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The potential offered by smart cities to promote smart tourist destinations

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Abstract. The digital revolution has radically changed the world, as new digital technologies have introduced important innovations in factories, hospitals and schools, especially cities, improving the efficiency of city operations and life quality of its citizens and visitors. This study is a demonstration of the capabilities provided by smart cities to promote smart tourism through global experiences, where the study concluded that the inclusion of smart city determinants will make it a smart tourism destination and thus realize the concept of smart tourism as part of smart city, and improve the Provided tourism services quality and tourism experiences, since the innovation and sustainability are the only way to improve life quality and social value of both local residents and tourists.

Keywords. Modern communication and information technologies, smart cities, global smart city rankings, smart tourism, smart tourist destination.

1. Introduction

The tourism industry has always adapted to social and technological developments, and in the age of digitization it must adapt more, and with more than 1.404 billion people traveling around the world each year and an increasing number in the future, the implementation of a simple change in this sector can have a significant impact on the whole of society, because the link between the tourism sector and its potential impact on sustainable development has been recognized by the United Nations World Tourism Organization (UN), which has launched a dedicated promotional campaign with the idea that tourism is becoming the engine to achieve the United Nations Sustainable Development Goals, which the massive increase in global tourism represents an unprecedented opportunity to achieve the United Nations Sustainable

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Development Goals through technology as a valuable tool for achieving development goals are clearly identified, shared and measured through local inputs, outputs, outcomes and impact [1].

the tourism sector has a strong influence on the current account more than the other sectors because of its independence from abroad, and getting 100$ of tourism revenue does not need imports or imports are very low, while 100$ of exports in another sector may require $65 of imports, where the travel and tourism industry is a major source of income in most countries of the world. According to The World Travel and Tourism Council (WTTC), the direct contribution of travel and tourism to GDP was 2.5 trillion $ US (3.2% of GDP) in 2017 and experts expected this to be figure increases 4.0% in 2018 and 3.8% annually to 3.8 trillion $ US (3.6% of GDP) by 2028 [2].

In view of the future growth of tourism activity, it was necessary to ensure a sustainable growth of this activity in order to avoid the negative effects of tourism on the social and natural environment. At the same time, each destination must constantly innovate to compete with other destinations basing on modern technologies, and this is why the concept of smart tourism has emerged to address both issues by creating an environment that encourages continuous innovation in tourism sector, and works to engage its users in the development of new tourism products, and offer free access to the data collected including the protection of privacy, it is therefore the growing dependence of tourist destinations, their industries and their tourists on the new emerging forms of information and communications technologies which make it possible to transform huge amounts of data into valuable offers, and for better operational decisions [3].

Here, it should be noted that the residents and the local community play a fundamental role in the implementation of technological solutions for smart tourism, and therefore they are at the heart of the future tourism ecosystem within the framework of the smart city [4], because the vital functions that smart cities provide to their citizens are additional expectations for tourists all over the world to have an unforgettable high quality experience in these smart cities, because smart tourism is part of the smart city, where the goal of a smart city has become one of the priorities and aspirations of most of the world's cities, so it is developing, investing and planning in several sides globally agreed as determinants of the Smart city, and thus make possible local development, and make them an excellent smart tourism destination. So on this basis, the following problem arises: and thus make local development possible, and make them a smart tourist destination par excellence. So on this basis, the following problem arises:

What potentials do smart cities offer to promote smart tourism globally?

This study aims to:

- Identify the determinants of smart cities through the global smart cities ranking.
- Explain the term smart tourism.
- Explain the potentials that smart cities offer to promote smart tourism globally.

2. Literature Review

2.1. Definition of Smart City (SC)

'Smart or intelligent' has become a new buzzword to describe technological, economic and social developments fueled by technologies that rely on sensors, Big Data, open data, new modes of connectivity and exchange of data and information [3], and the term was added to cities (smart city) to describe efforts that aims to use technologies in an innovative way to optimize the use of resources, efficient and equitable governance, sustainability and quality of life [5]. And when it comes to tourism, the vital functions that smart cities offer to their citizens are additional expectations for tourists all over the world to have an unforgettable and high-quality experience in these smart cities [6], where nearly 1.5 million people worldwide join the

urban population each week and millions of high-tech applications are installed daily in cities, and in physical infrastructure (e.g. smart home and smart factory), this concept emphasizes the lack of clarity between physical and digital lines and the promotion of technological integration, in addition to this, there exists in technologies such as smart phone, smart card, smart TV, etc., and therefore the concept of "smart" It describes multiple functions and high levels of communication in the context of markets/economies in what is known as smart economy [7].

the context of smart tourism is used to describe a mix of all of the above, and there are concerted efforts to advance the agenda of smart tourism, where governments in China and South Korea are taking intensive funding initiatives mainly focused on the technological infrastructure that supports the development of smart tourism, and in Europe, many smart tourism initiatives have arisen from smart city projects, and as a result, smart tourism destinations have begun to appear more and more on the European tourism scene, with an increased focus on innovation and competitiveness and the development of smart applications for end users that support tourism experiences supported by using the data that is already existing combined and processing them in new ways. In Australia, the focus is on smart governance or smart government, especially open data [8].

So, the smart city refers to sustainable urban development (smart environment); to the integration of information and communication technologies in the management of services (smart economy), to generate participatory spaces in terms of cooperation and innovation (smart governance). A smart city can be defined as a city supported by a ubiquitous presence and massive use of advanced information technologies, which, in conjunction with various urban systems and domains, allow the city to control the available resources in a safe manner, sustainable and efficient in order to improve economic and societal results [9]. Smart cities are knowledge centers that manage information, technology and innovation, trying to achieve efficient management, sustainable development and a better quality of life for residents [10].

