been one of the most attended aspects in the destination. In this regard, a particularly important point is the participation of all stakeholders in society: Government, business sector, academia and civil society, in order to have a positive impact on all indicators.

Speaking of innovation, the productive sector should apply it in the three corresponding areas (administration, business/tourism sector and universities), addressing multiple fronts: Technological surveillance, technical assistance, market information (tourism observatory), training, support for entrepre-

neurs (promotion of entrepreneurship and new business models that favor a new tourism economy based on knowledge and innovation), travel open apps, cooperation networks, etc. Of these innovation systems, there are only proposals for the future.

In the area of technology, much more work needs to be done. For example, there are only four cellular telephone companies operating in the municipality, which do not cover the entire territory. It would also be necessary to develop mobile applications to facilitate the visit, sensors that allow data collection, specialized tourism websites, online satisfaction surveys and greater presence in social networks. As in the previous pillar, there are certain proposals by the municipal government and sector that could be evaluated (or their existence verified) at the end of each administration's term of office.

In terms of accessibility, the destination must first be adapted to the different target markets, in addition to adapting it for people with disabilities, who would be able to enjoy the environment more satisfactorily, if it is decided to make this group a target market for Huatulco. Finally, Internet accessibility is crucial, since only two companies provide this wired service to the community, while free Internet access for tourists is limited to that provided by local businesses.

In the context of sustainability, in addition to continuing to strengthen the initiatives already underway, incentives should be provided for certifying companies and preventing the reduction of existing ones, as well as encouraging their expansion to other productive sectors. Likewise, the influence of seasonality on employment should be counteracted, with fair wages and a decent quality of life.

Huatulco is sometimes presented as a green, sustainable destination, which is reflected in the certifications that have been obtained, already mentioned, at the same time it wants to attract elite tourism. At the same time, work is being done to try to reduce seasonality, which is notorious especially in the months of September and October, in order to attract more tourists. However, it is necessary to have a clear and precise vision of where we want to go as a tourist center, and from there to create initiatives that include all the actors of a society. The cost-benefit of any proposed approach must also be taken into account: it is not possible to consider attracting more tourists if they are not tourists with the characteristics sought by the destination (i.e., concerned about sustainability or elite tourists, which has been the desired approach for Huatulco since its inception). Neither could it consider being a sustainable destination if the sustainability certification indexes are going down.

All the above shows that Huatulco has a long way to go if it wants to become a smart destination. What cannot be denied is that, with a more in-depth analysis of the destination's indicators, it is possible to establish with greater clarity where it can go and what steps will have to be taken from now on along that path.

We agree with Hollnagel[22], who states that, although when hearing smart destinations the first thing that comes to mind are large cities (such as London, New York, Barcelona or the aforementioned Dubai), small cities have a number of advantages when it comes to applying the technologies required for the development of a smart destination. These include, firstly, their smaller size, which makes it easier to monitor the activities carried out and their impact on the city. In small cities it is also easier to carry out planning, since their governmental organization is less complex. Finally, in small cities all public services are usually planned in an integrated manner, which allows the sharing of data and the development of such services on a citywide basis, without the usual compartmentalization problems typical of larger cities, where different sectors (health, water, etc.) are planned separately. It is considered that these three advantages pointed out by Hollnagel fully apply to the case of Huatulco and should be taken advantage of. In this regard, it could be very interesting to make use of the lessons learned from the case of Tequila.

A final reflection has to do with what the destination could gain if it decides to initiate its conversion to a smart destination. As stated by Boes, Buhalis and Inversini[23], the smart cities paradigm, since its inception, has been considered an element capable of boosting the prosperity of the cities where it is implemented, both in the economic and in the social and environmental dimensions. From this perspective, the goal of the smart approach would be to increase the quality of life of residents and tourists, and at the same time increase the competitiveness of the destination. Buhalis and Amaranggana[6] point out, in turn, that successful smart destination conversion also serves to attract foreign direct investment. The aspects are positive for the destination, and the multitude of existing success stories make it clear that this is a great opportunity for Huatulco going forward.

Conflict of interest

The authors declare no conflict of interest.