2.2. Smart Tourism Concept (ST)

According to the World Tourism Organization, tourism is a "social, cultural and economic phenomenon that requires the transport of people to countries or places outside their usual environment for personal, commercial or professional purposes" [11]. And given the intensity of tourist information and the resulting heavy dependence on information and communication technologies, it's not surprising that we see the concept of "smart" being applied to phenomena that include tourism, and then ST is a new brand for tourism, and it's part of a smarter city, so the real sense of ST is to focus on the needs of tourists, combining information technologies smart and informal culture, and the tourism innovation industry, to improve the quality of tourism services and improve the level of tourism management, and this will lead to the development and expansion of the modern engineering industry [12].

The term smart tourism or tourism 4.0 comes from the modern model of industry, known as the Fourth Industrial Revolution (Industry 4.0), which aims to improve the added value of tourism through innovation, knowledge, technology and creativity [13], and there are 3 basic questions associated with the concept of intelligent tourism which is:

- How to use the latest technologies to make tourism actors collaborate?
- How do you create ecosystems where tourism also becomes the engine of sustainability and positive impact?
- How to integrate high technology with tourism?

Therefore, the real essence of this transformation from the traditional model to the modern model of tourism is not only to use of technology to unleash the potential of innovation in the tourism sector, but also to influence all the areas surrounding it by creating an ecosystem in which physical and digital space, infrastructure, individuals and technology are integrated into

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a single system, where knowledge, forecasts and experiences will be used to serve tourists (concept of tourism 4.0) in order to create new services and products with the aim of raising the level of satisfaction regarding the experiences of all stakeholders of the tourism ecosystem, and will be done using key enabling technologies of the Fourth Industrial Revolution such as IoT, Big Data and Blockchain ... etc [4].

3. Components of smart cities in the most important international rankings

3.1. Smart City Components According to Boyd Cohen's Smart City Wheel

In order to support the smart city concept and track its progress, Boyd Cohen the urban strategist and smart city expert, developed the Smart City Wheel, where Cohen discussed the components of a smart city in six dimensions which are:

3.1.1. The intelligent administration or government: This means adopting a transparent management approach ensuring clarity of data and public participation, across indicators including participation in decision-making, public and social services, transparent governance, strategies and political horizons[14].

3.1.2. Smart environment: Sustainability of existing resources with energy management; measured by the attractiveness of natural conditions, the level of pollution, environmental protection and sustainable management of resources [15].

3.1.3. Smart mobility: Ease of access and use of modern transport systems in urban and intercity transport; measured by the indicators included ease and portability at the local level, ease and portability at the national level, the availability of information and communication technology infrastructure, as well as the availability of sustainable, innovative and secure transport systems [16].

3.1.4. Smart people: This means the quality of the inhabitants of the city, measured by the characteristics and indicators of the level of qualification, the attraction for long life learning, social and ethnic pluralism, flexibility, creativity, openness, participation in public life [17].

3.1.5. Smart Economy: Implement economic strategies based on the digital economy; among its advantages and indicators: competitiveness, spirit of innovation, entrepreneurship, economic image and brands, high productivity, labor market flexibility, international integration, capacity for transformation. [18].

3.1.6. Smart life: A healthy environment, social solidarity, tourist attraction and the high quality of life offered by accessible cultural and educational services, and we express intelligent life through the availability of cultural spaces and health conditions, the presence of individual security, the quality of housing, educational establishments and social cohesion [19].

As a result, through these six components, each city seeks to be a smart city [20], and an example of this is the smart cities model which classifies medium-sized European cities, which defines the smart city as a developed city with a perspective future in the economy, transport, environment, citizenship, quality of life and governance, and based on an intelligent mix of incomes and activities of conscious citizens and independent in their decisions[16], and these aspects are presented by Cohen in the smart city wheel (see Figure 1) on which he relied to compare the main large cities of the world [21]. The narrow view of smart cities by considering them as places that make better use of technology, information and communication no longer works, and smart cities are therefore now considered to be a global and integrated approach to improve the efficiency of the city's operations, the quality of life of its citizens and the development of the local economy [22].

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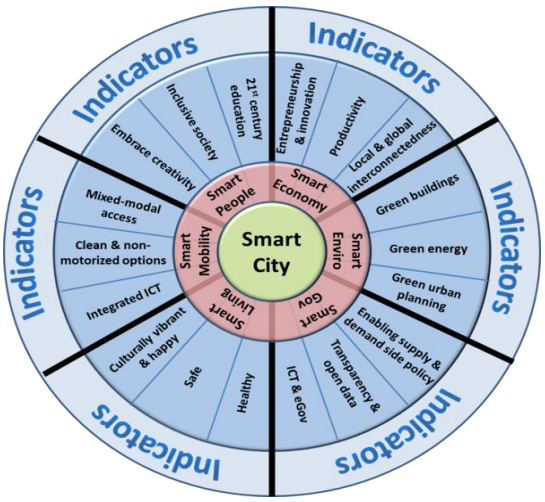
Figure 1. Boyd Cohen Smart City Wheel Component



Source: [23]

We could so conclude that smart tourism is managed as part of the smart economy from the components of smart cities. At the same time, research shows that smart tourism is linked to the six components of smart city mentioned above. For example, transport companies that provide services in the tourism sector are associated with smart mobility; and with the development of the tourism sector, the increasing number of skilled employees affects the intelligent human component and thus connects intelligent tourism with intelligent people, intelligent mobility, intelligent environment and intelligent life categories [24], hence intelligent tourism appears as one of the objectives of the smart city, and it is presented also as the one of the sub-dimensions of the smart city [25].

The following table N 1 shows the ten best smart cities according to Boyd Cohen's world classification, which includes four subcategories, which has been taken into account A best 100 cities indicator from Thinknow2 city rating for a fair comparison of the level of innovation in the world's best cities, and it uses better-known rankings for quality of life in cities, and also Siemens regional rankings for green cities, And the city rankings digital to the digital community for cities in the United States (referred to as DC in the table), and IDC rankings for smart cities in Spain (it's called IDC in the table), and finally use Study Digital governance in municipalities around the world to compare cities on their innovative use of ICT [21]:

Table 1. Top Ten Smart Cities by Boyd Cohen Rankings

Smart City Ranking	CITY	Region	Innovation Ranking	Green City Ranking*	Quality of Life Ranking	Digital City Ranking**
1	Vienna	Europe	5	4th in Europe	1	8
2	Toronto	NA	10	9th in North America	17	10
3	Paris	Europe	3	10th in Europe (RC: 6)	30	11
4	New York	NA	4	3rd in North America (RC: 8)	47	4
5	London	Europe	11	11th in Europe (RC: 9)	38	13
6	Tokyo	Asia-Pacific	22	Above Average in Asia (RC: 10)	46	15

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7	Berlin	Europe	14	8th in Europe	17	32
8	Copenhagen	Europe	9	1st in Europe (RC: 1)	9	39
9	Hong Kong	Asia-Pacific	15	Above Average in Asia	70	3
10	Barcelona	Europe	19	NR in Siemens (RC: 3)	40	NR in DCR (IDC: 2)
10	Boston	NA	1	6th in North America	36	NR in DCR (DC: 8)
10	Sydney	Asia-Pacific	20	N/A Siemens (RC: Runnerup)	11	33

Source: [22]

In general, we will review from this classification the top three ranks of cities and the actions they have taken:

Vienna ranked first because it was the only city that ranked among the top in the top ten in each category: Innovation ranking (ranked 5), Green city ranking in Europe (ranked 4) , Quality of Life Ranking (ranked 1) and Digital City Ranking (ranked 8), where Vienna sets bold goals for the smart city and tracks its progress towards achieving it, through programs such as Smart Energy Vision 2050 and Roadmap 2020, and in the action plan, the Vienna planners incorporate processes of consultation with stakeholders in the construction and implementation of carbon reduction [26], transport and spatial planning in order to make the city a key European player in smart city technologies [27].

As for the second place, it went to the city of Toronto, as Toronto is considered the smartest city in North America, also very good in all other domains, as Toronto is an active member of the 40 Clinton Cities (C40) looking to move to a low carbon economy and Toronto's private sector is also cooperating by creating the Smart Commute Toronto initiative in the hope of increasing transportation efficiency in the metro area. Toronto has also recently started using natural gas from landfills to run garbage trucks in the city, so it's a smart city of mobility [28].

As for third place, it went to Paris, where Paris ranks very well in several categories including innovation (ranked 3), green cities in Europe (ranked 10) and digital cities (ranked 11), where Paris succeeded on the world map concerning the bike-sharing program. Paris created the first modern large-scale bike-sharing system in 2007 called Velib, and Paris launched a similar model for Velib called the Service d 'Autolib' electric cars haring [29] (which also shows the value of the electric vehicle as an urban auxiliary vehicle) acronym for "automobile" which has been in service since 2009, and now it currently has 1,300 charging stations over 300,000 cars [23].

3.2. Global smart city wheel applications

We show examples of cities in how to use the real smart city wheel to develop and implement smart city strategy:

3.2.1. Creating a vision with citizen participation in the environmentally smart city of Vancouver Canada: Vancouver aspires to lead the world in at least one of the six ambitious Smart City Wheel goals, which is the smart environment, by setting a clear goal for the city to become the greenest in the world by the year 2020 [30], in order to achieve this goal, work began in 2009 with the Green City team on the action plan for the most environmentally friendly city. This group of local experts researched best practices from the world's leading green cities and set goals and targets that make Vancouver the greenest city in the world, over 30,000 citizens were involved in a process designed to define the city's 2020 objective [31], and the

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city has used social media and digital technologies to excite citizen-led public participation activities, online discussion forums and workshops at community centers.

3.2.2. Develop a benchmark, set targets and select indicators in Copenhagen: In one year from 2013 The city of Copenhagen has set itself the goal of becoming the world's first carbon neutral capital, reducing its energy consumption by switching to renewable energies and producing enough additional green energy to offset the other remaining emissions. And it plans to meet that target by 2025, while, for example, other cities, including Washington target until 2050, and by returning to the target until 2019, Copenhagen has reduced its emissions of 42% [32], and city leaders believe they are on track to meet that goal, and Mayor Frank Jensen says The city is striving to become "one of the greenest and most used cities in the world. bikes ", because it creates a better space, a cleaner air, less noise and a healthier city [33]. Therefore, before setting a future goal, cities should set the benchmark, for example Copenhagen has been measuring cycling and its polymorphic use for decades, now the city has a target indicator: 50% of all trips to work or to school will be achieved by bicycle by 2025. As a result, the city has made significant progress towards this goal, having already reached 62% in 2019 [34], and Copenhagen recently collaborated with MIT to create the Copenhagen Wheel, a bike hybrid that boosts sensors in the bike wheel to monitor pollution, traffic congestion and road conditions in real time. It is therefore an example of a smart city wheel which is Intelligent Mobility. before setting a future target, cities must set the benchmark, for example Copenhagen has been measuring cycling and its polymorphic use for decades, now the city has a target indicator: 50% of all trips to work or school will be achieved by bicycle by 2025, As a result, the city has made significant progress towards this goal, having already reached 62% in 2019. Copenhagen recently collaborated with MIT to create the Copenhagen Wheel, a hybrid bicycle wheel which boosts sensors in the bicycle wheel to monitor pollution, traffic congestion and road conditions in real time [33]. It is therefore an example of a smart city wheel which is Intelligent Mobility.