References

1. Del Chiappa G, Baggio R. Knowledge transfer in smart tourism destinations: Analyzing the effects of a network structure. Journal of Destination Marketing & Management 2015; 4(3): 145–150.
2. Bakici T, Almirall E, Wareham J. A smart city initiative: The case of Barcelona. Springer Science & Business Media 2013; 4(2): 135–148.
3. Batty M, Axhausen KW, Giannotti F, et al. Smart cities of the future. Europe Physical Journal 2012; 481–518.
4. Naphade M, Banavar G, Harrison C, et al. Smarter cities and their innovation challenges. Computer 2011; 44(6): 32–39.
5. Del Vecchio P, Mele G, Ndou V, et al. Creating value from social big data: Implications for smart tourism destinations. Information Processing & Management 2018; 54(5): 847–860.
6. Buhalis D, Amaranggana A. Smart tourism destinations. Information and communication technologies in tourism. Suiza: Springer International Publishing; 2014. p. 553–564.
7. Schmidt-Cornejo NEC, Santillan-Núñez MA, Velarde-Valdez M. Fundamentos teórico-tecnológicos de un destino inteligente: Diagnóstico del destino turístico Mazatlán (Spanish) [Theoretical-technological foundations of an intelligent destination: Diagnosis of the tourist destination Mazatlan]. Cultur 2016; 10(3): 51–64.
8. Miah SJ, Vu HQ, Gammack J, et al. A Big Data analytics method for tourist behaviour analysis. Information & Management 2016; 54(6): 771–785.
9. López de Ávila, A. Gestionar el modelo turístico del siglo Xxi (Spanish) [Managing the tourism model of the 20th century]. Revista de aenor 2016; 314: 10–15.
10. Asociación Española de Normalización y Certificación (aenor). La Norma une178501:2018. Sistema de gestión de destinos turísticos inteligentes. Requisitos (Spanish) [Intelligent tourism destination management system]. Madrid: aenor; 2018.
11. Aguiar Díaz MA. Tequila, es el primer destino geoturístico de México en un cobranding con National Geographic. (Spanish) [Tequila is Mexico's first geotourism destination in a cobranding with National Geographic]. Fundación José Cuervo 2017; 7.
12. KPMG. Dubai—A new paradigm for smart cities. Amstelveen: Holanda; 2015
13. Khan MS, Woo M, Nam K, et al. Smart city and smart tourism: A case of Dubai. Sustainability 2017; 9.
14. De Arteaga F. Modelo Tequila pueblo mágico, inteligente sostenible (Spanish) [Model Tequila magical town, intelligent and sustainable. Monthly Newsletter, José Cuervo Foundation]. Boletín Mensual, Fundación José Cuervo 2017.
15. López Guevara VM. La reorientación en los destinos litorales planificados. Caso de estudio: Bahías de Huatulco, Oaxaca (México) (Spanish) [Reorientation in planned coastal destinations. Case study: Huatulco Bays, Oaxaca (Mexico)] [Master's thesis]. Alicante (España): Universidad de Alicante; 2010.
16. Talledos Sánchez E. La imposición de un espacio: de La Crucecita a Bahías de Huatulco (Spanish) [The imposition of a space: From La Crucecita to Bahías de Huatulco]. Revista Mexicana de Ciencias Políticas y Sociales 2012; 57(216): 119–142.
17. Rocha Rodríguez J. Agua y vulnerabilidad: Experiencias comunitarias en la costa de Oaxaca (Spanish) [Water and vulnerability: Community experiences on the coast of Oaxaca]. In: Filgueiras-Nodar JM, García-Flores JG (editors). Oaxaca verde: ética Ambiental para nuestro estado (Spanish) [Green Oaxaca: Environmental ethics for our state]. Cuernavaca: Letras del Lobo; 2016. p. 187–202.
18. Gómez A, Server M, Jara A, et al. Municipal Government of Santa María Huatulco (gMH). Plan Municipal de Desarrollo de Santa María Huatulco 2017–2018 (Spanish) [Municipal Development Plan of Santa María Huatulco 2017–2018]. City Hall of Santa Maria Huatulco, Oaxaca: GMH; 2017.
19. Ministerio de Industria, Turismo y Comercio (MitC). Plan del turismo español horizonte 2020 (Spanish) [Spanish tourism plan horizon 2020]. Madrid:

Secretary of State for Tourism; 2008.
20. UNWTO. Tourism in the green economy. Madrid: UNWTO; 2012.
21. Domínguez-Licona JM, Gómez-Rojo VR, Hernández-Santiago C, et al. El caso de la problemática de la bahía y micro-cuenca delrío Cacaluta, Santa María Huatulco, Oaxaca (Spanish) [The case of the problem of the bay and micro-basin of the Cacaluta River, Santa María Huatulco, Oaxaca]. Diagnosis of the natural resources of the Bay and Micro-basin of the Cacaluta River, Municipality of Santa María Huatulco, Oaxaca. Puerto Angel, Pochutla, Oaxaca: University of the Sea, CONACyT-SEMARNAT; 2008. p. 470–510.
22. Hollnagel J. From "magic town" to smart city: The case of Tequila, Mexico. Inter-American Development Bank Blogs; 2015. Available from: https://blogs.iadb.org/ciudadessostenibles/2015/01/20/tequila/
23. Boes K, Buhalis D, Inversini A. Smart tourism destinations: Ecosystems for tourism destination competitiveness. International Journal of Tourism Cities 2016; 2(2): 108–124.