3.3. Smart cities parameters according to the CIMI index

On the other hand, there are several classifications, the most important of which is the international classification according to the CIMI index (CIMI: IESE Cities in Motion) prepared by the Center for Globalization and Strategy In IESE Business School of the University of Navarre under the direction of Pascual Berrone and Joan Enric Ricart which takes into account 09 main dimensions [35]:

3.3.1. Human capital: The main goal of any city is to improve its human capital, and a city with smart governance must be able to attract and retain talent, create plans to improve education and foster both creativity and research [35].

3.3.2. Social cohesion: Social cohesion is a social dimension of cities that can be defined as the degree of harmony between members of a social group or belonging to a position or a common project, it is a measure of the intensity of the social interaction within the group, social cohesion in the urban context indicates the level of coexistence between groups of people with incomes, cultures and ages The different professions who live in the same city, and this coexistence requires a concern and a common reflection on the social status of their city in the analysis of factors such as migration, community development, care for the very old people, the efficiency of the health system, public safety and inclusion [35].

3.3.3. Economy: This dimension includes all aspects that improve the economic development of the region, such as local economic development plans, transformation plans and strategic industrial plans such as innovation and entrepreneurial initiatives [36].

3.3.4. Public administration and governance: Governance is the term commonly used to describe the effectiveness, quality and good direction of state intervention, and given that the city dweller is the focal point in solving all the challenges facing cities, towns and cities. Factors

such as the level of public participation and the capacity of authorities to engage business leaders and local actors should be taken into account. As well as the implementation of e-government plans [37]. In addition, this dimension includes all measures that aim to improve the efficiency of management, including the design of new organizational and administrative models, and, therefore, in this area open up great opportunities and come true for private initiative that can achieve greater efficiency for these cities.

3.3.5. The environment: The sustainable development of a city can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. In this regard, factors such as improving environmental sustainability through pollution control plans, support for green buildings and alternative energies, efficient water and waste management, and existence of policies that help counter the impacts of climate change are essential to ensure the long-term sustainability of cities [38].

3.3.6. Mobility and transport: The cities of the future must face two major challenges in the field of mobility and transport, which facilitate circulation and access to public services, and afterwards affect movement and transport, with regard to road infrastructure and roads, the fleet of all types of vehicles, public transport, as well as air and sea transport on the quality of life of the inhabitants The city can be vital for the sustainability of cities over time. On the other hand, the most important aspect of mobility and transport is the external factors that are created in the production system, whether due to the need for labor to move or due to the need various outlets for production such as catering and distribution [39].

3.3.7. Urban planning: Urban planning has many sub-dimensions and is closely linked to sustainability. If this planning is inappropriate, incomplete and incorrect, it results in poor quality of life for the public in the medium term and can negatively affect the determinants of investment incentives, given poor planning or complete lack For planning to hamper and increases the costs of transport and supply and labor mobility, and in order to make cities viable and livable and to live in luxury there is a need to focus in a new urban planning on the creation of good integrated cities that take into account the link between public services, so that they are easily accessible [39].

3.3.8. International communication: Cities that wish to progress must ensure a distinguished place in the world, and this would improve the city's brand image and its international recognition as a smart city, and this can only be done through strategic tourism plans, attracting foreign investment, representation and a permanent presence abroad through exhibitions and international initiatives by these cities in various fields, and opening up more to the outside world [35], this dimension is measured by through airports, the number of passengers per airport and the number of hotels in the city, and the layout of the most popular places in the world according to the map of landmarks and the number of meetings and conferences held there.

3.3.9. Technology: Information and Communication Technology [27] is part of the backbone of any society that wishes to achieve the desired 'smart' position. It works to improve the quality of life, whether for residents or for expatriates from out of town [35]. The introduction of modern technology into the education, health, safety and production systems in various vital aspects of the city also helps to achieve the desired sustainability of society.

So that those responsible for this classification study the development of cities, they analyze in each version the trend of cities by calculating the index of the three previous years, allowing more appropriate comparisons. The authors of this classification have shown that smart cities generate many business opportunities and possibilities for cooperation between both public and private sectors, where all stakeholders (members of the public, organizations, institutions, government, universities, experts, centers of research, etc.) can contribute, and this cohesion, cooperation, and interconnection between all stakeholders has many advantages, including a

better definition of the needs of the city and its inhabitants and the definition of objectives Joint and continuous communication between participants, and to expand learning opportunities, greater transparency and the implementation of more flexible public policies.

4. The potentials available in the smart tourist destination within the framework of smart cities

The commitment of smart cities to technology, sustainability, innovation or accessibility has not only led to an improvement in the quality of life of its inhabitants, but it has also become a different factor for tourists who choose where. they want to relax, this is what is already known as smart tourist destinations [15], and the real meaning of smart tourist destinations is to focus on the personal needs of the tourist by combining information and communication technologies and informal culture, which ultimately improves the quality of service in the destination and improves the management of tourism in the destination [40].

Regardless of those who want to visit the remote places on this planet that have no luxuries and no internet, most tourists when choosing between smart tourist destinations prefer to enjoy the same goods and services that they have at home and more. when on vacation, in other words, they want to be able to contact social media, share their photos and experiences, easily locate relevant sites during their stay and access them without any hassle, choose the best restaurants and pay for them electronically, and for this there is a firm commitment from some countries to tourist destinations, while promoting these places in national and international markets.

For example, in Spain the Minister of State for Tourism has made a firm commitment to smart tourist destinations through the Comprehensive Quality Assurance System for Spanish Tourist Destinations (Sistema Integral de Calidad Turistica Española en Destinos SICTED) [41], which means "Comprehensive Quality Assurance System for Spanish Tourist Destinations", where assistance is provided to municipalities requesting help to improve their tourism services through technology, innovation and big data analysis, putting the 'emphasis on aspects such as sustainability and accessibility.

And also the Smart Destination Community model has also been introduced in the Galapagos Islands with the launch of the Ecohelix initiative in 2013, which is an innovative intervention program introduced by the Beyond Chacay Foundation in the Galapagos; Where this initiative works to align and mobilize stakeholders from the private, public, civil and academic sectors in the search for innovative and sustainable solutions to the complex challenges of development and conservation, EcoHelix is designed to engage tourists and stakeholders local communities in the promotion and strengthening of sustainable tourism activities. The components of EcoHelix include the following elements [42]:

- A rating system that allows tourists to rate Galapagos activity on the basis of criteria such as the quality of products or services, hygiene, ecological practices, etc., and provides useful information to other tourists;
- A voluntary accreditation process that helps companies to expose their business model, profitability, financial and technical needs and share this information with interested visitors, some of whom may be potential investors, volunteers or technical consultants;
- Create a web platform (www.ecohelix.com/galapagos) and a smartphone app that allows visitors to access and rate information on Galapagos activities and access information on services, products, business opportunities and technical assistance needs in each Galapagos community;
- Provide online marketing, advertising and reservation mechanisms that will help Galapagos tourism businesses gain access to national and international tourism markets;

- Help tourists who wish to invest their time, knowledge and wealth in local projects that seek to become more sustainable;
- Help Galapagos businesses improve their services to attract more tourists and sell their services at a higher price, while reducing the potential environmental impact.

On the other hand, in the Xinjiang Uygur Autonomous Region, and in recent years there are intelligent tourism systems at several levels have been set up throughout the Xinjiang region, which have not only improved the quality and level of tourism services, but also provide data support and decision support for the precise marketing of panoramic regions, and local government decisions, where “transport in Xinjiang by train” is a popular tourist sign in Xinjiang, and so, when transporting visitors to Xinjiang by train, they buy products, which increases sales of agricultural products and special products, and in order to facilitate the purchase of the product by visitors In the clean Xinjiang, the online store has been operated and has more than 100 kinds of products.

So smart tourism in Xinjiang region has created benefits for all and improved the quality of services provided to tourists. Therefore, Big Data on winter tourism in China has opened up new horizons, as the leading national laboratory for smart tourism released a report "The impact of Big Data on winter tourism in China 2019 ", which analyzes and explains the sources of winter visitors to the Altai region, opinions, consumption and factors limiting the development of winter tourism Currently, Xinjiang is striving to build a platform unified for the tourist information service and a Big Data Center in the region, and the Big Data platform for tourism statistics was launched in Xinjiang in May 2020, at which point the platform can play a big role in visitor orientation, Big Data analysis, green tourism development, etc., which helps to make Xinjiang a good place.

Consequently, the success of the management of tourist destinations depends on the ability of the different actors represented in the group of productive and organizational units that participate in tourism activities (hotels, suppliers, State, etc.) [1] to fulfill their respective roles and to build consensus among key stakeholders (representatives of public and private sectors and civil society) regarding the tourism development model and its strict and timely implementation, as well as to ensure the success of a tourism destination , it is important to facilitate the existence Six A's in the tourist destinations which are the Attractions, Accessibility, the Amenities, Available packages, Activities, and Ancillary services, so if the smart city uses information technologies and innovation to promote and advance Six A's tourism ultimately becomes a smart tourist destination [17].

5. The role of the most important advanced technological innovations available in smart cities to promote smart tourism

Technological innovations make it easier for tourist cities to meet the needs of tourists and citizens, as the emergence of new technologies in recent years has led to the emergence of smart cities based on efficient technology and high efficiency. On this basis, smart tourism has emerged through the insertion of various tools and applications of information and communication technologies in smart touristic attractions, and for this reason they have been called smart tourism tools, which are become the key to most tourism industry tools and sites for urbanized and developed tourist destinations, where every tourist destination wants to Increase the number of visitors the solution is smart technology such as applications and augmented reality, which will provide a unique experience for visitors in the end [43], and for tourist sites, smart technology will also improve sustainability. So, below, we will go over some models in which smart technology affects touristic destinations:

5.1. Augmented reality for smart tourism

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Augmented reality refers to the augmentation of the real world with computer generated data, such as video, audio, and graphics, as well as other media formats through a computer camera / speaker, a smartphone or other devices [44]. Often, museums and historical attractions have found visitors a challenge that captures the imagination of visitors, and therefore augmented reality technology has come as a solution to visit and experience these areas through this technology, giving tourists the ability to witness a battle or a pivotal moment in history on their Smartphones or Tablets using the building as a background.

5.2. Smart applications

Through these applications, visitors or tourists will no longer have to wait in long queues for hours to register tickets for the most important touristic attractions, as the smart technology applications will improve navigation in the touristic attractions of the smart city, which helps tourists find the best times to visit or buy tickets in advance or receive precise mobility instructions, this kind of smart technology makes every trip as easy as possible for new tourists to interact with the city and improve their experience from the get-go.

5.3. Smart social tourism networks

Tourists can use smart technology to instantly communicate with a local guide on social networks, giving them a unique and valuable tourist experience.

5.4. Smart tourism and the Internet of objects

The Internet of objects represents all devices - of any type - that can be connected to the Internet and send and receive information and accelerate it without interference from the human factor and to carry out the exchange of information and communication in order to realize the intelligent identification, positioning, monitoring, surveillance and management of a network, and it will create a more fluid tourism experience when applied to travel sales and reception, where smart urban tourism can be improved [44]. due to the Internet, new technologies (IoT) come in many forms, including smart tickets, smart security services, language services, smart city robots, booking engines, smart lighting devices and Wi-Fi hotspots, for example, there are 672 Wi-Fi hotspots in Barcelona, which greatly increases the number of Wi-Fi users in the city, ... etc [45]. So, the role of the Internet of objects is to install detection devices on objects and give them intelligence, and thus maintain communication between people and objects, objects and objects, to facilitate the human management and control of various objects. The application of the Internet of objects to the tourism industry in a timely manner has precise access to its dynamic information by installing sensing devices on the physical resources of the tourism market. With the help of the Internet of objects platform (like Thingworx IoT Platform, Microsoft Azure IoT Suite, Google Cloud IoT Platform, IBM Watson IoT Platform, Cisco IoT Cloud Connect, Salesforce IoT Cloud, ... etc.) which allows the management of IoT devices and terminals, Connectivity and network management, data management, processing and analysis, application development, security, access control, monitoring, event processing and interfacing/integration, the entire tourism system reaches a 3A connection at any time (Any time), anywhere (Any place), anything (Anything) to achieve a high degree of integration of the traditional separation of the physical world with the time of the information, and due to these platforms and the intelligent management mode, the service of management of the tourism can better control the entire process of tourist activity and the operational management of the tourist enterprise to realize the effective supervision and service of the tourist market and maintain the legitimate rights and interests of the tourists, of the tourism enterprises, the practitioners of the tourism.

5.5. Mobile Technology

It is undoubtedly the main character of the new modes of transport, because Smart mobile devices accompany users in their daily life and operate at all times, and they have become our

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guide, and as they are by our side during of each trip [44], and according to Trip Advisor uses 45% of users of their smart phones for everything related to their vacations, and this is what motivates this to adapt businesses and communication services to these devices, for example, KLM Royal Dutch Airlines really created an information service for travelers using Facebook Messenger, where this system sends as soon as someone makes a reservation, user information about their ticket via Facebook Messenger in addition to the boarding pass or updates on the status of his flight, thus, the user has all the relevant information about his flight in the palm of his hand using the application he is using in effect, this eliminates the need to download any other application.

5.6. Big Data in the context of smart tourist destinations

Smart tourism destinations rely on information technologies applicable to their management and the co-creation of tourism experiences. Big Data has therefore become a key part of the information technology infrastructure in smart destinations, leading to more sophisticated decisions. Unlike traditional data, big data refers to large, growing data sets that include heterogeneous formats and are complex in nature that requires powerful technologies and advanced algorithms [46]. From a technological point of view, Big data is often characterized by 3 Vs: volume (large volume continuously generated from many devices and applications), velocity (rapid means of data generation and need to proceed quickly), and variety (various data sources in several formats) [47], and the managerial point of view adds 3V: veracity (accuracy of significant data for the problem analyzed), variability (meaning of constantly changing data) and value (possibility of extracting useful information) [48]. On the other hand, Destination managers need to know the details of the specific places visited by tourists, what attracts them to each location, personal reflections on tourists' experiences and future travel behavior intentions. Traditional approaches to collecting information in the management of tourist destinations previously relied heavily on surveys and questionnaires. This approach is time consuming and inefficient, which is why the use of big data is welcome. Big data analytics in smart tourist destinations is all about extracting useful knowledge from large masses of data for improved decision making. For example, through the use of techniques of extracting specific and sophisticated data and analyzes in smart tourist destinations, it is possible to provide a much better tourist experience, to create contextualized offers based on the needs of tourists, to co-create products and services with the tourists, thus providing them with better real-time value and strengthening the competitiveness of destinations. The objective of using Big data in the management of a destination is to create an authentic emotional connection between tourists and stakeholders in order to improve customer service and support [15], and destination management organizations must anticipate the needs of tourists and prevent problems.

6. Conclusion and results

Because of new technologies, everything has become smart, and with a smart economy, smart mobility, smart environment, smart citizenship, smart quality of life and smart governance, cities can be moved from traditional cities to smart cities. , which will help to improve the functional efficiency of these cities and improve all aspects of the life of their residents, and improve the overall tourism experience for the digital tourist, and as a result of which above, smart tourism is treated as one of the components of the smart city due to its connection with the components of the smart city, and this what is already known as smart tourism destinations, and by reflecting on some global experiences, results can be drawn based on the capabilities that Smart cities provide to promote smart tourism in the following domains:

- The world's smartest cities have paid special attention to smart and sustainable mobility, social cohesion, protection of people's privacy and smart economy, management and life, while having people smart.
- Smart tourism refers to the efficient and effective use of new technologies applied to tourism services from the vision of sustainability to improve the quality of life of people (individuals, groups, citizens and tourists) in a tourist destination.
- Innovation in all fields and sustainability is the way to improve the quality of life and social value of local residents and tourists.
- Countries and cities must make a strong commitment to smart tourist destinations while promoting these places in national and international markets, through approved programs and systems to ensure the quality of their tourist destinations.
- The success of the management of smart tourism destinations depends on the ability of different actors to effectively play their role and build consensus among key stakeholders regarding the tourism development model and its strict implementation in a timely and proper and correct manner.
- The introduction of various ICT tools and applications to smart tourist attractions has helped smart countries and cities to develop the quintessential smart tourism.
- - Finally, it can be said that the smart city and smart tourism are constantly subject to changes resulting from intensive technological and social development. Today, the Fourth Industrial Revolution and tomorrow the Fifth Industrial Revolution, and with it cities and tourism are developing, all with the aim of ensuring sustainability in everything, thus improving the quality of life of residents and the quality of tourist life. In smart tourist destinations and enrich their tourist experiences.

References

[1] D. Lansdale, K. P. Castro Pacheco, and C. Guerrero, "Smart Destinations: Harnessing Technology to Promote Transformation and Sustainability Through Ecotourism in Emerging Market Communities," in *Zero Hunger*, W. Leal Filho, A. M. Azul, L. Brandli, P. G. Özuyar, and T. Wall, Eds., ed Cham: Springer International Publishing, 2020, pp. 799-810.

[2] S. Ainin, A. Feizollah, N. B. Anuar, and N. A. Abdullah, "Sentiment analyses of multilingual tweets on halal tourism," *Tourism Management Perspectives*, vol. 34, p. 100658, 2020.

[3] U. Gretzel, M. Sigala, Z. Xiang, and C. Koo, "Smart tourism: foundations and developments," *Electronic Markets*, vol. 25, pp. 179-188, 2015/09/01 2015.

[4] U. S. Peceny, J. Urbančič, S. Mokorel, V. Kuralt, and T. Ilijaš, "Tourism 4.0: challenges in marketing a paradigm shift," in *Consumer Behavior and Marketing*, ed: IntechOpen, 2019.

[5] N. A. R. H. A. Basri, "Smart tourism in Najaf Governorate in light of the indicators of religious tourism demand movement " *Uruk journal for humanity science*, vol. 12, pp. 734-755, 2019.

[6] E. Bravo. (2019, 16/08/2020). *Smart tourism destinations: the challenge of achieving a harmonious balance between industry and habitability*. Available: www.smartcitylab.com/blog/digital-transformation/what-is-smart-tourism-and-how-it-evolves-from-smart-cities/

[7] C. Harrison, B. Eckman, R. Hamilton, P. Hartswick, J. Kalagnanam, J. Paraszczak, and P. Williams, "Foundations for smarter cities," *IBM Journal of research and development*, vol. 54, pp. 1-16, 2010.

[8] C. Lamsfus, D. Martín, A. Alzua-Sorzabal, and E. Torres-Manzanera, "Smart tourism destinations: An extended conception of smart cities focusing on human mobility," in *Information and communication technologies in tourism 2015*, ed: Springer, 2015, pp. 363-375.

[9] T. Gajdošík, "Big Data Analytics in Smart Tourism Destinations. A New Tool for Destination Management Organizations?," Cham, 2019, pp. 15-33.

[10] S. E. Bibri and J. Krogstie, "Smart sustainable cities of the future: An extensive interdisciplinary literature review," *Sustainable cities and society*, vol. 31, pp. 183-212, 2017.

[11] U. N. S. Division, *International recommendations for tourism statistics 2008*: United Nations Publications, 2010.

[12] X.-k. Huang, J.-z. Yuan, and M.-y. Shi, "Condition and key issues analysis on the smarter tourism construction in China," in *International Conference on Multimedia and Signal Processing*, 2012, pp. 444-450.

[13] T. Pencarelli, "The digital revolution in the travel and tourism industry," *Information Technology & Tourism*, pp. 1-22, 2019/11/27 2019.

[14] R. Giffinger, C. Fertner, H. Kramar, N. Pichler-Milanovic, and E. Meijers. (2007, 30/08/2020). *The smart city model in European smart cities*. Available: http://www.smartcities.eu/model.html

[15] D. Buhalis and A. Amaranggana, "Smart tourism destinations enhancing tourism experience through personalisation of services," in *Information and communication technologies in tourism 2015*, ed: Springer, 2015, pp. 377-389.

[16] R. Giffinger and N. Pichler-Milanović, *Smart cities: Ranking of European medium-sized cities*: Centre of Regional Science, Vienna University of Technology, 2007.

[17] A. Jasrotia and A. Gangotia, "Smart cities to smart tourism destinations: a review paper," *Journal of tourism intelligence and smartness*, vol. 1, pp. 47-56, 2018.

[18] J. Simard, "La ville intelligente comme vecteur pour le développement durable: le cas de la ville de Montréal," Université de Sherbrooke, 2015.

[19] C. Harrison and I. A. Donnelly, "A theory of smart cities," in *Proceedings of the 55th Annual Meeting of the ISSS-2011, Hull, UK*, 2011.

[20] G.-J. Peek and P. Troxler, "City in transition: urban open innovation environments as a radical innovation," in *REAL CORP 2014–PLAN IT SMART! Clever Solutions for Smart Cities. Proceedings of 19th International Conference on Urban Planning, Regional Development and Information Society*, 2014, pp. 151-160.

[21] B. Cohen. (2012, 15/08/2020). *The top 10 smart cities on the planet*. Available: www.fastcompany.com/90186037/the-top-10-smart-cities-on-the-planet

[22] B. Cohen, "What exactly is a smart city," *Co. Exist*, vol. 19, 2012.

[23] P. Pélata, "Réinventer la mobilité : une autre bataille numérique," *Le journal de l'école de Paris du management*, vol. 135, pp. 37-44, 2019.

[24] P. YALÇINKAYA, A. Lütfi, and E. KARAKAŞ, "SMART TOURISM APPLICATIONS," *Gastroia: Journal of Gastronomy And Travel Research*, vol. 2, pp. 85-103, 2018.

[25] A. Nabben, E. Wetzel, E. Oldani, J. Huyeng, M. Boel, and Z. Fan, "Smart Technologies in Tourism: Case study on the influence of iBeacons on customer experience during the 2015 SAIL Amsterdam event," in *the International Tourism Student Conference*, 2016, pp. 1-32.

[26] V. Roblek, "The smart city of Vienna," in *Smart City Emergence*, ed: Elsevier, 2019, pp. 105-127.

[27] V. Fernandez-Anez, J. M. Fernández-Güell, and R. Giffinger, "Smart City implementation and discourses: An integrated conceptual model. The case of Vienna," *Cities*, vol. 78, pp. 4-16, 2018.

[28] R. Lanyon, "Smart Commute Initiative Establishment of a Multijurisdictional Workplace-based Transportation Demand Management Program Serving the Greater Toronto Area and Hamilton," in *2007 Annual Conference and Exhibition of the Transportation Association of Canada: Transportation-An Economic Enabler (Les Transports: Un Levier Economique) Transportation Association of Canada (TAC)*, 2007.

[29] D. Harari and C. Trink, "L'amélioration de la sécurité des villes," *Annales des Mines - Responsabilité et environnement*, vol. 84, pp. 15-21, 2016.

[30] D. R. Boyd, *Vancouver 2020: A Bright Green Future: an Action Plan for Becoming the World's Greenest City by 2020*: Vancouver, Greenest City Action Team, 2009.

[31] A. Kopec and B. Sheldrick, "The adoption of open government by local governments in Canada

Obstacles and possibilities," *Canadian Journal of Urban Research*, vol. 29, pp. 70-93, 2020.

[32] T. Damsø, T. Kjær, and T. B. Christensen, "Implementation of local climate action plans: Copenhagen–Towards a carbon-neutral capital," *Journal of cleaner production*, vol. 167, pp. 406-415, 2017.

[33] A. Gleich. (2014, 23/08/2020). *The top 10 energy efficient cities in the World* Available: https://www.nasdaq.com/articles/the-worlds-10-most-energy-efficient-cities-2014-07-09

[34] A. PETERS. (2019). *How Copenhagen plans to reach carbon-neutral status in just six years*. Available: https://www.fastcompany.com/90392020/how-copenhagen-plans-to-reach-carbon-neutral-status-in-just-six-years

[35] P. Berrone, J. Ricart, C. Carrasco, and A. Duch, "New York, London and Paris firmly established as the smartest cities," in *IESE Insight*, 2018.

[36] T. Sorin-George and S. Andreea, "The world's smartest cities in the metropolitan century," *Ovidius Univ Ann Econ Sci Ser*, vol. 18, pp. 111-116, 2018.

[37] M. Luterek, "Smart Cities and Citizen Orientation: The Growing Importance of "Smart People" in Developing Modern Cities," Cham, 2020, pp. 209-222.

[38] A. Vegara, "The critical factors for the competitiveness of cities," *WIT Transactions on Ecology and the Environment*, vol. 204, pp. 47-56, 2016.

[39] P. Berrone, J. Ricart, A. Duch, and C. Carrasco, "IESE Cities in Motion Index 2019. doi: https://doi. org/10.15581/018," *ST-509*, 2019.

[40] J. Rocha, "Smart Tourism and Smart Destinations for a Sustainable Future," in *Decent Work and Economic Growth*, W. Leal Filho, A. M. Azul, L. Brandli, A. Lange Salvia, and T. Wall, Eds., ed Cham: Springer International Publishing, 2020, pp. 1-10.

[41] D. F. Ruíz, J. P. Burgos, and M. d. l. O. B. González, "The intelligence in the tourist field. a new formulation in the management of tourist destinations and their possible adaptation to cultural destinations," *Journal of Tourism and Heritage Research*, vol. 2, pp. 353-381, 2019.

[42] D. Lansdale, P. Álvarez, M. J. Ayala, J. C. Izurieta, and A. F. Terranova, "EcoHelix: Working toward a smarter, more sustainable Galapagos," *GALAPAGOS REPORT 2013-2014*, p. 67, 2013.

[43] H. Hambleton. (2019, 27/08/2020). *How smart tourism will shape smart city design*. Available: https://www.smartcity.press/how-smart-tourism-will-shape-smart-city-design/

[44] A. Kontogianni and E. Alepis, "Smart tourism: State of the art and literature review for the last six years," *Array*, vol. 6, p. 100020, 2020/07/01/ 2020.
[45] P. Sethi and S. R. Sarangi, "Internet of Things: Architectures, Protocols, and Applications," *Journal of Electrical and Computer Engineering*, vol. 2017, p. 9324035, 2017/01/26 2017.
[46] A. Oussous, F.-Z. Benjelloun, A. A. Lahcen, and S. Belfkih, "Big Data technologies: A survey," *Journal of King Saud University-Computer and Information Sciences*, vol. 30, pp. 431-448, 2018.
[47] B. Furht and F. Villanustre, "Introduction to Big Data," in *Big Data Technologies and Applications*, ed Cham: Springer International Publishing, 2016, pp. 3-11.
[48] M. Marjani, F. Nasaruddin, A. Gani, A. Karim, I. A. T. Hashem, A. Siddiqa, and I. Yaqoob, "Big IoT data analytics: architecture, opportunities, and open research challenges," *IEEE Access*, vol. 5, pp. 5247-5261, 2017.